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Microeconomic Evolution in High Uncertainty Contexts: The Manufacturing Sector in Argentina

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MICROECONOMIC EVOLUTION IN HIGH UNCERTAINTY CONTEXTS: THE MANUFACTURING SECTOR IN ARGENTINA

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Introduction

Various studies showed that high output volatility: (i) negatively affects long run economic growth, (ii) imposes high costs in terms of wellbeing and (iii) adversely affects the poorest members of society.[1]

The literature shows that these effects are particularly severe in developing countries. In the attempt to explain the negative correlation between volatility and growth, the literature usually focuses on two mechanisms: 1) the fact that greater uncertainty reduces growth as investment falls, and 2) the consideration that the existence of credit restrictions or imperfect access to capital market adversely affects the impact of short term volatility on long term growth by limiting financing options of long term investment. While those studies tend to stress the aggregate economic effects of real volatility, few scholars attempt to explain the microeconomic aspects of agents' decision making process and its influence on macroeconomic behavior in the case of countries characterized by high volatility and low institutional quality. The aim of this paper is to contribute to fill this gap.

Indeed, this work aims to identify, in an exploratory fashion, some of the effects of real volatility on the structure of the industrial sector and the evolution of the micro-economy of industrial firms, emphasizing that macroeconomic sustainability and the microeconomic structure are two mutually dependent dimensions. The conceptual frames used to advance in the understanding of the observed micro-behavior constitute an eclectic collection of fragmented evidence rather than a unified body of theory.[2] First we present a brief review of industrialization in Argentina since the end of the 19th century. In the second section we analyze the micro-foundations of the decision making processes in highly volatile contexts, focusing on investment

decisions. We will then discuss the accumulation of technological capabilities and skills. The fourth section focuses on the heterogeneity of economics agents. The fifth section concludes.

A brief history of Argentine industrial development

The process of industrialization in Argentina started at the end of the 19th century. Initially, the industrial sector was driven by an agro-exporting model based on the production of cereals and meat. This open model persisted until the complete exploitation of the agricultural frontier, which basically coincided with the global turn to wars, economic crises and protectionism.[3] Similarly to what was happening in other nations, in order to respond to this new scenario, a new economic regime was implemented starting from the thirties onwards. This new regime operated under the form of the so called "import substituting industrialization process" (ISI). Thereafter, the industrial sector started to dominate the Argentinean economic structure. Initially, the most prominent economic actors were large state owned companies in sectors "of national interest" (like steel, iron, energy and transport, among others) and small and medium enterprises stimulated by unsatisfied domestic demand and by the high trade tariffs (those firms basically were specialized in the following sectors: clothing, shoes, other consumption durables, simple machinery).

From the fifties onward, the industrial activity was the engine of the economy. Industry absorbed labor and contributed to capital accumulation. In addition, there was a gradual development of remarkable local technological capabilities. At the end of the 1950s subsidiaries of international companies were already major actors in the local industrial sector[4]. The massive flow of subsidiaries of multinational companies (MNC) altered the organization of production and shifted the specialization pattern towards more complex and technology intensive activities,

especially in sectors like vehicles, pharmaceutical products, petrochemicals, agricultural equipment and processed foods.

In the following decade, between 1964 and 1973, industry enjoyed continuous growth, showing constant increases in production. In addition, this period was characterized by a fall in relative prices of industrial goods due to increases in productivity, a rise in industrial exports, an increase in the average size of plants (especially in metalmechanics, chemicals and petrochemicals) and by growing employment creation.

In the middle of the 1970s, the Argentinean industrial model faced a set of barriers. These difficulties included aspects related to the general functioning of the economy (balance of trade restrictions and persistent inflation, among others), as well as those derived from the form of industrial organization that was unfolding (plants working at reduced scale, weak subcontracting and specialized supplier networks, low international competitiveness, among others). At the production level, the local answer was an initial attempt to implement reforms calling for opening up the economies and pushing for industrial modernization, in a framework characterized by an abrupt appreciation of the local currency. To sum up, the four decades of ISI laid the foundations for the creation of human skills, engineering capacity, equipment and a generalized entrepreneurial base. However, when this model came to an end, the prevailing industrial restructuring had been characterized by a "regressive" character that did not attempt to rescue the positive aspects of the previous phase.

From 1975 onward, in a context of economic volatility and stagnation, the Argentine industrial sector lost its capacity for productive dynamism, for employment generation, and for leadership in the investment process that had characterized it in the past (see Table 9.1).

Gradually, the specialization pattern shifted towards the prevalence of natural resource and capital intensive activities. (Bisang et al., 1996; Kosacoff and Ramos, 2001).

Table 9.1. Employment sectoral distribution, 1895-2001, percentages

	1895	1914	1947	1960	1970	1991	2001
Primary sector	34.9	26.8	27.2	20.3	16.7	11.5	8.7
Secondary sector	29.8	35.6	29.7	35.4	33.8	25.1	18.3
Manufacturing	*27.1*	*31.3*	*25.0*	*27.8*	*23.9*	*17.5*	*11.4*
Construction	2.6	3.9	4.2	6.4	8.7	6.8	6.1
Electricity, gas & water	0.1	0.4	0.5	1.3	1.2	0.9	0.8
Tertiary (services) sector	35.4	37.6	43.1	44.3	49.5	63.3	73.0
Trade & Finances	13.3	16.2	14.0	13.5	16.7	26.1	1.7
Transport & Communications	3.8	3.4	6.1	7.8	6.8	5.2	6.6
Other Services	18.4	18.0	23.1	23.0	25.9	32.0	64.7

Source: Galiani and Gerchunoff (2003) and Authors´ calculations based on 2001 Census.

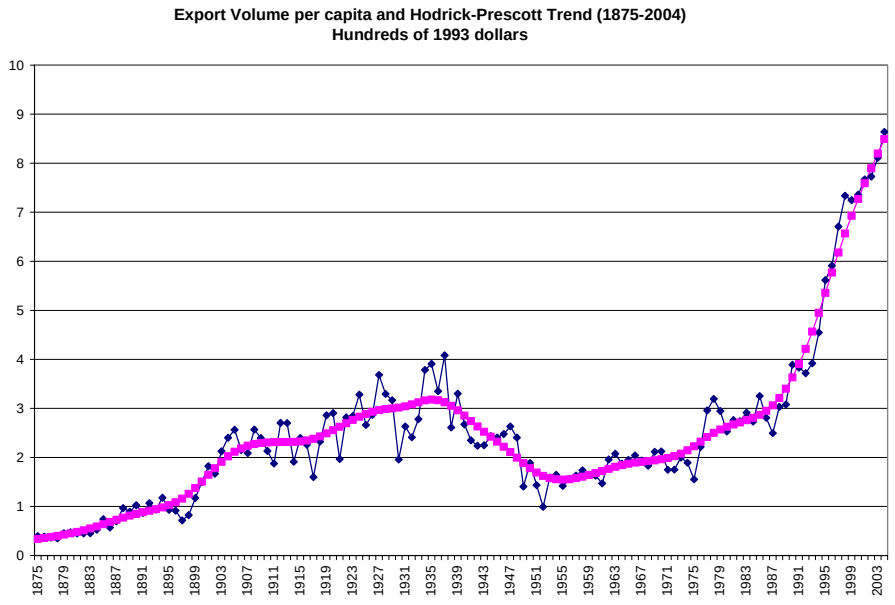
The structural pro-market reforms of the nineties (reinforced by the effects of a disproportionate appreciation of the exchange rate) contributed to strengthen this specialization pattern (see Table 9.2). Within this context activities based on natural resources and basic inputs, which were already endowed with considerable capabilities, quickly advanced towards the application of the best international practices.[5] Natural resources exports displayed good performance and generated an outstanding mass of foreign currency, although they consisted of products reaching only the first stages of added value (see Figure 9.1).[6]

Table 9.2. Structure of industrial value added, percentages*

Industrial sectors	1970	1980	1990	1999
Sectors making intensive use of engineering services, except the motor industry (ISIC 381, 382, 383, 385)	13.2	13.4	8.8	10.8
Motor industry (ISIC 384)	10.9	13.1	6.4	9.9
Foodstuffs, beverages and tobacco (ISIC 311, 313, 314)	33.5	32.5	40.6	38.3
Other sectors making intensive use of natural resources (ISIC 331, 341, 351, 354, 355, 362, 369, 371, 372)	18.3	20.8	24.0	20.2
Sectors making intensive use of labour (ISIC 321, 322, 323, 324, 332, 342, 352, 356, 361, 390)	24.0	20.1	20.2	20.9

*The petroleum refining sector (ISIC 353) has been excluded.
Source: Katz and Stumpo (2001)

Figure 9.1



Source: Authors´ calculations on the basis of official figures

In contrast, there was a remarkable loss of social capital in wide sectors of the economy that could not adapt and the majority of activities resorted to survival strategies, moving from the world of production to the world of assembly and commercialization of imported inputs and products. The result of these processes was a pattern of specialization in exports that was excessively concentrated in primary products and increases in productivity that occurred concurrently with the expulsion of labor and with negligible promotion of new productive initiatives. (See Figure 9.1 and Table 9.2)

Both the ISI and the structural pro-market reforms caused imbalances and generated heterogeneous responses. Economic processes are not linear and therefore it is necessary to avoid falling into oversimplified models of analysis. The stabilization policies of the nineties supposed homogeneous and immediate responses of microeconomic agents. However, the micro-responses to macro adjustments have been much more complex and diversified from the expected behavior (Kosacoff, 2000). The following pages attempt to analyze this micro-behavior of firms in a context of high macroeconomic volatility focusing on three major aspects: (i) investment decisions and capital accumulation, (ii) technological capabilities and skills and (iii) heterogeneity between economic agents.

The investment decision and accumulation of capabilities in highly uncertain contexts

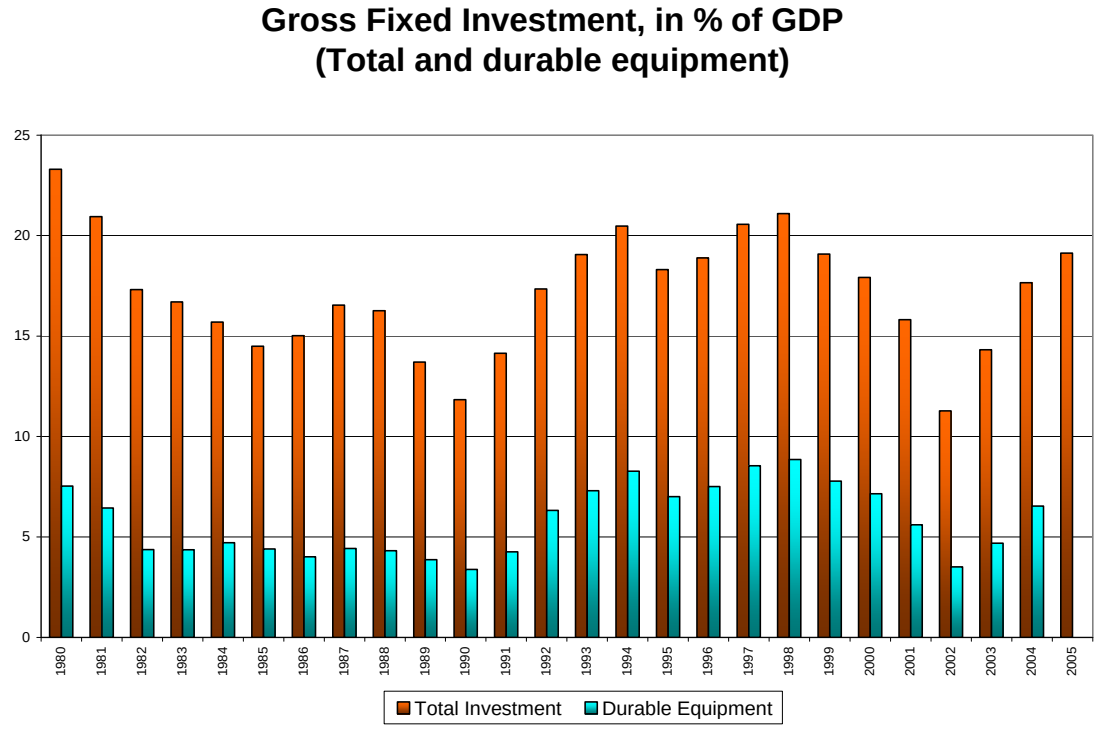
Large variations in the price index (above 500%, between 1982 and 1990), hyperinflationary processes, sizable changes in relative prices and abrupt modifications in policies, generated a

scenario that threatened investment decisions due to high entrepreneurial risk and high uncertainty regarding future outcomes.

In such context, firms postpone the decision to incur in high sunk costs and delay investments. The economic value of "waiting" increases and current capital accumulation does not necessarily reflect the net future value of investments. Thus, even in the case of projects with positive net present values, companies may decide to postpone their investments. Within the perspective of "real options", the higher the uncertainty, the greater the threshold of profitability that companies will require in order to make their investments (Dixit and Pindyck, 1994).

At the beginning of the nineties, the sudden modification of the competitive environment introduced new uncertainties. The predominant analytical frameworks of the semi-closed economy were useless for evaluating investment decisions in a context of an open economy (Kosacoff, 2000).

Figure 9.2



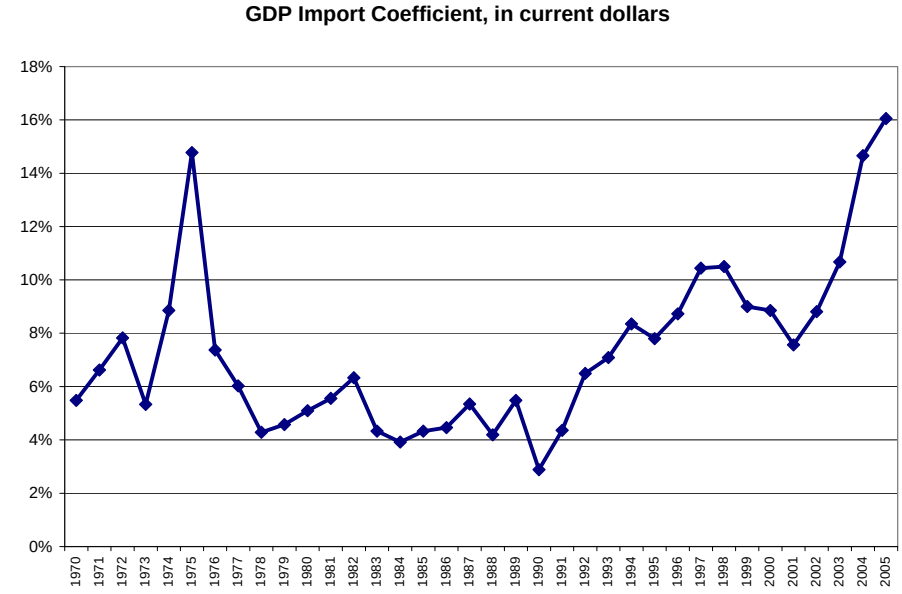
Source: Authors´ calculations on the basis of official figures

The perception of local businessmen of being somewhat unable to adequately respond to the challenge of open economies and high internationalization led many local firms to be absorbed by MNC or to merge with them (Kosacoff, 2000). Within these circumstances, the strategic position defined by corporate offices of MNC was crucial in diminishing some of these uncertainties.

In addition, given the change in economic regime of the nineties, it was difficult to discern cycle from trend.[7] As a consequence, some firms and investors made economic decisions based on misleading forecasts. And, at the same time, investment decisions modified economic performance itself and influenced perceptions of other actors, in a circular feedback mechanism. At the end of the nineties, the majority of firms faced difficulties in managing their financial debt, due to rising interest rates, diminishing profits and increasing rationing in the financial market. Skyrocketing real interest rates led firms' debt to exceed the value of their assets.

After the devaluation in 2002, the average real exchange rate almost doubled, favoring exports' growth. Nevertheless, in recent years, most firms – in particular large ones that have reached the limit of their installed capacity and still face excess demand from the domestic market – choose to import final goods. In aggregate terms, purchases of foreign goods during the first six months of 2005 were similar to those of 1997 when, with a GDP that was comparable, the exchange rate was considerably lower.

Figure 9.3



Source: Authors´ calculations on the basis of official figures

There are two major explanations of firms' behavior in this situation. On the one hand, there is the effect of high uncertainty on investment decisions; numerous local companies preferred to import than to invest, and to develop complex relationship with suppliers or train human resources. This is so in particular because importing is a short term action that can be self-financed, while investing implies borrowing today in order to make irreversible commitments involving high uncertainty in the long term.

On the other hand, a version of the "beachhead effect" might apply. In the middle of the eighties many studies focused on the effects of the real exchange rate on the evolution of exports and imports. At that time, the US dollar displayed strong oscillations with respect to the main currencies of the world. Its initial persistent appreciation and the subsequent rise of imports affected the market position of a wide set of local companies of the United States and opened up

the debate on whether the return to levels considered sustainable would revert the losses in market share.

Several theoretical works emphasized the existence of hysteresis in the interaction between the exchange rate and international trade.[8] The basic assumption behind those models was that a company that does not export must pay a cost of entry in order to access the international market and that this cost is a sunk cost. As a consequence, given the "beachhead effect", imports would decrease slower than expected when the currency depreciated, because foreign exporters, once they incurred in fixed costs such as the investment in distribution channels, marketing, research, development, reputation, etc, would only expect to cover operating costs to stay in the market.[9]

A sort of the "beachhead effect" might explain specific business attitudes in Argentina (see Figure 9.3). The persistence of the open economy model stimulated a set of learning processes that were reinforced by a high real exchange rate that later became unsustainable. Actually, the establishment of import channels for local companies during convertibility implied the development of processes of experimentation, routines and the payment of certain sunk costs that were not compensated once the macroeconomic situation changed.

In general, in contexts of high volatility and low institutional quality there is great uncertainty about the evolution of the economy; hence, the planning horizon of firms shortens. From a production perspective, microeconomic behavior in most cases translates into defensive strategies that negatively affect the "animal spirits" and long term growth. Under these conditions, the predominant attitude is one of reluctance to invest in specific assets and to commit to long term strategies. Regarding investment in fixed capital, as well as in intangibles, and also in human capital, the maxim seems to be one and only one: *wait and see*. Thus, in

Argentina, uncertainty and recurrent macroeconomic fluctuations induced microeconomic behavior that resulted in low growth and reinforced tensions at the aggregate level.

Technological capabilities and the supply of skills

In terms of technological capabilities and skills the industrial structure that emerged through the ISI was characterized by a size of plants that did not reach the scale of similar plants in developed countries. In addition, given the immaturity of the productive structure and the absence of local suppliers, the degree of vertical integration was much higher than was predominant in the industrialized world. The lay-out and organization technologies had a rudimentary character that increased the incidence of "dead time" (Katz, 1986). The technological challenge for industrial firms was to adapt and assimilate knowledge of foreign origin in a local environment with different prevailing relative prices, less division of labor and higher transaction costs. However, in order to incorporate knowledge it is necessary to master some additional know-how. Hence, many national and MNC created internal R&D and engineering departments. However, till the mid-70s there was no attempt to systematically increase the international competitiveness or export capacity (Katz and Kosacoff, 1998; López, 2002). The ISI strategy allowed the accumulation of knowledge, which however did not converge with the international standards.

The sudden opening of the economy and the overvaluation of the exchange rate imposed a ferocious competition. From a technological perspective, the increasing internationalization of production pushed for a specialization in products that were technically compatible with international standards. In this way, through progressive foreign supply, the process tended towards a reduction of the pre-existing gap in product technology while, at the same time, efforts

to develop new products or processes or to adapt foreign technologies were minimized. In addition, this process occurred within a context of continuous weakening of the domestic supply chain.

Thus, the processes of integration to international commerce networks intensified. This tendency resulted into a reduction in the mix of production, which occurred simultaneously with the disintegration of domestic production networks and a stronger reliance on commercial chains (Cimoli, 2005).[10] Innovation activities were particularly concentrated in the acquisition of technology embodied in capital goods.[11] Along the same lines, internal sources of knowledge (R&D),[12] technology transfer, industrial engineering and management training displayed relatively little importance.

Manufacturing firms scantly invested in innovation activities, and particularly in R&D. Investing few resources in R&D, in absolute as well as relative terms, firms tended to increasingly rely on sources external mainly through the purchase of capital goods and information technology. This, combined with the fact that imports became the most dynamic factor of technology supply, particularly when it involved embodied technology but also in the case of the supply of disembodied technology (Yoguel and Rabetino, 2002).

On the other hand, increased international competition forced organizational changes such as: (i) modernization of production processes, which basically introduced flexibility in production management, subcontracting, new quality control systems and just in time techniques, and (ii) consolidation of forms of production that were unusual in the seventies, like clusters and alliances between local and foreign companies; actually large national and international consulting companies were major modernization actors (Fuchs, 1994), and favored the introduction of quality certification procedures (Ramos, 1995).

Another characteristic of the post-reform era is the productive retreat of the “technology intensive” sectors. The drop in the output of local pharmaceuticals, capital goods, electronics and telecommunications, deprived the local economy from the “spillover” effects that these sectors normally produce. In general, there is an absence of strategies aiming to conquer new markets in productive sectors with more knowledge content. The economic scheme prevalent after the collapse of convertibility does not yet seem to have induced significant changes in business innovation strategies. A *wait and see* attitude is predominant.

At the same time, however, the expansion of agricultural production during the nineties and the introduction of innovations brought about a radical change in the organization of production in those traditional sectors. The widespread use of technologies originating in the developed world and commercialized in Argentina by MNC led to the expansion of the agricultural frontier. Some examples are the incorporation of genetically modified soybean, corn and cotton seeds; a greater use of fertilizers and agrochemicals; the proliferation of direct seeding and double cropping in agriculture; improvements in animal genetics; the development of feedlots in beef production and of new dairy techniques, and the use of new field storage technologies (BID-CEPAL-Ministry of Economics, 2003; Bisang, 2003).

In summary, firms absorbed product and process technologies of foreign origin close to the best international practice that required low adapting efforts. This led to a reduction in product technology asymmetries, but it also implied a significant loss in the generation of domestic capabilities deriving from research and development activities. However, the massive incorporation of imported machinery and equipment was accompanied by organizational changes and greater investment in training. At the same time, the tendency towards de-verticalization of production, which led to the increasing use of imported inputs and components, reduced the

probability of creating networks based on local subcontracting and had negative effects on qualifications and skills requirements in the domestic labor market (due to lower direct and indirect labor requirements as well as the losses engendered by the reduction in “learning by doing” processes of human resources).

Heterogeneity and economic agents

One factor that emerges as a distinguishing feature of the Argentinean industry is that firms and sectors behave heterogeneously.

On the one hand, a set of companies grew and not only increased their productivity, but they also reached the best international standards in efficiency and practice. Exposure to international markets provided them with the necessary motivation to increase their efforts to achieve higher productivity levels. This group consists of no more than 400 establishments and represents approximately 40% of industrial output, particularly in the agro-food sector and the restructured basic input industry created through the public policies efforts of the past. The most representative examples in this sense are the large steel and aluminum plants, oil refineries, petrochemicals, among others. Among them, there are also some firms of the automotive complex, and several enterprises which specialized in the mass consumption market.

On the other hand, the rest of the production structure has been characterized by a “defensive” behavior. These firms also increased their productivity; however, they are still far from the international technical frontier and continue to display certain features of the substitution strategy, such as small production scale and limited economies of specialization (Kosacoff, 2000).

In some cases, activities based on natural resources generated downstream effects that also resulted in the attainment of high levels of competitiveness. Such was the case of the candy industry, fine wines, oils, dairy products, lemons, among others. However, these were isolated cases and did not affect the dynamics of the whole production structure.

However, the empirical evidence of the last several years shows that the domestic economic somewhat created capacities to develop more sophisticated production processes based not only on the use of natural resources but also on human capital and technology. Some interesting cases in this respect are: EDIVAL and BASSO (engine valves) in the district of Rafaela or TRANSAX (gear boxes) in Cordoba, the production of fine wines in various provinces, ARCOR (candies), the Santa Fe Province dairy complex, INVAP (nuclear reactors), among others.

EDIVAL is an engine valves producer that reached the international frontier. It created its technological capabilities in the protected market in the 50s and 60s and during the 90s introduced changes in the managerial strategy to face trade liberalization and the appreciation of the local currency. Within this context, it undertook a risky project: to become a global player in the original equipment supply market. In 2002, once a process of professionalization in company leadership was completed, EDIVAL purchased a plant in Portugal in order to increase its production capacity and "get closer" to European clients. Today, EDIVAL is the fourth valves producer and exporter in the world and has become supplier of automotive producers at their headquarters worldwide, despite the distance that separates them from the city of Rafaela.[13]

INVAP is another example where the long term public intervention played a crucial role. The firm was created by an agreement between the National Commission of Atomic Energy (*Comisión Nacional de Energía Atómica* or CNEA) and the government of the Province of Río

Negro. INVAP is well known as an exporter of nuclear plants and equipment for nuclear technology. It has also exported cobalt-therapy machines and automation systems and equipment for industrial projects. INVAP was created from a division of the Applied Research Department. It initiated its activities as contractor of CNEA in the manufacture of equipment for the supply of combustible elements for a second nuclear plant, in an international setting of strong restrictions to the acquisition of nuclear technology. In the eighties, the technological progress made by INVAP allowed it to obtain its first turnkey-plant export contracts. The crisis of the late eighties affected resource availability and the firm incurred in drastic employment cut-offs. Some of its former employees created their own companies and became its suppliers. INVAP entered new fields related to space activities and communications and information technology. Finally, the nineties were the decade in which INVAP consolidated its take-off. During this period, it deepened its penetration of foreign markets as supplier of nuclear technology, which culminated in 2000 with its winning a contract for the construction of a research nuclear reactor for Australia (Lugones and Lugones, 2004).

The perspective provided by evolutionary theory is a central element in the understanding of these long term processes, with their ups and downs and their co-evolution with macroeconomic dynamics. Despite the striking dearth of company case studies, there are some works that merit mention, such as Gutiérrez (1999), which analyzed the evolution of IMPSA; Kosacoff et al. (2001) which studied the ARCOR group; Ordóñez and Nichols (2003) and the Grobo case; Vispo and Kosacoff (1991) for the analysis of IBM Argentina; Schvarzer (1989) and the experience of Bunge and Born; Artopoulos (2004) and the Teching Group; and Barbero (1995).

During the nineties, along with the privatization of state-owned companies and the reduction in the number of large independent local companies, the presence of foreign companies increased remarkably.[14] Although the presence of foreign capital in manufacturing was not new, it increased substantially.[15] Business structure had already changed considerably at the beginning of the decade, given the active participation of foreign investors in the privatization process. But it is from 1995 onwards that the extraordinary growth in the transfer of private sector industrial firms takes place.

Notwithstanding the importance of Argentine endowment in natural resources as a location advantage for investments in agro-industrial, mining and petroleum commodities, FDI concentrated on sectors stimulated by a dynamic demand. Despite the fact that the opening of the economy – within the framework of an exchange rate misalignment – generated an unfavorable bias against domestic production of tradable manufacturing goods, the dynamism displayed by domestic and regional demand in the greater part of the decade became a decisive factor for the investment decisions of MNC, both for established firms and "newcomers."

The imperfections of financial and capital markets and the interest rate differentials between the local and the international market favored the transnationalization process. Furthermore, in certain cases, the technological factor came into play. In sectors that experienced technological progress at an intense pace at the beginning of the 1980s (information technology, telecommunications, machine-tools) or in sectors in which access to innovations was difficult (pharmaceuticals) local firms faced adverse effects to their performance, thus favoring the taking over by MNC.

In the production area, the main concern of the new investments was the specialization and the increase in the scale of production, which were considered the decisive factors in

achieving competitiveness. In the cases of growth by merger or purchase of local companies, the tendency was to vertically dismantle facilities, outsourcing certain sections, and rationalizing activities, downsizing administrative areas and maximizing corporate synergies. It is important to note that in some cases the accumulated equipment imposed technical restrictions to the definition of new projects. In general, only in these cases, and in particular if new investors were involved, the transationalization led to the establishment of new plants or greenfield investment projects.

The transnationalization of the Argentine economy was also reflected in the increasing participation of MNC in foreign trade (both in imports and exports). The majority of exports was concentrated in a reduced number of sectors based on natural resources, with the exception of the automotive industry. Two other striking facts give the Argentine case a certain singularity: in international terms, the participation of MNC in trade was comparatively high, and, at the same time, the internal market orientation of their operations was also much greater than in other FDI receiving countries.

Table 9.3. TNCS Strategies in the Nineties

Main Sectors	Share in FDI Flow	Location Advantages or Attraction Factors	Type of Investment	Market
Public Services	37%	Regulation Captive market, monopoly, guaranteed profitability	Market seeking Rent seeking	Internal
Private Services (financial and commercial)	11%	Regulation Expectations about the internal market	Market seeking	Internal
Food Light Chemicals	6%	Expectations about the internal market	Market seeking	Internal and some

Beverages		Market position Natural protection	Efficiency seeking	Mercosur
Automotive Auto Parts	5%	Regulation Expectations about the regional market	Efficiency seeking Market seeking	Mercosur
Agro-industrial Commodities Petroleum Mining	28%	Natural advantages (frontier expansion) Privatization Regulation	Resource seeking	World Mercosur

Source: Chudnovsky and López, 2001

Only those FDI strategies focused in natural resources generated a positive balance of trade. This occurred as a result of the strong orientation of these activities towards the export market based on natural advantages and their very low import propensity. In contrast, among the firms that engaged in predominantly market seeking strategies[16] – like the majority of the manufacturing sector – there was a generalized trade deficit, even in the case of those firms that had a higher export coefficient than the national average and due to their particularly high reliance on final or intermediate imports. Moreover, this group displays a pattern of integration into the foreign market in which exports to Mercosur and imports outside of the region are predominant, combined with a strong component of intrafirm trade. As far as the availability of international commercialization channels may be a significant ownership advantage of a MNC, an important expected effect of FDI is its potential contribution to the net generation of foreign currency through exports. However, in the case of Argentina the evidence does not support this argument: the export performance of MNC seems to be associated with a deployment of strategies of specialization and complementarity among subsidiaries, laid out on the basis of regional commercial preferences.

In fact, despite their preponderant participation in the country's commercial flows and except for the singular case of the development of the automotive complex within the framework of sectoral integration in Mercosur, the strategies displayed by MNCs in the nineties do not appear to have contributed to modify or diversify the traditional pattern of Argentine exports. To the extent that these subsidiaries show a greater import propensity with respect to export – except in the obvious case of sectors based on agricultural resources – their actions are the main source of the trade deficit and, therefore, aggravate external restrictions. In recent years a significant contraction in FDI flows has been experienced. Although it is still difficult to differentiate between temporary and permanent changes, a boom similar to that of the nineties seems unlikely to occur.[17]

An issue generally underexplored by the literature regards the processes of accumulation of idiosyncratic knowledge by managers. Years of high economic volatility, can affect the firm's trajectory and performance. In particular, the latest crisis clearly demonstrated that knowledge accumulated through the years about how to act in the face of changing economic scenarios provided some local companies with a better interpretation of what could happen once the crisis accelerated and became a depression.

Past experiences provide local management with greater flexibility to adapt adroitly, from a financial perspective as well as from a commercial standpoint. In times of crisis, when the decision horizon suddenly shortens, certain business mistakes in short term decision making related to daily operations can irreversibly lead to a forced company sale or merger, or even permanent closure. These same mistakes, in other contexts, may only translate into a reduction in annual profitability, in economic losses, or into changing the manager of the subsidiary in a country that represents less than one percent of total sales. Therefore, the entrepreneurial

capacity for day to day crisis management qualifies as an asset, and it represent a structural strength of the firm.

A successful strategy applied by several local companies during the crisis was to protect the company's working capital, which generally meant selling goods and services "cash only." Implicitly, this involves the reduction of sales volumes and the loss of a portion of the market to the competition. Lost market shares might be difficult to recover in future. Decisions of this type generate strong internal tension in the attempt to maintain an adequate balance between financial and commercial aspects of the business (Kosacoff et al., 2001).

Final considerations

In Argentina volatility and crisis have been managed purely from a macroeconomic perspective. The government focused on targeting inflation and stabilization policies, disregarding any kind of microeconomic management likewise any possible interaction between the two was ignored. The predominant view assumed that microeconomic responses of agents to macro shocks were homogeneous and automatic. In this way, there was a sub-estimation of the potential (and averse) feedback effects of macroeconomic policies on micro-behavior, leading to a persistence of adverse conditions. Actually, most of the literature on the Argentinean crisis does not include any kind of microeconomic characteristics as explanatory variables.

Actually, as we have seen in this paper, the relationship between modes of production, development of technological capabilities, training of human resources, and the dynamics of productivity and competitiveness is affected by output volatility and financial fragility. In turn, those micro-aspects influence macroeconomic management in a circular feedback process. Therefore, consistency between macro and microeconomic schemes should be taken into account

in designing policies for long term growth. The development of production capacities, besides being country and time specific, is a complex process, which advances in uneven fashion and show high sectoral specific features, which are affected and affect macroeconomic patterns. The above notes, based on the Argentine case, aim to contribute to a better understanding of the complex relationship between macro- and micro-behavior.

Notes

[1] Cf. Kose, Prasad and Terrones (2005) and Aizenman and Pinto (2005) surveys the economic literature on the topic and Fanelli (2003) studies the Argentine case.

[2] Cf. Dal Bó and Kosacoff (1988), and López (2005).

[3] Villanueva (1972) and Schvarzer (1996) showed that the strong industrial expansion of the thirties and beginning of the forties did not constitute a rupture with the dominant tendencies of the 20th century.

[4] Between 1957 and 1965 approximately 200 subsidiaries of the main international corporations set up their industrial production facilities in Argentina. Cf. Sourrouille et al. (1985)

[5] Inherited from sectoral and regional public policies implemented since the beginning of the seventies that originally sought to strengthen the ISI, the production of basic inputs (steel, aluminium, paper, petrochemicals, among others) became the new pattern of industrial specialization as a result of enormous transfers of public resources. Also, after four decades of stagnation, the natural resource sector, with the leadership of agriculture (in particular, of soybean production), expanded again and today is noted for being the most dynamic of sectors, a fact which is reflected in its substantial incorporation of new technology.

[6] The performance of these products, along with that of the manufacture of gearboxes, valves, etc., is only comprehensible from an evolutionary perspective that combines routines, learning and selection. Also, it suggests that the local economy is ready to advance towards more sophisticated productive processes.

[7] Cf. Heymann and Sanguinetti (1998)

[8] Cf. Baldwin (1988), Baldwin and Krugman (1989). Models were even presented in which those decisions prompted by overvaluation induced a permanent reduction of the equilibrium exchange rate of the economy.

[9] Cf. Campa (1993 and 2000), Roberts et al. (1995), Roberts and Tybout (1997).

[10] In a study where comparisons were made in scales of production, it was shown that local plants were of smaller size in 78% of the 408 cases analyzed. In the cases where larger or equal scale existed, it was observed that 35% corresponded to the food sector, followed by chemicals-petrochemicals with 30% (Department of Economic Programming, 1994).

[11] Purchase of capital goods and hardware were more than 70% of expenditures in innovation activities (INDEC-SECYT-CEPAL, 2003). Cf. Anlló and Peirano (2005).

[12] The Argentine private sector displays scant participation in R&D (between 20 and 25%) within a domestic outlay (0.4% of GDP in 2003) that is in itself lower that the average in the region and very low when compared to that of other newly industrialized countries (SECYT-Ministry of Education, 2005).

[13] Cf. Ascuá (2003)

[14] According to official estimates, between 1990 and 2000 seventy-eight billion dollars entered the country in foreign direct investment (FDI); thus, the amount of foreign capital grew at annual rates above 20% and surpassed eighty billion dollars in 2000 (Kulfas, Porta and Ramos, 2002).

[15] While in 1994 there were 69 foreign owned companies among the largest 200 industrial firms in the country, their participation in this group grew in a sustained fashion, increasing from 87 in 1995 to 129 in 1998. In 1994, sales by foreign companies concentrated 43.4% of total sales by the largest 200 firms, while in 1998 such participation was remarkably higher, reaching 69.2% (CEP, 1999). In 2002, 325 of the largest 500 companies were subsidiaries of TNC and generated more than 80% of the added value of this business elite.

[16] Cf. Dunning (1988); Chudnovsky and López (2001)

[17] Since the 2001-2002 crisis, the purchase of Argentine companies by Brazilian firms suggests a certain ability by regional firms to take advantage of opportunities that emerge in high instability contexts in which the TNC of the developed world are absent or prefer to be absent.

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