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Market failure and *technological policy*

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This article highlights the need to complement macroeconomic policies designed to secure stabilization, deregulation and greater openness with other macroeconomic and microeconomic measures aimed at revitalizing the growth and competitiveness of the countries of the region. At the national level, in terms of macroeconomic measures, it is necessary to increase domestic saving and channel it towards productive investments within the local context, while microeconomic policy should include measures to develop and consolidate in the countries an innovative, wide-ranging system for furthering changes in the production patterns of the economy and promoting the transition to new technologies and forms of participation in international markets. It would also be advisable to improve management capacity, the generation and dissemination of technical knowledge, and the quality of human resources, while also encouraging a spirit of enterprise after years of macroeconomic instability and pursuit of short-term speculative rents which are generally incompatible with efforts at innovation and technological progress. At the supranational level, integration programmes like MERCOSUR or NAFTA demand a new institutional framework favouring the coordination and harmonization of public policies, including those designed to promote the training of highly-skilled human resources and technological innovation. Moreover, legislation on industrial property, quality codes and standards, standards of certification, etc., must now be reviewed in the light of the new context of industrial organization which is emerging.

I

From import substitution industrialization to stabilization programmes

A new breed of market-oriented theoretical ideas and policy proposals seems to be gaining ground among economists. Protectionism, excessive inward-orientation and direct investment subsidies—all of them resulting from a high degree of government intervention in the economy—are increasingly identified as the main source of poor economic performance.

The degree of government intervention in the economy increased quite considerably—both in developed and developing countries—during the 1940s and 1950s. It did so in the aftermath of the market failure debate of the 1930s, and was associated with Keynesian economics, on the one hand, and socialist planning, on the other (Helm, 1989). In most developing countries, this intervention took the form of what later came to be known as the import substitution industrialization strategy (ISI). Different sources of market failure—whether micro or macro, and whether originating on the demand side, on the supply side, or in market structure—gave rise to a clamour for intervention by the ‘visible’ hand of Government. In addition, greater expectations concerning social justice and individual rights led to the establishment of the basic principles of the Welfare State.

The abandonment of the Gold Standard made necessary the creation of Central Banks and the introduction of active monetary policy in many peripheral countries. Economies of scale—leading to industrial concentration and monopoly pricing—suggested the desirability of nationalization and public production in sectors such as steel or petroleum. The insufficiency of capital markets induced the establishment of financial institutions and development agencies. The shortcomings of the insurance market, the inadequacy of information and the unsatisfactory operation

of the system of consumer preferences made necessary social insurance and the public provision of such goods as health or education. And so on and so forth. A new set of institutions and ideas developed worldwide as a consequence of the emerging new values and principles, and the role of the State became central within the new patterns of social organization that resulted thereafter.

It is important to note that these were years of rapid economic expansion for both developed and developing countries. Within such a climate, the world economy and international trade grew significantly for quite a long period of time. Foreign direct investment in manufacturing acted as a major growth-inducing force in many peripheral societies and had a considerable impact upon the rate and direction of the industrialization process. Little consideration was then given to the high (and increasing) degree of government intervention in the economy and, in a more general way, to the fact that the public sector was gradually taking over initiatives and responsibilities which naturally belonged in the private sector.

Relatively low-cost external public financing and foreign direct investment in manufacturing supplied the resources thanks to which this model was able to spread rapidly to many Third World countries. Excess domestic demand in the early stages of the ISI process provided the basis for a period of rapid economic growth within the limits of the internal market.

This process of rapid economic growth lost momentum in the late 1970s. The international economic scene suffered a dramatic transformation after the oil shocks of 1973 and 1979 and the Mexican debt moratorium of 1982. As a result, the expansionary process in the industrialized world suffered a major setback and practically ceased to act as a growth-inducing force in the peripheral world. At the same time, a drastic slump in raw material prices, the drying-up of external finance and skyrocketing interest rates gave rise to a less friendly world environment for developing countries, which thereafter could hardly maintain the levels of development they

■ This paper is based on a commentary on the document “IDRC regional strategy for the Latin American and Caribbean Region”, Ottawa, IDRC, 1991 (mimeo). Comments by Dr. F. Chaparro on a first draft of this paper are hereby acknowledged.

had attained, so that they lost ground internationally. In addition to the above, the rapid spread of microelectronics and of flexible automated production technologies rapidly rendered obsolete much of the technological capacity acquired by the developing countries through domestic R&D efforts during the ISI process.

As a result of the foregoing, the domestic socioeconomic environment of many developing countries became increasingly unstable and fragile. Their faltering overall economic performance and the massive escalation in social repression which occurred after military coups in countries such as Argentina, Brazil, Chile, Uruguay, Bolivia, etc., point to the fact that a major transformation of the long-term development model of many peripheral societies was clearly in the making. The rate of saving and investment suffered a dramatic contraction, and the inflow of foreign investment in manufacturing became much less significant than in the immediate post-war years, or ceased altogether in many countries. The process of capital accumulation deteriorated badly and public accounts moved into huge deficits which could only be covered by printing money and imposing a rapidly rising inflationary tax.

In such critical circumstances, many peripheral societies attempted to return to orthodox free-market principles during the 1980s. They drastically curtailed the regulatory role of the State and opened up their economies to foreign competition. A new set of institutions, markets and patterns of social organization gradually began to emerge as a consequence of this, giving rise to a profound socio-economic transformation which is now steadily working its way through the socio-economic structure. This as yet unfinished transformation, whose impact on production efficiency and social equity is still far from clear, will surely have far-reaching consequences in the years to come.

Questions of production efficiency and international competitiveness, as well as major issues concerning social equity and political governance, are clearly at stake and demand a new and fresh discussion. Once again, the role of governments and markets appears to be called into question, and a new debate seems to be urgently needed concerning the massive process of 'creative destruction' many Third World countries are presently going through.

It goes without saying that the above-mentioned transformation, both as regards values and principles as well as the rate and nature of the growth process,

has strongly affected the way in which economists—and social scientists in general—are now looking at development problems. Today, on the basis of ideas emerging from strict conventional neoclassical thinking, many professional economists take a negative view of the ISI strategy and are highly critical of what they see as 'government failure' during the post-war period.

From this extreme perspective, the import substitution industrialization process has left the developing countries with distorted and inefficient production systems as a result of long-standing protectionism. Excessive inward orientation, low international competitiveness and rent-seeking behaviour on the part of local businessmen are all regarded as the result of over-intervention by governments in the economy. Such an extreme view—although widely held—is probably false, as the last Annual Report of the World Bank argues on its introductory page when it says: "This is not a question of intervention vs laissez-faire. ...Competitive markets are the best way yet found for efficiently organizing the production and distribution of goods and services. ... But markets cannot operate in a vacuum. They require a legal and regulatory framework that only governments can provide. [Moreover] ...markets sometimes prove inadequate or fail altogether." (World Bank, 1991).

Thus, and in spite of the fact that the neoclassical critique of the ISI model rightly spells out a number of major aspects in which the 'visible hand' of government has failed dramatically, we have to recognize that many 'ifs and buts' still persist and that at both the conceptual and policy level it is by no means obvious—at least not for the present author—that the advice of "get your macro prices right and let the market mechanism do the rest" is all that is needed in development economics.

There are at least three different sources of doubt concerning the simple neoclassical views on these matters.

First, even "well-behaved" cases—such as Korea or Chile, which are so frequently cited by supporters of the liberalization approach such as Krueger and Balassa (see Balassa, 1990)—have been seen in quite a different perspective by other authors. Thus, Amsden (1989) and Kim (1990) have pointed out that there was a much higher degree of government involvement in the economy than what neoclassical economists have reported in their own accounts of the facts.

Let us consider the case of Chile. The availability of external finance in the mid-1980s (even taking account of the dramatically high external debt ratio) and the public ownership of its major export commodity –copper– seem to suggest that the explanation of the Chilean economic restructuring efforts of the 1980s requires a more complex analysis than that reflected in the simple neoclassical account of the facts. Likewise, the rather peculiar relationship which the Korean State managed to establish with its large national conglomerates (the Chaebolds) seems to indicate that the Korean story, too, has its own idiosyncratic side which is not adequately accounted for by a simple neoclassical description.

Second, some skeptical Latin American voices have recently been raised, arguing that the neoclassical approach tends to ignore some problems posed by the Smithian and Keynesian tradition. Thus, it ignores the problem of how to generate more savings and how to ensure that savings are allocated to investment, because it takes the view that the market forces are potentially able to simultaneously resolve classical, Keynesian and neoclassical questions. It holds that the problem of increasing savings –the classical or Smithian question– does not exist *per se*, because a market-determined interest rate can automatically induce the optimal amount of savings, and by the same token, the problem of deciding between higher-risk and solid portfolio investments –the Keynesian question– does not arise either, because the growth models of the Arrow tradition take it for granted that investment and savings are instantly equalized by the market (Fanelli, Frenkel and Rozenwurzel, 1990).

Now, it so happens that over the course of the last 15 years the rates of public saving and investment have been significantly reduced in many developing countries, while private savings have been transnationalized and are now financing the economic restructuring process of more mature industrial societies. Lack of credibility –which in some cases persists even after several years of successful stabilization efforts, as in the cases of Bolivia or Uruguay– has prevented the restoration of capital markets and of the capital accumulation process. A “bottom of the well” equilibrium situation has emerged and it is by no means obvious how to deal with this new set of circumstances. “Wait and see” seems to be the only answer the neoclassical model so far has to offer for cases of that sort.

In view of the above, Fanelli, Frenkel and Rozenwurzel (1990, p. 41) underscore “the need to generate more savings and to reinforce the links between savings and investment in order to restore growth in Latin America”.

Third, while the above-mentioned sources of failure are macro in nature: i.e., they involve economy-wide disequilibrium processes, there is yet another important category of “market failure” situations which are essentially microeconomic and which the neoclassical model frequently leaves out of consideration as well. Some of them –notably those related to the existence of “public goods”, externalities, increasing returns to scale, etc.– clearly provide a strong case for State intervention and valid grounds on which to argue that the “visible hand” of the Government still has a valuable role to play in development economics.

In particular, many of these issues appear in relation to the generation, diffusion and utilization of technical knowledge and to the functioning of the national system of innovation supporting the process of technical advance in the production of goods and services. There can be little doubt as to the crucial role innovation and technological change play in the building up of international competitiveness, and it is precisely here that the role of governments in strengthening the workings of the national system of innovation, supporting the process of technical change, and promoting a greater degree of technological innovation at the enterprise level can be conceptually defended, even under strict *laissez-faire* rules. Once again, the last Annual Report of the World Bank (1991) explicitly recognizes this when it says: “Certain actions involving public goods [admit intervention] because the private sector does not usually carry them out: spending on basic education, building up infrastructure, etc.”.

We shall argue here that there are strong *a priori* grounds for believing that market signals operate only in a very imperfect manner in the field of knowledge generation and diffusion as well as in the upgrading and development of qualified human resources. Consequently, explicit government action is needed if developing countries are to generate the basic technological and human capital infrastructure required for a satisfactory process of growth, technological modernization and re-insertion into world markets. These are the topics that we shall examine in our next section.

II

Market failure in the generation and diffusion of technical knowledge, and the need for an explicit technological policy

We have so far argued that policy proposals involving short-term stabilization efforts, deregulation of markets, the opening up of the economy to foreign competition, etc., constitute a *sine qua non* condition for a successful process of re-insertion of the region in the world market. We have also indicated that there are strong *a priori* grounds for believing that such macropolicy actions may be a necessary but not a sufficient policy package if developing countries are to be successful in revitalizing their capacity for growth and their international competitiveness.

At the macro level, explicit policy actions might be needed in order simultaneously to deal with what Fanelli, Frenkel and Rozenwurzel (1990) have called the "Smithian" and "Keynesian" constraints on growth, that is to say, insufficient volume of domestic savings and the difficulty of ensuring that such savings are effectively channeled into productive investment activities within the local economy. The existence of these growth constraints induced those authors to argue that the agenda of public actions required in the near future probably needs to incorporate far more questions and issues than those that neoclassical authors have so far considered necessary. Stabilization with growth—which means simultaneously closing the fiscal and external gaps as well as restoring the capital accumulation process—will probably require more than just minimal actions on the part of developing country governments, as well as changes of attitude by financial institutions and international and regional organizations such as IDB, the World Bank, etc. Further deregulation and opening up of the economy to foreign competition, new forms of external financing, and a lower degree of protectionism in raw material markets on the part of developed countries, together with a more open attitude by industrialized nations concerning the diffusion of technology and intellectual property rights, etc., belong in this area. Many of these issues have been discussed in connection with the Uruguay

Round and the Brady Initiative, but we are still a long way from having achieved substantive progress on this front.

Leaving aside the macro policy debate on stabilization and growth for the time being, let us concentrate on microeconomic issues related to how to strengthen domestic technological capabilities and the functioning of the national system of innovation supporting the process of technical change in industry, agriculture, etc. In other words, let us now concentrate on the issue of how to develop and consolidate a "generic" technological infrastructure capable of supporting the modernization of the production structure of the economy and the transition to the world of flexible automation, biotechnologies, telecommunications, new materials, etc., which is gradually gaining ground in mature industrial societies.

A number of structural features prevailing in the markets for technical knowledge and information as well as in the field of education and human capital creation—such as imperfect appropriability of benefits, externalities, incomplete specification of production functions, scale economies in the generation and utilization of knowledge, etc.—suggest that institutions other than the price mechanism might be needed in this field if peripheral countries are gradually to build up the kind of "generic" technological infrastructure—and the new company attitudes towards innovation and technical change as well as towards human capital upgrading—they now need to meet the challenge of the international marketplace. The creation and strengthening of a network of institutions, agencies and policies related to the generation and diffusion of technical change, to the recycling and upgrading of human resources, to the opening up of new international markets, etc., appear to be a *sine qua non* condition for a dynamic process of technological change and modernization and for the consolidation of new patterns of insertion into

world markets for goods and services. Universities, public research agencies, producers of capital goods, trading companies, banks, Ministries of Industry and Trade and of Education, Departments of Science and Technology, etc., need to be seen as individual parts of a complex network of actors whose coherence is crucial if peripheral countries are to regain international competitiveness and capability for self-sustaining growth. In addition to the above, a new set of incentives is required in order to revitalize the willingness to take greater investment risks and reinvigorate entrepreneurial attitudes after long years of macroeconomic instability and rent-seeking behaviour.

Major changes in the domestic socioeconomic and institutional environment are required for this to take place. On the one hand, the building up of new domestic technological and managerial capabilities is an essential condition for any further improvement in productivity and international competitiveness. On the other hand, this by itself might not be enough if it is not supplemented with the right kind of economic incentives and institutions which would insure that the restructuring process is accompanied by a new export-oriented mentality capable of inducing local entrepreneurs to explore new and imaginative ways of entering into the international marketplace.

1. Strengthening the domestic technological, managerial and human capital infrastructure in the countries of the region

A first major issue related to the achievement of better international competitiveness undoubtedly has to do with the creation and upgrading of human capital and with the enhancement of the technological and managerial capabilities of the countries of the region.

a) The creation and upgrading of human capital

Notwithstanding the fact that all kinds of education seem to be needed for industrial progress, greater emphasis on science and engineering training appears to be essential for coping with fast-moving and complex new technologies such as those involved in the transition from electromechanical to electronic production processes and product designs. Microeconomic aspects related to the organization of work on the shop floor, as well as industrial organization issues at the sectoral and macro level, are involved in

this and demand urgent consideration. New types of information management, new forms of telecommunications, new patterns of industrial relations, etc., are at stake here, and in all of these spheres managers, engineers and technicians, as well as plant workers, need to learn new skills and patterns of interaction.

It is important to determine the level of secondary and tertiary education enrolment ratios, but such aspects as the technical orientation of students, the length of training, the quality of teaching, etc., are also major aspects educational authorities should look into. These are all topics about which we still know very little and which demand urgent new research if public policies are to proceed on a strong footing on this front. The Korean and Taiwanese experience in this territory is quite remarkable, and many economists have in recent years suggested that their policies in this respect are the main explanatory factor of their successful economic performance of the last two decades (Lall, 1990). Urgent domestic action –and international collaboration– in the building up of a “generic” human capital infrastructure is clearly a first priority on the present agenda of public action. Complementary to such public policy efforts, intra-firm training programmes are also required in order to facilitate:

i) *Upgrading of human resources and the transition from electromechanical to electronic skills and techniques.* This involves the recycling of engineers, machine-tool operators, etc. already in the labour force, as well as a complete rethinking of the curricula new generations of technicians, workers and engineers study at universities, secondary, vocational and technical schools. In this respect, the curricula in such areas as mathematics, trigonometry, computer sciences, etc., need to be strengthened and modernized. “Custom-made” product design, flexible manufacturing production organization techniques, universal standards and norms, etc., are some of the crucial aspects with which new generations of engineers and technicians will have to be familiarized in their training. Much of this is in the nature of a “public good”, where public expenditure is fully justified in view of its high expected social rate of return.

ii) *The recycling of industrial management.* Strategic planning, “Kan Ban”, “just in time” and “total quality” production organization techniques, as well as greater use of indirect methods in the

production process, new forms of global sourcing, etc., are among the new skills modern industrial management has to handle in a marketplace which is rapidly evolving towards "custom-made" products and world-wide production systems (Kliksberg, 1991). Decentralization of production and global sourcing are some of the new conceptual tools the oncoming generation of managers will have to learn to use in the present circumstances.

The dramatic transition many big transnational firms (such as Ford, Fiat or Olivetti) had to go through in recent years in order to regain international competitiveness, and the huge price –both in terms of personnel turnover and management restructuring– which all of these firms had to pay in order to master newly emerging electronics-based production planning and organization techniques show that this is by no means a marginal issue. A network of public and private institutions needs to be created to facilitate this transition, along with experimental research "trying out" different approaches to see what works, and how, as well as joint efforts between the public and private sectors.

iii) *Flexible automation and trade union participation at the shop-floor level.* The successful adoption at the shop-floor level of many of the new production organization techniques, such as "just in time" or "total quality" arrangements, requires institutionalized procedures for trade union participation in production decisions, as well as a completely new approach to "on the job" training. It also demands a major transformation in trade union attitudes to plant operation and the flexibilization of labour contracts. Much of this is already happening at the enterprise level (Middlebrook, 1991), but we still do not fully understand many of the new micro/macro issues this involves. As in the previous cases, more research on these topics seems to be urgently needed.

The need for a massive effort on the educational front and in the building up of human resources comes at a time when public social expenditure has contracted quite drastically in most developing countries as a result of structural adjustment programmes whose main priority is to reduce –or completely eliminate– the public sector deficit regardless of the long-term impact such a policy option is going to have upon the social sectors of the economy (health, education, etc.) and its likely negative consequences for the sources of economic growth.

According to recent World Bank statistics (World Bank, 1991) a large number of Latin American countries registered a decline in government expenditure on health and education, as a percentage of GDP, between 1980 and 1985. The impact these policies are going to have upon total factor productivity growth and international competitiveness in the years to come has not yet been seriously examined, but there are strong grounds for believing that it is going to be far from negligible.

The importance of foreign collaboration in all of the above-mentioned areas must be stressed. Expatriates who are now permanently established in the academic and professional communities of more mature industrial societies, as well as retired professionals and educational agencies of developed nations could be called upon in order to assist developing countries in the massive educational and training effort they now require if they are to meet the challenge of the international marketplace.

The development of human capital along the lines suggested above is a necessary but not sufficient condition for the gradual revitalization of international competitiveness. Additional measures aimed at strengthening firm-specific administrative and technological capabilities and country-wide export orientation and international market penetration are needed as well, and these will be examined later on in this paper when dealing with the creation of new institutions and incentives. Government intervention is fully justified in this field in view of the fact that the "generic" industrial organization infrastructure required for this is in the nature of a public good.

In many of these aspects we do not know for certain the best way to proceed, and experimental research to explore what works and what does not work would be highly valuable for further public policy design and implementation. In spite of the acknowledged long history of "government failure" during the substitutive industrialization process, imaginative new ways of intervention will have to be explored on this front, in view of the highly imperfect behaviour of markets when "public goods" are involved.

b) *The generation and diffusion of new technical knowledge and information.*

Close to the previously discussed topic of how to create and upgrade the human capital infrastructure of peripheral nations we find a set of issues

concerned with the size and quality of the already available R&D infrastructure. Let us now briefly examine some of the questions hereby involved.

i) *R&D efforts*. Imperfect appropriability of results, increasing returns to the generation and utilization of scientific and technical knowledge, etc., indicate that we can expect markets to behave in an imperfect manner in relation to the allocation of resources to R&D activities. Public sector spending on R&D can therefore be justified even under strict *laissez-faire* rules. Furthermore, many of the public sector requirements in areas such as transport facilities (including roads, port and shipping infrastructure, etc.), telecommunications, energy, health, etc., demand "made to order" equipment and technologies which cannot easily be obtained "off the shelf" in the international market. "Tailor-made" solutions demand a great many highly idiosyncratic knowledge-generation efforts which must be performed locally.

The case for public support of R&D activities and risk-sharing and subcontracting with the private sector in the above-mentioned fields seems therefore particularly strong. The experience of mature industrial societies in this respect is highly illuminating, if we are to judge by the role played by NASA, the Departments of Agriculture, Health, Defense, etc., in the US, or by the Ministry of Industry and Trade in the UK and MITI in Japan, to name just a few examples.

Having said the above, it is important to understand that many Latin American developing countries currently spend somewhere in the region of 0.5% to 0.7% of GDP on R&D activities. Around two-thirds of such expenditure is absorbed by research and development efforts carried out by public laboratories, universities, etc. However, there is a great deal of institutional slack, inadequate selection of research priorities, lack of *ex post* peer evaluation of the amount and results of such expenditure, etc. in this field. A major "institutional engineering" effort needs to be undertaken in this area before further resources are spent on domestic R&D activities, but there is nevertheless no doubt that the domestic effort on the R&D front needs to be significantly expanded if these countries are to meet the challenge of creating the new social and technological infrastructure they require. Only after a serious effort is made to reorganize and improve the cost efficiency of the existing R&D network and infrastructure should resources be significantly increased on this front.

ii) *Diffusion of technology*. There can be no doubt that, from the point of view of total factor productivity growth and international competitiveness, the technological upgrading of small and medium-sized enterprises is a major issue requiring consideration. Many small and medium-sized family firms are considered to be lagging well behind prevailing average technological practices, and bringing them gradually up to scratch as far as production planning and organization, product design capabilities, etc. are concerned should be given high priority within the national agenda. Here, too, a fair amount of "institutional engineering" and government intervention seems unavoidable, given the "public good" nature of the generic technological assets involved.

Recent policy actions by the British Ministry of Industry and Trade on what we could call "industrial extensionism" indicate the general direction of the policy prescription we have in mind in this case: a widely circulated paper from the above-mentioned Ministry tells British small and medium-sized firms that "...The (Ministry's) Advisory Service will undertake a feasibility study lasting up to 15 man-days with the cost split equally between you—the firm—and them. Alternatively, 50% support is also available from DOI (Department of Industry) if you employ an independent authorized consultant." It goes on to mention that "...Another very valuable source of information and advice is the British Robot Association. It will put you in touch with manufacturers experienced in your type of application, suggest further reading materials, etc." (United Kingdom Ministry of Industry and Trade, Department of Industry, 1982).

The foregoing provides a clear example of how a central government agency can explicitly intervene in favour of a faster process of technological diffusion and productivity improvement, particularly among small and medium-sized enterprises which may be operating with imperfect information about alternative opportunities and possible courses of action. This particular type of intervention must be seen as part of a broader set of institutional interactions loosely defining what we consider a "generic" technological policy should be. Obviously, both public and private agencies have important roles to play in networks of this sort.

We have so far examined public action related both to the creation and upgrading of human capital and the generation and diffusion of new technical

knowledge and information. Such action may be important for the enhancement of international competitiveness, but it may not be sufficient under present circumstances. In our next section we shall examine

various additional incentives and institutions which might be required in order to support the new export orientation now needed on the part of the domestic entrepreneurial community.

III

Institutional engineering efforts

Many of the above-mentioned spheres of public policy action clearly demand institutions –both public and private– capable of interacting in new and creative ways. It would be wrong to expect that the “invisible hand” of the market will, of itself, induce the establishment and strengthening of the kind of institutional networks needed for this. Exploratory programmes between public and private agencies –business associations, groups of firms, universities, public R&D laboratories, etc.– have to be set in motion to try to develop the kind of scientific and technological infrastructure most developing countries now require in order to attain a faster process of modernization as well as a less painful transition to electronics-based technologies, new telecommunications systems, etc.

It is important to understand that it is the “public good” nature of the technological assets involved in this that calls for collective action and exploitation of the “generic” part of such assets. Contemporary authors see such collaborative efforts as pre-competitive research and point to the “common pool” aspect of the social organization model underlying their functioning (Stiglitz, 1987). Price signals seem to be particularly inefficient in situations of this sort, and it is precisely this feature that calls for public intervention.

It should be noted, however, that action of this sort on educational and technological matters, important though it may be, may not be enough for a successful revitalization of international competitiveness under present circumstances. Given the low state of “animal spirits” that the domestic business community presently exhibits in many developing countries and the indiscriminate effort most of these countries are nowadays making with regard to the deregulation of markets and the opening-up of the economy to foreign competition, more action may be needed on the part of the public sector if the present

period of transition towards decentralized market functioning is going to bring the expected positive social returns, rather than wreaking havoc in the existing production structure. It seems reasonable to argue that external collaboration from developed countries and new institutions and mechanisms of interaction between public and private agents may be needed during this transition to a much less regulated model of production organization. These institutions should focus on such aspects as the deterioration of equity, anti-dumping legislation to deal with unfair competition, etc.

Let us now consider these topics in some detail. A broad set of issues –some apparently of only minor importance, such as organizing the right kind of consular and marketing information services in support of domestic exporting companies, others as major and fundamental as having adequate port and shipping facilities– might be listed in the agenda of possible public actions to be carried out with the purpose of enhancing international competitiveness. As in the case of education and the generation and diffusion of technology, there are many “public goods” involved here, and it is precisely this fact that justifies explicit government intervention on this front.

Aspects connected with equity –and their relationship with productivity growth, on the one hand, and with issues of political governance, on the other– come next in the list of topics demanding urgent consideration and explicit government action. A falling rate of public social expenditure in areas such as health or education might prove to be highly detrimental in the years to come from the point of view of production organization, quality standards and, ultimately, international competitiveness. On the other hand, a higher unemployment rate and the transfer of human resources to the informal sector of the economy, as well as the deterioration of the average

health standards of the population –aspects which might well result from the ongoing industrial restructuring process– might bring into question an otherwise highly necessary structural adjustment process and generate a feeling that the government's attitude is not legitimate. Unemployment subsidies and institutions capable of mitigating the hardships of the transitional period as far as health, social security, etc. are concerned might be justified in order to raise confidence in the expected benefits of the structural adjustment efforts, as well as to avoid extreme forms of social conflict and exclusion.

Finally, a few remarks are called for on anti-dumping protection. Given the very uncritical way in which the opening up of the economy to foreign competition is now taking place, it seems reasonable to utter a word of warning. It is worth remembering that the most successful newly industrialized Asian countries did not massively ex-

pose their manufacturing firms to foreign competition during the early stages of their development process. That is certainly the most widespread interpretation of the Korean and Taiwanese experience. It is no doubt true that the “infant industry” argument has been grossly overplayed in many peripheral countries during the import substitution industrialization period and that this has made both economists and ordinary citizens highly critical of protectionism and inward orientation. It is also true, however, that learning takes time and money and that the danger of dumping activities by foreign suppliers should not be minimized. Indiscriminate opening up of the economy to the impact of foreign restrictive practices might lead to the failure of the whole industrial restructuring effort. Antimonopoly and anti-dumping legislation and careful customs rules and procedures should be part and parcel of the present institutional restructuring efforts.

IV

National and supranational levels of intervention

There are strong indications that the world economy is now gradually entering a stage of transnationalization and globalization, particularly in so far as production and trade are concerned. National development strategies –though still only mildly influenced by these trends– will eventually come to incorporate in a more explicit way the opportunities and restrictions resulting from the process of regional and subregional integration now under way.

Integration programmes such as those of MERCOSUR, the Board of the Cartagena Agreement (JUNAC), the North American Free Trade Agreement (between the United States, Canada and Mexico), etc., are examples of this process of globalization. National frontiers are bound to lose some of their traditional significance in the years to come, and institutions of supranational level will gradually have an increasing impact on the behaviour of the local economic agents.

The impact of the globalization process needs to be analysed both at the micro level (in relation to new types of business strategies) as well as at the

macro level (in connection with national development strategies). Neither of these spheres has been fully explored so far, and major research efforts will be called for in the future.

At the macro level, integration programmes such as MERCOSUR, for example, involve the establishment of a common external tariff and common trade policy with respect to third countries or groups of countries, as well as the coordination and harmonization of macroeconomic, fiscal, monetary, exchange, agricultural and industrial policies. The task of coordination and harmonization is by no means an easy one, as the experience of the EEC clearly shows. Specific research and technical information concerning each one of the above-mentioned fields is required, and technical groups to explore the new issues have to be put together before any serious progress can be made in the negotiation itself. This is precisely where both Argentina and Brazil are presently standing as far as their future participation in MERCOSUR is concerned.

An example of this is the discussion between the MERCOSUR countries in relation to the establishment of a common external tariff and tariff structure.

In spite of the fact that both the average and the inter-industry spreads of import duties have fallen in the above-mentioned countries during the course of the last decade, it is nevertheless true that significant differences still persist and will have to be ironed out before MERCOSUR actually comes into operation in 1994. Argentina operates with an average external tariff of 12.7%, while Brazil, Paraguay and Uruguay currently exhibit average external tariffs of 28%, 16% and 23.7%, respectively (Conexión, 1991). Representatives of these four countries are presently working on the design of a common external tariff structure, but differences in their industrial structure and productivity levels and the paucity of the available information make this task very difficult. The macroeconomic coordination and harmonization required for the integration process is far from easy and will demand a great deal of economic research, political will and an institutional learning process in the years ahead. A number of new institutions of supranational level will have to be designed and put into operation, and a "learning by doing" process is likely to take place *pari passu* with the economic integration itself.

The supranational institutional efforts needed in relation to the training and upgrading of human resources are of a different nature. The common perception of the fragility of the existing human capital in such areas as informatics or biotechnology has in recent years induced Argentina and Brazil to tackle the question of human capital development jointly, through the creation of the Latin American

School of Informatics and the Argentine-Brazilian Biotechnology Centre (CABBIO), both within the framework of MERCOSUR. In spite of the fact that both these experiences are recent and rather small in terms of expenditure, they seem to be pointing towards the type of collaborative efforts that could be explored in the future in the field of human capital upgrading.

Finally, we also need to consider microeconomic aspects related to changes in individual firm behaviour triggered off by regional integration processes. Technical cooperation agreements between companies—along the lines of those that have flourished in the Pacific region, between United States, Japanese, Korean and other enterprises—will probably emerge in due course in other regional groupings such as MERCOSUR or the Free Trade Area between Canada, the United States and Mexico.

The question of intellectual property rights and the strengthening of the patents system is a major issue in this field and one in which a great deal of institutional change is presently taking place under the pressure of the United States Government. Countries as different as Spain, Greece, Mexico or Argentina are currently introducing more stringent patents legislation than that which they had during the substitutive industrialization period, in the expectation that such policy action will greatly improve their institutional credibility and the inflow of foreign manufacturing investment and its associated technological component. It goes without saying that the evidence in support of such expectation is rather thin, but this is undoubtedly an area in which more research will be needed in the years ahead.

(Original: English)

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