DEVELOPMENT ECONOMICS: A THEORETICAL AND HISTORICAL PERSPECTIVE

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ABSTRACT

This paper is part of a larger project aiming at revitalizing «high development theory». It examines the roots of development economics, tracing it back to the seminal contributions of European émigrés to the UK and the US in the 1930s. Developed mainly by German speaking economists it became very influential in the 1950s and 1960. It was virtually pushed out of economic theory and research by the new course in economic analysis, relying more and more on a formalized approach. Discussing the reasons of the dismissal, Paul Krugman has identified a basic model where modernization was a self-sustaining process centered on the interaction between scale economies and market size. That is hard to fit into standard competitive analysis and so it was abandoned.

The paper focuses on the basic model and argues that a fruitful way to develop the interaction between scale economies and market size is focusing on the process of market formation. This is a key issue for updating and bringing forward the fundamental insight of high development theory. The paper calls attention to the differences in the way the question is articulated in developed and developing economies. In developed economies the main problem is to overcome the tendencies towards market saturation. In developing economies the main

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problem is to build up the domestic market. Constraints arise from income distribution, social conflicts and environmental problems. We argue that the focus on market formation helps to shape a research agenda that, while based on the approach of high development theory, can address the formidable challenges posed by the development of a heterogeneous periphery dominated by the new giants in Asia and Latin America.

Key words: Development, development economics, Krugman, scale economies, increasing returns, market creation

JEL **Classifications:** O16, O25

RESUMEN

La economía del desarrollo: Una perspectiva teórica e histórica

Este trabajo es parte de un proyecto más amplio cuyo propósito es revitalizar la llamada «alta teoría del desarrollo». Se examinan las raíces de la teoría del desarrollo, rastreando sus orígenes en las contribuciones seminales de emigrantes europeos al Reino Unido y a los Estados Unidos, en la década de 1930. La teoría del desarrollo fue desarrollada principalmente por economistas germano-parlantes y fue muy influyente en las décadas de 1950 y 1960. Fue virtualmente expulsada del cuerpo de la teoría y la investigación económica por el nuevo rumbo que tomó desde entonces el análisis económico, que depende más y más de un enfoque formal. Al examinar los motivos de la expulsión, Paul Krugman identifica un modelo básico en el cual la modernización era un proceso auto-sostenido centrado en la interacción entre economías de escala y tamaño del mercado. Este enfoque difícilmente encaja dentro del análisis competitivo corriente, de manera que fue abandonado.

El ensayo se concentra en el modelo básico y argumenta que una manera fructífera de desarrollar la interacción entre economías de escala y tamaño del mercado es enfocarse en el proceso de formación de mercados. Este es un tema clave para actualizar e impulsar hacia adelante la contribución fundamental de la alta teoría del desarrollo. El trabajo llama la atención hacia las diferencias en la forma en que esta cuestión se articula en economías desarrolladas y en desarrollo. En las economías desarrolladas, el principal problema es superar las tendencias a la saturación de mercados. En economías en desarrollo, el principal problema es expandir el mercado doméstico. Los impedimentos se derivan de la distribución del ingreso, los conflictos sociales y los problemas ambientales. Argumentamos que enfocarse en la formación de mercados ayuda a construir una agenda de investigación que, aunque basada en el enfoque de la alta teoría del desarrollo, puede tratar los formidable retos que representa el desarrollo de una periferia heterogénea dominada por los nuevos gigantes de Asia y América Latina.

Palabras clave: Desarrollo, economía del desarrollo, Krugman, economías de escala, rendimientos crecientes, creación de mercados

Clasificaciones JEL: O16, O25

I. INTRODUCTION

The purpose of this paper is to lay out the basis for a historical and analytical appraisal of development economics and suggest a possible direction along which to pursue its original approach. This appears to be a preliminary step for further research aimed at a more satisfactory framework for the study of development in the present conditions of the world economy. In particular, the rise of some large developing economies in Asia and Latin America present formidable challenges for the study of development and underdevelopment; it seems then appropriate to look back at the foundations of development theory.

The paper lays out the basis for a larger research project addressing three topics. One concerns the historical roots of development economics, or high development theory, as labeled by Paul Krugman. The second is the basic analytical structure of such a theory. The third is the focus on market formation that offers a possible useful contribution to the basic scheme and thus a promising way to bring back development economics as a fundamental tool for the study of development.

These topics clearly go beyond the limits of a brief paper. No comprehensive discussion is attempted, but primarily a new perspective is presented, which redefines the research agenda of development economics and brings it to bear on the analysis of emerging markets in the context of the crisis of the late 2000s.

II. THE HISTORICAL ROOTS OF DEVELOPMENT ECONOMICS

Development economics has its roots in a series of seminal contributions. Although hard to label them a school of economic thought, they have nevertheless a similar approach to the question of development and a common set of analytical tools. Early development theorists were for the most part émigrés from Europe, fleeing political persecution. They contributed most to the establishment of this field of study. Very important contributions were those of Latin Americans, which are, however, less known.[1]

In fact, there were two effects of European émigrés on Economics in the US. On the one hand, the entire discipline of Economics was deeply affected by this migration of people and ideas. On the other, new fields of investigation entered the domain of economic science. Among them was precisely development economics.

The work and ideas of economists that moved from Europe to the United States and Great Britain in the 30s and the 40s were deeply influential on the discipline, determining what was in fact a new course in the history of economics. Indeed, the internationalization of economics was rather its "Americanization". It occurred mainly through the migration after 1933 of German-speaking economists from Nazi Germany and from Stalinist Soviet Union, as in the case of Jacob Marshack (Hagemann, 2007 and 2010). As Samuelson (1988, p. 319) put it: «The triumphant rise of American economics after 1940 was enormously accelerated by the importation of scholars from Hitlerian Europe». The rise of «American economics» can be described as the creation of a commonly recognized analytical and methodological standard in the discipline. European émigrés very much contributed to the establishment of the new standards for the economics profession (the professional "Gleichschaltung"), defined by a growing importance of mathematical economics and econometrics. The use of formal, mathematical methods to conduct the theoretical analysis of the economy became the decisive characteristic of modern economic thought.

That may have reflected a national style of economic research characterized by a high degree of specialization and applied work. Nevertheless, the reasons

[1] On the Latin American contributions to development economics, see Boianovsky (2010) and Gualerzi and Cibils (2011).

for this peculiar development should be investigated further. One question in particular deserves consideration: Why was the national (*i.e.* US) style of research, conceivably rooted in the Anglo-Saxon culture, brought to a new level of completion by economists coming from the European continental tradition and culture? What matters here is to note that European émigrés were also most influential in the establishment of a body of theory and research which came to be known as development economics and that occurred at the same time —except that it was going in an altogether different direction.

Development economics became a new discipline because of the work and teaching of continental economists in the United States and Great Britain. Their concern was industrialization and economic development in the backward areas of Europe. The classic article by Paul Rosenstein-Rodan (1943) was written to address the problem of development in Eastern and South Eastern Europe. Besides Rosenstein-Rodan the best known names are probably Alexander Gerschenkron, Albert Hirschman, Kurt Mandelbaum and Hans Singer. The institutional centers for the development of the new discipline in Great Britain were mainly London and Oxford, where Mandelbaum and Rosenstein-Rodan were teaching.

These scholars stand out for their original insights into the problem of development, but also for a way of theorizing that is the opposite of what was becoming dominant in economics. As Krugman points out, high development theory was in essence discursive and non-mathematical. It followed an entirely different path. The leading role played by Hirschman and Rosenstein-Rodan, together with a few others (for example, Gunnar Myrdal), highlights an intellectual development that has little in common with the establishment of the new mainstream in economic science. Development economics is from the beginning a distinct and peculiar branch of economics. Its eventual demise can be traced back to these origins.

III. THE FALL AND RISE OF DEVELOPMENT ECONOMICS

A. The strange story of development economics

Against this historical background stands the question of what has become of development economics today. This is relevant given the rise of «developing economies», and in particular the so-called «four tigers» (Hong-Kong, Taiwan, Singapour, Korea) in the 1980s (Amsden, 1989 and 2001) and the new economic powers in Asia (China and India) and Latin America (Brazil) in the 1990s and 2000s.

Some years ago, Paul Krugman (2005) reconstructed the making of this field of investigation and offered some reasons for its demise.[2] Krugman analyzed what he calls the strange story of development economics. What is this strange story? It is a story of «some loss of knowledge», or «the evolution of ignorance» (p. 3) which, in Krugman's opinion, is a necessary step in the progress of science. Krugman attributes the dismissal of what he calls «high development theory» to the rise of improved techniques in economics. Model building became the standard of the profession, and in the process the development theories of Hirschman and Myrdal became to economists «not so much wrong as incomprehensible» (2005, p. 1).[3]

While the development of the science of Economics took a more formalized approach, high development theory is instead noted for its «adherence to a discursive, non mathematical style» (p. 4), which Krugman regards as «archaic in style even for its own time». Squeezed between these two opposite «methods», Krugman argues, the fundamental insight into the problem —the very substance that made valuable the theory— got lost. That lasted a number of years, indeed until Krugman himself brought back into the picture some of these ideas.[4] That implies the loss of knowledge as a step in the progress of science.

In Krugman's reconstruction, the virtual cancellation of development theory is the result of the direction taken by mainstream economics. Although fully relevant to the issue of development,[5] its dismissal as a tool of analysis and policy is the result of the evolution of the discipline. Krugman argues that the method

[2] The references in the text are to «The Fall and Rise of Development Economics», an article posted in 2005 in Krugman's web site. These ideas were originally expounded in Krugman, 1993.

[3] Something similar must have happened to regional economic analysis. Contributions such as those of Myrdal and Francois Perroux set the discipline on a path largely divergent from that of more mainstream «regional economics». Notice that both Myrdal and Perroux were development theorists focusing on the regional-spatial dimension.

[4] One example is the new theory of international trade (Krugman, 1985, 1991). The theory is based on the recognition of the role played in specialization and trade by static factors, such as factor endowments, and dynamic factors, which account for increasing returns. For example, in the case of FDI (Foreign Direct Investment) it implies the need to distinguish between scale economies at the level of the single plant and at the level of the enterprise. Production in less developed countries is the result of the joint operation of lower factor prices and the internalization of «joint inputs» services, which are enterprise-specific.

[5] «The irony is that we can see that high development theory made perfectly good sense after all.» (p. 1).

based on abstraction and formalization, i.e. model building, took over economic science, to the point of marginalizing a discourse that could not be fitted into formalized models. It fell out of the theory and ended up largely ignored. Indeed, it was too good to fit into formalized models. But economic science cannot progress without modeling. Models are indispensable for controlled experiments and to establish the main relationships of theory based on logical coherence. That is imperative to handle complexity that is otherwise intractable.

Designed to highlight why the theory was virtually dismissed, Krugman's argument is certainly telling a part of the story, and yet is somewhat puzzling. The issue at hand is why development theory lost its relevance in favor of a return to the analysis of development based on mainstream economics and market orthodoxy. Considering its deep roots in the history of economic thought and the major impact it had, it is indeed difficult to understand how it could be almost completely wiped out.

Krugman highlights the logic of the dismissal. Pitting against each other relevance and modeling, richness and rigor, he explains the crisis of development economics purely as a result of a methodological shift.[6] However, at closer consideration the issue seems to be not so much modeling but theory. Theory is a matter of finding the appropriate abstractions. So the shift in method was part of a shift in theory and, in particular, in the choice of the appropriate abstractions. The fundamental issue appears to be the theoretical treatment of externalities and economies of scale. They could not fit into rigorous, albeit admittedly simplistic, economic models. The kind of theory or, if you like, the way of theorizing favored by the mainstream could not accommodate the problems discussed by high development theory. We could conclude that theoretical principles, rather than choice of method, determined the dismissal of development economics.

There is, then, another side to the issue that is worth investigating: the shift of method did not occur out of the blue; it responded to a change in theory. One may ask whether the fundamental issue was model-building or rather the kind of modeling, based on constrained maximization. The question would then be much more theoretical than methodological. The crisis in the field of economic development would then be driven, more than by the distinction between method and theory, by the rise of mainstream economic theory. To be true, ex-

[6] «This paper, then, is a meditation on economic methodology, inspired by the history of development economics…» (p. 1).

ternalities, economies of scale and cumulative causation cannot fit modeling, but more fundamentally economic theorizing concerns something else. After all Krugman himself highlights how the fundamental ideas of development economics can be presented formally, in the sense of exposing some fundamental relationship in rigorous terms. That strongly suggests that it was not primarily the method that drove out of sight the problems posed by development theory; it was, rather, the very notion of what economic theory was about. Rigor only requires picking the best abstractions with respect to the fundamental theoretical issues. If one differs on what the theory is about the rest follows.[7]

This argument can certainly be pursued further to establish what is indeed the crux of the matter. That raises questions that go beyond the brief examination of the issue presented here. It is, however, rather hard to see the dismissal of the highly relevant body of theory that Krugman neatly outlines as purely an unfortunate case of economists becoming increasingly incapable of following up the central arguments, so as to make it irrelevant. That, notwithstanding the fact that the inclination towards the use of formalization and in general the approach at theorizing may differ among economists.

B. The fundamental structure of development economics

Krugman's discussion is nevertheless very helpful to examine the fundamental structure of development economics and also to place in perspective the main questions for a revitalization.

According to Krugman,

> «Loosely, high development theory can be described as the view that development is a virtuous circle driven by external economies – that is, that modernization breeds modernization. Some countries, according to this view, remain underdeveloped because they have failed to get this virtuous circle going, and thus remain stuck in a low level trap. Such a view implies a powerful case for government activism as a way of breaking out of this trap» (p. 2).

The main ingredients in most versions of high development theory were, first, the self-reinforcement coming from «an interaction between economies of scale

[7] In this respect it is of great interest what Krugman says about the use of models and metaphors.

at the level of the individual producer and the size of the market», (*ibid.*) and, second, some sort of dualism such that the modern sector would have higher productivity, and therefore could pay higher wages, than the traditional one.

> «The story then went something like this: modern methods of production are potentially more productive than traditional ones, but their productivity edge is large enough to compensate for the necessity of paying higher wages *only if the market is large enough*. But the size of the market depends on the extent to which modern techniques are adopted, because workers in the modern sector earn higher wages and/or participate in the market economy more than traditional workers. So if modernization can be gotten started on a sufficiently large scale, it will be self-sustaining, but it is possible for an economy to get caught in a trap in which the process never gets going» (p. 2).

The problem is that by the late 1950s mainstream economics, argues Krugman, was becoming increasingly hostile to the kinds of ideas embodied in high development theory, and in particular increasing returns tended to disappear from the discourse. But increasing returns are «invariably crucial to the argument» (p. 3). The problem is that economies of scale «were very difficult to introduce into the increasingly formal models of mainstream economic theory» (*ibid.*). Indeed, high development theory rested on something that nobody knew exactly how to put into formal models (p. 5).

IV. DEVELOPMENT ECONOMICS AND MARKET FORMATION

As the title of Krugman's paper suggests, the main ideas of «high development theory» are, in a sense, making a comeback. It is an open question, however, how influential the approach is in current research and in devising development policies. Central elements such as externalities in development and increasing returns are still a challenge to economic thinking, as they were in the years of the first rise of development economics.

I would like to go into the substantive matter of the basic structure of high development theory, suggesting a way to improve and expand on the insight concerning the relationship between economies of scale and the size of the market. To do that, a discussion of the question of market formation and structural change is relevant.

It is useful in this respect to recall what Krugman regards as «the essential high development model» (p. 2), that is, Rosenstein Rodan's Big Push argument. The main point is the establishment of large scale (modern) production in manufacturing (economies of scale) by drawing workers from the pool of the unemployed and/or low paying agricultural activities (dualism). Upstream is the large investment necessary to establish modern industry, downstream the effects of higher wages. Parallel to that is the recognition that large investment in one industry might be unprofitable in isolation —thus the call for coordinated investment in many industries, which is the essence of the Big Push. But one can also see in this the basis for an argument about market creation that occurs through the converging forces of rising incomes for a large part of the population and the establishment of new consumption patterns and lifestyles. This is the basis of a virtuous cycle of growth, propelling further prospects for investment and the possibilities of changes in lifestyles. This is largely consistent with cumulative causation; indeed market creation is a fundamental aspect of it and completes the development mechanism.

After all, the interplay between economies of scale and market size is the simplest way to conceptualize the close relationship between modernization of production and market formation. Yet another example of the central role played by the interaction between scale economies and market size are Hirschman's backward and forward linkages. Indeed, Krugman says that circular causation was a part of Allyn Young's (1928) analysis of increasing returns; it can be added that this is where precisely the issue of quantitative and qualitative increasing returns arises in connection with the growth of the market.

We can conclude that market formation, although hardly discussed as such, is an essential aspect of high development theory and a possible variable to develop the approach. The point is to articulate the mutual reinforcement between market growth and economies of scale.

V. ON MARKET FORMATION: A NEW APPROACH

A fundamental limitation of the approach is that the interdependence between economies of scale and the extension of the market does not clarify what is no doubt a complex set of causal relationships. The point of the strategy of development is to break into the mechanism of economic expansion. That is, in essence, the «big push». But the sequence of development is not further investigated.

The question can be dealt with by a simple scheme based on Keynesian premises. Although arising from the effort to address the question of long-term stagnation tendencies in advanced industrial economies, such a scheme highlights in general the mechanism of market creation. The approach is centered on the structural dynamics of market creation (Gualerzi, 2010). Its distinctive characteristic is to look at the change in consumption patterns as a fundamental aspect of growth, which in turn allows for a fresh look at investment and structural change.

Consumption patterns are the result of the change in the forms of need satisfaction. In a market economy, needs are satisfied by means of commodities. Therefore, these forms are the result of a potential realized by specific commodities and systems of commodities, by means of investment in these commodities. This is the first and fundamental step of market creation: the exploitation of a potential (*the market to be*) by private investment. Firms are engaged in *a market development effort* confronting more than the existing demand —what we can call potential demand. The aim is to identify and examine the potential implicit in need development into a more narrowly defined notion of potential market. This arises from the demand side the development of commodities and systems of commodities, *i.e.*, the size and forms of innovative investment. Potential market has a greater degree of determinacy than potential demand. It depends on the previous development of the structure of needs, manifested in established patterns of consumption. It emerges as a possibility implicit in the variation of current patterns of consumption and a stimulus to investment aimed at modifying current forms of need satisfaction.

It can be said that changes in consumption, which redefine the way needs are satisfied, also permit their development. Therefore, in a market economy the notion of needs cannot be grasped without reference to the ways in which they are satisfied.

What then comes to light is the other side of the transformation of consumption patterns: they evolve in a manner consistent with the creation of new markets, therefore sustaining market formation. Market creation is the other side of the new forms of need satisfaction. It proceeds from firms' efforts to develop the markets that successfully redefine the structure of consumption and therefore the development potential of the need structure. New markets arise from this process and contribute to overall market expansion. In order for that to happen a key aspect is the interdependence of needs and the mutual determination of the needs structure and systems of commodities.

The tools to this end are investment spending, mobilizing productive technology, organization, and material and immaterial resources. Market development strategies are, therefore, substantiated by investment in a variety of different areas, from the acquisition of new technology to market research, from the experimentation with new products to the policies of image and selling effort. The efforts directed to translate potential market into actual market, when successful, results in new market formation that sustains the rate of growth of the firm, as well as that of the aggregate economy, as can be expected from any form of autonomous investment.

It is precisely the focus of investment that gives a clear sense of determination to the process of market formation. In this respect, there is a two-way relationship between investment and market growth. In the first stage, that of market development in a strict sense, investment establishes an innovation as a viable consumption alternative; in the second, that of market expansion, eventually culminating in the last stage of maturity, investment responds and follows market growth. In short, investment first «creates» the market; then it responds to its expansion.[8] Thus, it is only in the second stage that the more established notion of investment as capacity creation takes hold fully, as the diffusion of innovation in consumption drives market growth. In this second stage investment responds to demand (or expected demand), contributing to further growth of the market. We can conclude that investment «drives» market growth and, according to the stages of market development, market growth stimulates further investment.[9] This development process generates income that, in principle, could be spent to buy the new products, transforming a potential market into an actual market.

It appears that development economics, a result of the intellectual trends in economics of the 1950s, has focused exclusively on the cumulative causation arising from an initial stimulus. That is why it insists on the role played by government and by public investment. In this respect, the scheme outlined above a) brings into light the fundamental force, innovative investment, that can set

[8] The stages of market development are quite clearly shaped after the product cycle, approximated by a sigmoid pattern of growth. This is more fully discussed in Gualerzi, 2001, Chapter 5.

[9] In the aggregate, market expansion will depend on how radically new is the innovation introduced, the pace of diffusion and how deep is the process of transformation it entails.

in motion the development sequence, and b) it highlights that the interaction between scale and market size is typical of the second stage of market formation —what we have called the stage of market expansion.

Admittedly, the structural redefinition of the market in stage one is much more important for contrasting the effects of saturation of established markets (mature sectors) that face decreasing rates of sales. Thus, it is fundamental to understand market formation within the structural and institutional conditions of advanced market economies. What appears more relevant from the point of view of developing economies is the rapid growth of the market associated with the diffusion of products and associated lifestyles that have already reached maturity in developed economies. Nevertheless the scheme has a general relevance: it addresses the problem hidden in the interdependence between industrial modernization (economies of scale) and market formation (the size of the market) that is at the core of high development theory. On the one hand, it suggests a way to enrich and update the «big push» argument; on the other, it highlights the relationship between investment and the potential contained in the expansion of the domestic market. This is possibly the most important issue for consolidating growth in the developing economies of Asia and Latin America.

The scheme, therefore, opens the way to examine how the issue of market formation and the rise of new markets are articulated differently in developed and developing economies. This highlights, first, the limits imposed on market formation in advanced industrial economies and in particular on the consumer-driven US economy, and, second, how the issue surfaces in the rapid growth of developing economies.

VI. ADVANCED ECONOMIES

A. Technological Development

It is often argued that, in advanced economies, new markets are the result of technological change. Let us consider the latest «technological revolution». Though often overstated, it is hardly disputable that ICTs and their impact on development reached a new stage of maturity in the last two decades, particularly in the United States.

The rise of the Internet economy and the investment-driven US boom in the second part of the 1990s shows that technological change can stimulate spurts of growth. But it resulted in a bubble, and its collapse fed right into the current crisis. Focusing on market formation helps to consider the limitations this process encountered. Ultimately new information technologies, despite the Internet boom, did not breed long-term expansion, as witnessed by the recession of the late 2000s. In fact the collapse of the 1990s boom and the subsequent recovery incubated the financial crisis that began in the US in 2007 (Gualerzi, 2010). The expansion did create new markets but it then collapsed over the failure of a deeper process of market formation. Thus, the need to examine, in this particular instance, the limitations of a growth pattern centered on ICTs on the process of market development.

There are not only opportunities but also barriers to consumption transformation and market growth associated with digitalization and the spread of the Internet. There are four main aspects of such barriers (Gualerzi, 2010, Chapter 7):

1) *Computer literacy and skills acquisition.* Computer literacy and familiarity, depending on age, early experience and skills acquisition, works as a limiting factor on the transformation based on the Internet and «virtual reality» as a viable notion for economic development. But limitations may have an altogether different nature.
2) *Time in the home and domestic capital.* The Internet affects the allocation of time between the production-consumption activities that take place in the private, domestic sphere. All too often the shift of certain functions away from the market to private time and the home setting (which by the way can be of very different quality and «capital intensity») is treated as a shift at zero cost. But access is an empty notion without the time it requires. This is often overlooked, insofar as it is assumed to be negligible, per se and/or with respect to the time it saves.
3) *Costly equipment and Internet access.* If time use is a «hidden cost», other costs, although also overlooked, are quite tangible. Neither the equipment nor Internet access are free. They are simply included in what has become a higher «domestic capital», such as electric appliances and domestic electricity bills. Second, these home-based activities rely on a fundamental capital that is the home itself.
4) *The notion of home and place.* ICTs and the Internet are partially reversing a long run tendency towards industrialization of domestic production (Nell, 1998). While we observed in the past a massive exodus from homes of the

> production of goods and services, we are witnessing now the re-importing of some functions to the sphere of domestic production. Thus, the need to observe the often neglected costs of transformation and the way they affect consumption, domestic life and, ultimately, the very notion of home.

Finally, it should be noted that there are still other limitations, derived from negative externalities. The domestic use of ICT products and, in particular, the access to virtual reality may have costs that are largely social, more than strictly economic. There are indications that these costs may lay, for instance, in the phenomenon of addiction that has been observed by clinical research.

Admittedly, this is only a first analysis of the limitations engendered by a growth pattern centered on ICTs. It can certainly be the subject of further development.[10] The point is that these barriers are usually underestimated when they are perceived at all. In particular, the peculiarities and difficulties of a deeper transformation driven by the Internet highlight why the diffusion process may not result in the same rapid growth of the market as in the past. In other words, we have seen the difficulties that ICTs encounter for becoming a new engine of growth, as other general-purpose technologies (or epoch making innovations) have done in the past.[11] These limiting factors, together with the balance of costs and benefits, shed a negative light on the prospects of ICT-driven market growth.

It may be said that we have now a first clear picture of these limits on the information economy and society. An indication of this is what happened in the 2000s. The diffusion of ICT products and the Internet, together with some trends of transformation, have continued unabated, sustained by the same forces of computerization and access. Still, a new expansive phase did not occur. Technology development —and productivity growth— continued, in directions that were already evident in the 1990s. However, the positive aspects of the boom dissipated into a new slowdown of the economy. The recovery after 2003 was pulled by booming household debt that sustained high levels of consumption and eventually collapsed in a liquidity crisis that triggered a recession.

The example of ICTs in the 1990s and 2000s weakens the general trust in new technologies as creators of new markets. That stimulus must be seen in the con-

[10] In this respect one should look, for example, at the work of Jonathan Gershuny, in particular his analysis of the effects of the Internet on time uses and the domestic sphere. See Gershuny, 2000 and 2003.

[11] In this light the boom at the end of the 1990s appears to be more than an adjustment in a continuing growth path. It is, rather, a severe halt, precisely because of its capacity to create new markets.

text of the barriers to market formation: overcoming these barriers may depend on changes in economic and social organization and in institutions that are difficult to induce, in fact difficult even to delineate.

Emerging New Markets

To be sure, there is more than ICTs on the frontier of technological innovation. We can look at the past decade to see that some trends of development have returned to the fore. One centers on energy and the environment, which appear closely related issues, converging into the question of the transition to a so-called green economy. A second is biotechnologies. Let us consider them briefly, looking only at features that may be thought to promote or limit market expansion.

The green economy

The questions of energy and the environment reached a new and critical stage with the worsening of the environmental problem worldwide and the mounting pressure posed by global warming and climate change.

In this respect, one can notice, on the one hand, the pressure created by the rise of oil prices and the uncertainties about oil reserves and market prospects. On the other hand, we see the alternative energy industry stepping forward into a rapidly growing market. But these developments in energy and the environment are laying heavy pressure on the transportation and automobile industries. The latter is going through a deep crisis and reconsolidation, subject to the search for an alternative to the internal combustion engine and/or to the automobile as the master of private transportation.

Previously the environmental problem was mostly a matter of protection, i.e. containing air and water pollution and preserving the natural environment. Now, especially the climate change problem is a pervasive issue, calling into question the short-term sustainability of the economic system. There are problems that are reaching a crucial stage and need to be addressed urgently. Global warming and climate change are the results of carbon dioxide (CO^2) emissions of industrial production and cattle breeding. This generates a formidable challenge of industrial reconversion. So far, discussion has revolved around setting limitations to emissions (hoping that it will work backward on the choice of «clean» or at least cleaner technologies) and trading emission rights.

The energy industry also emits carbon dioxide and, like other industrial activities, burns fossil fuels. It is, however, at the core of the general environmental problem because it extracts oil and produces oil derivatives. Focusing on energy helps to narrow down the problem of new markets, revolving around oil and automotive transportation. Indeed the large question that seems ripe for further development is that of the alternatives to oil and the automobile. Both seem to depend, on the one hand, on the limits set by the environmental problem and global warming, and, on the other, on oil prices and reserves. Alternative sources of energy are available, but for the development of a green economy it seems necessary to create incentives for fossil fuels to be used in homes and industries and to create technologies beyond the internal combustion engine for transportation.

Further analysis should focus on such development, analyzing the oil market, the alternatives to the combustion engine and the alternative energies industry, beginning with solar technologies. Though it may do so in the future, so far green investment has not provided much of a push to growth. Solar energy use, for example, appears to be booming in Germany and many other places, including China. But solar energy displaces other sources of energy. The question is how much *new* employment it will create.

Climate change also affects ecosystems. New issues concern biodiversity and the natural and human environments, indispensable to the livelihood of local populations. Here the question crosses with that of agriculture, and especially agro industry and biotechnologies.

Biotechnologies

After ICTs, this may be the most advanced of the sectors that may trigger a boom. In biotechnologies there is a great deal of R&D and a large amount of investment by venture capital, so that the rate of formation of new companies is high. A little reflection suggests fantastic possibilities: A cure for cancer? For diabetes? Regenerating the heart? Growing replacement organs? Repairing arthritic joints? Staving off old age, perhaps by genetic engineering? Surely the markets would be endless... Nor are biotechnologies only medical; there are new seeds, new pesticides, new crops and new or at least improved animals. There may even be biological computers, faster than anything we have now.

Unfortunately a little more reflection reveals huge and, given our present institutions, perhaps intractable problems. Life-saving, life-enhancing and life-lengthening procedures will surely be very costly: Will they only be available to those who can afford them? They will also very likely be available in limited supply, at least initially, but perhaps for a long time: How will they be rationed? Will they go only to those who can pay the price? Public opinion would not accept a market solution. But, if not decided by markets, then who will decide, and on what grounds? These are potentially very divisive questions. Solutions will have to involve an ample public debate. There will almost certainly be a substantial public sector role in providing the services in question.

As for genetic engineering, we already can see serious problems emerging: the very successful weed-killers of a decade ago have now spawned very successful resistant weeds —in some cases not only successful but far more damaging than the ones they have replaced. Again there will have to be government regulation and a large public sector role.

VII. DEVELOPING ECONOMIES

The difficulties of further market development in advanced industrial economies appear to arise from the increasingly complex way in which technologies affect economic and social life. That creates opportunities but also barriers. What the recent experience of advanced industrial economies suggests is that, given the present institutional structure and the role of the state, and no change in the distribution of income, it becomes increasingly difficult to expect a sustained process of market creation. The same limitations could, in principle, arise in developing economies, except that in these cases we are looking at a different set of questions.

One set of questions concerns the fact that development is about building institutions, not just markets. Here, of course, a central question is the role of the state (Gualerzi, 2010). However, the focus here is on new markets as a key to the growth of demand that drives economic expansion. In this respect, the main difference is that, in developing economies, the crucial problem is the very process of expanding the market, not the possibility of gluts in those that are well-established. Primary evidence based on the growth rates of countries such as China, India, Brazil, but also other developing economies (see the countries of the G20), suggests that market growth prospects are at present very positive. These countries are expected to grow faster in the next years compared to the developed world. Another group of countries is still struggling to enter some sustained process of development. That is part of the complicated picture of the world economy, which is going to be further affected by the current crisis.

We are considering here only the first group of developing economies, what we may call growth poles. China is possibly the most paradigmatic case among them. It most clearly is a case in which development is not driven by the exports of natural resources but by the expansion of industry and manufacturing. We ought to recall that China is a peculiar case of a developing economy. It is the first recipient of Foreign Direct Investment and a world power. It has options that other countries lack.

Looking at the past twenty years, including the 2008-2009 crisis, one should conclude that China is the most striking example of rapid market expansion. Albeit successful, Chinese growth has been, however, largely driven by world demand and, in particular, by the demand of industrialized economies for its exports. That is not to say that the internal market is unimportant, but it has not been the driving force of expansion.[12] Things however appear to be rapidly changing. Increasingly, the attention is shifting to the domestic market. However, one must note that market growth so far depends on the diffusion of Western consumption patterns. In this case technology does in general have positive effects and market formation follows a well-known path. It does not reflect, however, any major novelty or innovation in consumption. This might be detrimental in the long term. The point is that in China there are no problems of market saturation, and they may not arise for years to come. However, market growth in the context of a developing economy, and particularly in China, is facing other obstacles, notably arising from low wages, social constraints, and the deterioration of the environment. This is precisely the point: market development depends on the overall circumstances and structural characteristics of the economy.

In this respect it can be noted that, though it is a developing economy, much attention is given in China to advanced technologies, as well to renewable energy and environmentally sound products. China is one of the major investors in solar energy and is moving forcefully into to design of zero-emission automobiles. How this is going to drive the development of the domestic market is the second fundamental question for Chinese economic growth.

[12] Krugman, for one, has recently observed that low domestic consumption and the high saving rates are becoming a problem for Chinese growth prospects.

VIII. CONCLUDING REMARKS AND RESEARCH QUESTIONS

Only further research can firmly establish the role of market formation in the framework of development economics. The working hypothesis is that it can usefully be inserted in that analytical structure. It appears indeed central to an understanding of the question of development and underdevelopment in the XXI century. A starting point is the recognition that in developing economies the bulk of market formation proceeds from the establishment of those patterns of mass consumption that characterized the post-war period in advanced market economies. This process is however subject to other constraints, a fact that defines the peculiarity of the transformation in developing economies. This is a major theme for future research.

We have seen that the question has a solid basis in the early development literature, which in turn has its roots in economic ideas in vogue between the two wars. Krugman's argument helps to identify the fundamental insights of early development economics. The interdependence of the division of labor and the extension of the market and, thus, the cumulative process associated with industrial development is at the core of the approach. This overlooks, however, the question of the actual process of market formation. Krugman certainly contributed to bring back the approach, although one may ask whether the loss of knowledge he discusses is really indispensable to the virtuous cycles of scientific advance. Still, it is debatable whether development economics is now in better shape than it was in the 1950s, when it became practically irrelevant to the development of economic theory.

This essay has sought to revitalize that approach and give it a new perspective. We have argued that a major rethinking should a) bring back the question of development and underdevelopment into the domain of theoretical investigation, rescuing it by the simple application of the general principles of mainstream theory, and b) respond to profoundly different circumstances of the world economy. The analytical framework must reflect more accurately the changes that have occurred in the very question of development after the years of high development theory. That should also mark a distinction with a multidisciplinary field such as development studies.

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