ENTREPRENEURSHIP AND ECONOMIC GROWTH: AN OBVIOUS CONJUNCTION?

Marcus Dejardin

ISSN 00-8

Marcus Dejardin
CREW, Faculty of Economics and Social Sciences
University of Namur
Namur, Belgium

November 2000

ENTREPRENEURSHIP AND ECONOMC GROWTH: AN OBVIOUS CONJUNCTION?

by Marcus Dejardin

This research was undertaken by the Institute for Development Strategies. The statements, findings, conclusions, and recommendations are those of the authors and do not necessarily reflect the views of the Institute for Development Strategies, or the Ameritech Foundation.

THE INSTITUTE FOR DEVELOPMENT STRATEGIES
INDIANA UNIVERSITY

The Institute for Development Strategies (IDS) was initially established by the Indiana University Trustees in 1984 as the Regional Economic Development Institute. The Institute was created to further research, graduate-level education, and scholarly exchange in the area of economic development and development policy. The Institute reports to both the University's Research and Graduate Development Office, and to the School of Public and Environmental Affairs.

IDS serves as a focal point for Indiana University's intellectual contributions to the economic development field through its coordination of faculty research, presentation of seminars, course offerings, workshops, and conferences. Programs involve University faculty and students from a variety of disciplines, including Business, Education, Economics, Geography, Law, Political Science, Public and Environmental Affairs, Sociology, and Telecommunications.

The Institute maintains a publications series based on the research it sponsors. A publication list can be obtained from the Institute offices.

One of the major programs of the Institute between 1987 and 1992 was the Ameritech Fellowship Program, financed by the Ameritech Foundation. The faculty research projects supported by this Program targeted major issues related to the new and emerging economies of mature economic regions, with particular emphasis placed on the American Midwest. In 1992 the Foundation awarded the University an endowed chair to continue this effort.

David B. Audretsch
Ameritech Chair of Economic Development
Director, Institute for Development Strategies

Entrepreneurship and Economic Growth: An Obvious Conjunction?

An Introductive Survey to Specific Topics*

Marcus Dejardin

CREW, Faculty of Economics and Social Sciences, University of Namur

November 2000

Abstract: This paper consists of an introductory survey of two fundamental questions regarding the link between entrepreneurship and economic growth. The first one deals with the endogenous relationship between entrepreneurship and growth. In particular, we suggest that, while more entrepreneurship could mean more economic growth, economic growth in turn could affect the individual arbitrage between different professional occupations (including entrepreneurship) and expected payoffs. The second question is concerned with the types of activities to which the individual directs his talents. We distinguish between entrepreneurship and rent-seeking. The impact on economic growth is assessed in static and dynamic frameworks.

JEL-classification: O12, J23

Keywords: entrepreneurship, economic growth, rent-seeking

* A French version of this paper is to be published in *Reflets et perspectives de la vie économique*, 4, 2000.

Correspondence address: Marcus Dejardin, Centre de Recherches sur l'Economie Wallonne, Faculté des Sciences économiques, sociales et de gestion, Facultés Universitaires Notre-Dame de la Paix, Rempart de la Vierge, 8, 5000 Namur, Belgium. E-mail: marcus.dejardin@fundp.ac.be

Acknowledment: The author thanks Margaret Main, Jean-Marie Baland and Michel Mignolet for comments.

Introduction

The idea that entrepreneurship and economic growth are very closely and positively linked together has undoubtedly made its way since the early works of Schumpeter (1911)[1]. An increase in the number of entrepreneurs leads to an increase in economic growth. This effect is a result of the concrete expression of their skills, and more precisely, their propensity to innovate. Schumpeter has already described this innovative activity, "the carrying out of new combinations", by distinguishing five cases[2]: "(1) The introduction of a new good – that is one with which consumers are not yet familiar – or of a new quality of a good. (2) The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned, which need by no means be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially. (3) The opening of a new market, that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before. (4) The conquest of a new source of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created. (5) The carrying out of the new organisation of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position" (Schumpeter, 1963 (1911), p. 66). Through his innovative activity, the Schumpeterian entrepreneur seeks to create new profit opportunities. These opportunities can result from productivity increases, in which case, their relationship to economic growth appears quite clearly. Moreover, the disequilibrium created by the entrepreneur can be propitious for additional innovations and profit opportunities. Therefore, more entrepreneurs means more growth, which in turn leads to more entrepreneurs… The phenomena seem to be self-feeding.

Although in some way relatively limited in regards to the interaction between entrepreneurship and economic growth, economic theory is not without enlightening arguments on the subject. We will use some of these arguments in our examination of two fundamental questions, which have already received some treatment in the economic literature.

The first of these questions is the assessment, by means of a non-formalised discussion, of the interdependent nature of entrepreneurship and growth. This assessment will permit us to set certain limits on this relationship. We will grant special attention to particular concepts, as well as to the description of entrepreneurial supply, by referring to individual decisions to undertake economic activities. These decisions can appear as the result of an arbitrage between different professional occupations (to be self-employed or to be an employee), based on relative expected rewards according to the specific abilities of the agent. We will then suggest the endogenous relationship between

[1] Relatively to these issues, the Aghion and Howitt's book (1998) must certainly be distinguished amongst the recently published contributions.

[2] "The carrying out of new combinations" defines what Schumpeter means by "economic development" (Schumpeter, 1963 (1911), p. 66), that is more than "economic growth".

entrepreneurship and growth and how labour market reactions operate to create some boundaries on their symbiotic interactions.

The second question that is examined is in fact threefold. It deals with the types of activities to which the entrepreneur directs his talents (Murphy, Shleifer and Vishny, 1991). These activities will be distinguished according to the social productivity of their character (Baumol, 1990). We will introduce, at this time, *rent-seeking behaviour*, followed by an examination of factors explaining the allocation of entrepreneurial skill. Finally, respective to this allocation, we will see that an assessment of its impact in terms of economic growth must be appreciated not only in a static framework – the importance of positive effects for the society as a whole depends upon the proportion of productive projects –, but must also take into account the interactions between entrepreneurship and rent-seeking behaviour.

1 Occupational arbitrage and economic growth

This section is articulated as follows: first, we will reappraise, from the introduction, the relationship between entrepreneurship and economic growth by going a step further into conceptualisation. We will point out skills that are generally associated with the entrepreneur. The individual arbitrage between different professional occupations will then be sketched. An entrepreneurial supply will be defined. Finally, taking into account the aggregated impact of individual choices on expected pay-offs, will allow us to underscore the endogeneity of growth and entrepreneurial decisions.

Innovative entrepreneurship and economic growth

Among the possible sources of economic growth and development, innovation has received a special treatment in the economic literature because it has been more or less linked with the figure of the individual entrepreneur. Relatively to this question, the early Schumpeter (1911) appears to be particularly original and pervasive.

Since the beginning of the twentieth century however, the way in which economic theory brings together economic and innovative processes through entrepreneurship, must certainly be revised. In fact, this has been in that economic analysis has undoubtedly reduced the "noise" between the articulation of simple concepts and recent observations.

Schumpeter (1942) himself predicted that, due to irresistible trend of concentration in the capitalist system, innovation could no longer be the realm of the entrepreneur, but would in fact primarily be the job of innovation professionals and laboratories controlled by big companies, themselves being directed by managers.

If indeed there still remains a place for innovative entrepreneurship, embodied by the action of individuals, it can no longer be seen as the sole vector of innovation.

In a recent and comprehensive survey of the literature, Wennekers and Thurik (1999) emphasise the decomposition of the concept of entrepreneurship in order to gain a better understanding of the links between entrepreneurship and economic growth. Although their "pragmatic distinctions" are formulated, through a long and detailed discussion, for operational and not theoretical purposes, they remain helpful in grasping the question at hand.

Table I: Three types of entrepreneurs

	Self-employed	Employee
Entrepreneurial	**Schumpeterian entrepreneurs**	**Intrapreneurs**
Managerial	**Managerial business owners**	Executive managers

Source: Wennekers et Thurik (1999, p. 47).

Associating, on the one hand, *entrepreneurial* with "the manifest ability and willingness of individuals, on their own, in teams, within and outside existing organisations, to perceive and create new economic opportunities (new products, new production methods, new organisational schemes and new product–market combinations) and to introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions", and, on the other hand, *managerial* with "organising and coordinating", Wennekers and Thurik (1999, p. 46–48) cross these definitions with the distinction between *self–employed* and *employee*.

Thus, the authors are able to define four different types of situations. Three of these are types of entrepreneurs: Schumpeterian entrepreneurs (entrepreneurial and self–employed), intrapreneurs (entrepreneurial and employee) and managerial business owners (managerial and self–employed) [3].

Both Schumpeterian entrepreneurs and intrapreneurs contribute actively to feed a *creative destruction* process (Schumpeter, 1942). Although managerial business owners play an important role in the economy for the achievement of production and trade, and can even reveal themselves as entrepreneurial and develop innovative projects, their

[3] The fourth type corresponds to the *executive managers* (managerial and employee).

activities are more closely tied to routine work. So, "(t)hey include many franchisees, shopkeepers and people in professional occupations" (Wennekers and Thurik, 1999, p. 48), and generally represent the great majority of the self–employed.

By introducing new ideas, new processes, new products and services, Schumpeterian entrepreneurs and intrapreneurs affect and ultimately renew the economic activities: the activities not only of the firms and industries, but also those of the region in which they are situated. When these entrepreneurial initiatives are aggregated and evaluated in terms of economic impacts at a territorial level, it could mean economic growth.

This process tends to be a diverse one. "At the aggregate level of industries, regions and national economies, the many individual entrepreneurial actions compose a mosaic of new experiments. In evolutionary terms this can be called variety. A process of competition between these various ideas and initiatives takes place continuously, leading to the selection of the most viable firms and industries. Variety, competition, selection and also imitation (...) expand and transform the productive potential of a regional or national economy (by replacement or displacement of obsolete firms, by higher productivity and by expansion of new niches and industries)" (Wennekers and Thurik, 1999, p. 50).

Greater productivity, as well as firm exits, allow for the *possibility* of resource reallocation into new combinations. When particular to a given territory, this greater productivity could mean an increase in competitive advantages and *localised* economic growth. However, this process should be globally followed by a positive net effect. In other words, the competition case that we describe is not a zero-sum game.

From entrepreneurial initiatives to economic growth, a number of conditions and multiple effects, at different levels, ultimately determine the impact of one phenomenon in regards to another. However, a working assumption will be: the larger the share of innovative entrepreneurs in the workforce, the more elevated the rhythm of economic growth.

Toward the definition of an entrepreneurial supply

A simple approach in determining the share of innovative entrepreneurs in the active population is to begin by considering each individual as a potential entrepreneur, characterised by the specific capacity to become one. That is, we recognise the heterogeneity of the population. These individuals are then confronted with heterogeneous career opportunities (different projects) with different expected pay-offs. The individual choice is finally an arbitrage between pairs of project and pay-offs, for given skill sets. These projects include the choice of a career as an employee.

What then, briefly, are the individual characteristics that determine the entrepreneurial potentialities?

Knight (1921) introduces a distinction between *risk* and *uncertainty*. Risk enters into computations with known probabilities. On the contrary, uncertainty although it takes

into account the notion of risk, refers also to non-foreseeable events. In other words, events whose probabilities are at this time unknown. Estimating the degree, to which a particular event is weighted with uncertainty, depends upon individual judgement expressed in terms of subjective probabilities[4]. This understood, an entrepreneurial candidate is the one who, taking into account his judgement, would accept to bear the uncertainty of production and trade[5]. Expected profits would be payment for this specific activity.

We note, by the way, that, within a Schumpeterian framework, what characterises an entrepreneur is not a particular ability to bear the consequences of unforeseeable events. The capitalist plays this role. Undertaking economic activities and innovating require skills that make the entrepreneur a person of exception. One of his motives continues to be profit-seeking.

Lucas (1978), Murphy, Shleifer and Vishny (1991), Jovanovic (1994, presenting a generalisation of Lucas model) come closer to a Schumpeterian concept of entrepreneurship in the sense that, in their models, individuals are not different in their attitude towards risk, but in their competence, intelligence, creative capacities...[6] It is in fact possible to see in the enumeration, a wide range of skills that are corresponding to "talents", valuable traits in an entrepreneurial project (Murphy, Shleifer and Vishny, 1991).

A synthesis of the different approaches runs through the tight definition of an *entrepreneur offer curve* (Burke, 1995; quoting Schultz (1975) and Casson (1982)). This offer sums up, amongst other arguments, the previously evoked traits of the working population. It meets an *entrepreneurial demand* that represents a variety of profit opportunities.

What can be considered as the advantageous aspects of the offer-demand synthesis, at the same time comprises some of its weaknesses. The general framework on which it is based, can disguise heterogeneous situations that each previous model translates, although only in part. We must recognise that what is following an individual arbitrage is in fact rather coming out of a black box.

---

[4] Distinguishing between known and unknown probabilities is a matter of debate. Thus, do the so-called known probabilities not rest on judgment and subjective methods? Baron and Frisch (1994, pp. 289-290) are more specific about this distinction and introduce the discussion that we refer to.

[5] Kihlstrom and Laffont (1979) propose a general equilibrium entrepreneurial model. Individuals differ by their risk aversion. They choose between being an employee, for an unrisky wage, and being an entrepreneur, for a risky profit. Real wage is the equilibrating variable. Cf. also Kanbur (1979).

[6] In the models cited, agents which are the best endowed with qualities that can be called up in entrepreneurial projects control the biggest firms. So, herein exists some explicative argument for the distribution of firm sizes. For a brief synthesis on the question, cf. Audretsch (1994).

More entrepreneurs, more growth, more entrepreneurs?

Interpreting the above arguments, we can consider an individual's career as a chain of individual arbitrages between pairs of project and pay-offs given individual abilities. Aggregating individual situations at a given time *t*, reveals the share of entrepreneurs in the working population. However, for the purposes of assessing more carefully the links between entrepreneurship and economic growth, this is not a sufficient result. Time must be reintroduced as a period, allowing in that case interactions between each term

By fostering economic growth, entrepreneurship affects the whole economy. Particularly hard to ignore are its effects on labour markets. More growth might, on one hand, signify an increase in profit opportunities for potential entrepreneurs. On the other hand, it could lead to inflationary pressures on wages[7]. It must be noted that raises in wage cannot necessarily be derived as the result of disequilibrium on the labour markets. In fact, raises in wage may indeed be the consequence of the application of profit-sharing schemes within the firms[8]. From the above considerations, it follows that growth in turn can seriously affect the individual arbitrage that we have discussed. So, appears the problem of endogeneity by way of markets and pay-offs adjustments.

2 Entrepreneurship versus rent-seeking

Different rhythms of growth between nations, that have been theoretically associated with entrepreneurship[9], are not fully explained by different entrepreneurial supply, measured in quantitative terms. The allocation of this supply between more and less socially productive projects must also be taken into account. This question introduces the idea of rent-seeking behaviour. Its examination will be the subject of the following section.

After having briefly defined the general framework and the employed concepts, we will discuss the allocation of entrepreneurs between different types of economic projects (in other words between innovative entrepreneurship and rent-seeking), as well as the explicative factors of this allocation. A dynamic set-up will follow, where we will examine interactions between project categories and their relations to growth.

---

[7] The argument presented is undoubtedly exceedingly simplified. Thus, the analysis should be continued, particularly by examining the impacts of increased productivity and competitiveness on labour demand.

[8] In this case, an interesting and important question in regards to the feeding of economic growth is to know if this scheme favours intrapreneurs or introduces no distinction between staff members.

[9] Surely, we can stress here the limits of this paper in that it considers only the sources of economic growth related to entrepreneurship. There are numerous variables, besides population growth, which can explain economic growth. It is however easily conceivable that entrepreneurship, through the innovation that it carries out, greatly contributes to their application.

Definitions

To this point, the individual arbitrage between different remunerative occupations ended up, in all cases, in the development of socially productive activities. Therefore, the described economy has been a strict income economy. Individuals were exploiting, as best they could, their skills entrepreneurial or otherwise and given the exercised occupations, private interests and social benefits were successfully coinciding.

In the following, we will introduce another type of activity, which is remunerated by transfers. We may note that, by definition, transfers do not imply a productive counterpart. This assumption will result in the possibility that a distortion between private and collective interests may occur. This distortion becomes undoubtedly effective when rent-seeking is involved[10].

The rent-seeking (behaviour) refers to "the socially costly pursuit of wealth transfers" (Tollison, 1997, p. 506). In other words, rent-seeking is manifested when the bottom-line of its social consequences is negative. The fact that this definition allows for an expression of the social opportunity cost that represents a diversion of resources towards (or following) this type of activity should be emphasised. Examples of rent-seeking are: corruption, stealing, bribery, as well as seeking abusive judicial compensation or protection-seeking with the express purpose of limiting economic competition and promoting particular interest… Rent-seeking can originate both from the public or private sector.

In regards to the connection between entrepreneurship and growth, the occurrence of unproductive but yet remunerated activities means not only that projects with socially positive or negative impacts are in competition, but also that there is a direct *potential* diversion of entrepreneurial talents. For this diversion to take place, we need indeed to assume that the skills and abilities required by entrepreneurship and by rent-seeking correspond.

Following these considerations, at least two remarks can be formulated. The first one refers to public services. These are generally financed by transfers, but are not included in rent-seeking, given their productive contribution. We note furthermore that discussing the redistribution role of the state is outside the framework of this paper. This is different, however, as soon as we look at legal institutions that organise productive activities, as they might, by limiting competition for example, create rent-seeking situations.

The second remark concerns the entrepreneurial initiatives. Through innovation, the entrepreneur seeks to create a monopoly position, from which he will assume overprofit. In the Schumpeterian model, this position is necessary fore it motivates the innovation activity. It is however temporary, as competition will quickly reduce this position to zero in favour of a new monopoly position created by a new innovation… The institutional

[10] According to Tollison (1997), rent-seeking has been introduced in economic theory by Tullock (1967). For diverse applications of the concept, cf. Congleton and Tollison (1995).

framework, that of competition, is then of primary importance. In this case, a dynamic assessment of events will justify the existence of an abnormal profit, as it will distinguish its positive net contribution to the social benefit[11].

Rent-seeking behaviour thus being defined, as well as the general framework of this section, we will address in the remaining discussion the allocation of talents and its links to growth.

Explaining the allocation of talents

The allocation of talents between socially productive and unproductive projects and its impact on economic growth have already been subject to theoretical studies[12]. The static results of these studies scarcely elicit further commentary, when we take into account the preceding arguments. Indeed it appears quite easily that the diversion of entrepreneurial talents towards unproductive activities will have a negative impact on growth rate. However, the explicative factors of the allocation deserve greater consideration.

Attempting to explain the allocation of talents implies both reconsidering the arguments that have been exposed with regard to the individual arbitrage between remunerative activities and considering the non-pecuniary factors that may also have some impact.

According to Murphy, Shleifer and Vishny (1991, p. 506), the point is the following: "talent goes into activities with the highest private returns, which need not have the highest social returns".

These authors assume increasing returns on talent. In other words, the greater the ability of an individual, the greater his private benefits will be. Because the exercise of talent is physically limited (by the period of human activity in a day), talented individuals tend to invest themselves and their abilities into reward maximising occupations. It follows that their occupational choice will be determined by the size of the market, the compensation contract (rewards on talent application) and the technology.

Furthermore, the allocation of talent can be linked both with institutional context, as well as non-pecuniary explicative factors.

The legal framework and its effective use define a propitious environment for entrepreneurship and, contrarily, for rent-seeking behaviour. Property rights, the conditions of their application, and the respect of these rights, appear to be crucial factors. They contribute particularly and decisively to precise the compensation circumstances that have already been quoted, as well as the fiscal organisation. Information is also important as it determines the efficiency of allocation and the

[11] About this question, cf. Buchanan (1980).
[12] Cf. Acemoglu (1995), Baland and Francois (2000), Baumol (1990, 1993), Murphy, Shleifer et Vishny (1991, 1993).

possibility of linking the application of talent and its results. (Murphy, Shleifer and Vishny, 1991; Baumol, 1990, 1993; Acemoglu, 1995)

Social esteem might play a role. The question becomes therefore how much entrepreneurship is socially valuable and valorised, over another less socially productive occupation[13]. Finally, entrepreneurs or rent-seekers might influence, by voting or lobbying, political organisation and political decisions. The idea is that the political equilibrium, replying to one or another group's interests, will make decisions that favour its maintenance[14]. (Baumol, 1990, 1993; Acemoglu, 1995)

Entrepreneurship and rent-seeking in motion

The interaction between entrepreneurship and rent-seeking is without doubt an interesting question to examine. Formalised models show that multiple equilibria – an equilibrium being defined by an entrepreneur share in the population and a rate of growth – may exist. We will not insist on model developments. The interested reader may consult the references we provide. However, briefly, we note that the results are grounded on the specification of two functions, both with negative slopes, and consequently a potential for multiple intersections. Because it places burdens on entrepreneurial rewards, rent-seeking negatively affects entrepreneurship. Moreover, given competition in the rent-seeking sector itself[15], rent-seeking rewards will depend negatively on the number of rent-seekers (Murphy, Shleifer and Vishny, 1993; Acemoglu, 1995). Baland and Francois (2000) formalise as well the effect of entrepreneurial activities on rent-seeking. Their model can apply to an economy with import license. The production of direct substitutes by local entrepreneurs tends to turn off the rents obtained by importers. Here also, results suggest the existence of multiple equilibria[16].

Murphy, Shleifer and Vishny (1993, pp. 412-413) deal with rent-seeking affecting the innovation sector. According to these authors, rent-seeking, whether from private or public origins, can undoubtedly burden the profits of established productive sectors.

[13] Socially productive occupations are defined in this paper, let us stress it again, by their contribution to economic growth or, in other words, to increases in GDP.

[14] With regard to this last argument, we can point out that the innovative entrepreneur should be strongly inclined, when in a (temporary) monopoly position, to adopt rent-seeking behaviour.

[15] Acemoglu (1995, p. 29) mentions, but does not formalise, the case when barriers to entry in rent-seeking activities are established by insiders.

[16] The authors discuss moreover the effect of an exogenous resource boom such as an increase in income resulting from an increase in the world price of exports. The result, more entrepreneurship or more rent-seeking, depends in their model on the importance of the proportion of entrepreneurs and rent-seekers in the population preceding the shock.

Tornell and Lane (1999) analyse the consequences of windfalls in a two sectors economy. The first sector can be taxed, the second cannot. Moreover, the first sector is using a more efficient technology than the second one. The economy is characterised by weak legal and political institutions and by the existence of some powerful lobbies. Each of them tries then to support their own interest in an effort to increase their share of the national wealth through additional transfers. This leads to higher tax rates, where they can be applied, that is in the first sector. This provokes the reallocation of production factors towards the non-taxed and less productive sector. The result, called the *voracity effect*, is that a positive exogenous shock can be followed by a more than proportional increase of transfers and a decline in growth.

The innovation sector, however, might be described the reserved hunting ground, for the most part, of public rent-seeking. Their arguments rely particularly on the nature of innovation. In his project developments, the innovative entrepreneur is confronted with legal and environmental constraints. Innovation can imply indeed production permits, licenses, dispensations, as well as amending the local zoning regulations. This results in demand for government intervention and it provides opportunities for corruption. Moreover, the socially unproductive transfers that corruption implies, might have some inhibitive effects on innovation activity, given that innovators may not have equal lobbying power compared to that of established firms, or the same financial resources to pay bribes. Important funds may then be consumed instead of being invested, to avoid expropriation. The ex post existence of rent-seeking should raise the project risk and effective cost. The authors mention, following these arguments, that the negative effects of rent-seeking could be limited if the rent-seeker himself becomes a stakeholder in the innovation project. In the long run, he would find his interest in such an involvement. We note moreover that this idea can be generalised as: rent-seeking, by burdening current entrepreneurial profits, limits its future transfer opportunities.

Thus, the interaction between entrepreneurship and rent-seeking can generate multiple equilibria that correspond to an allocation of talents and an economic growth rate. Starting from a dynamic extension of his basic model, Acemoglu (1995) discusses the history dependence of an economy. Past and current allocations of talents influence the future structure of rewards. Given historical circumstances (particularly describing successive states of determining factors and allocation), the economy can be locked in low or high steady state equilibrium[17]. Under these circumstances, only a shock will have any positive and sustainable effect.

Conclusions

A positive interaction between growth and entrepreneurship is grounded on the innovation activity that entrepreneurs convey. Thus, a significant entrepreneurial supply in the economy stirs up scholarly interest.

The first argument in this paper suggested that the supply of entrepreneurial activity is not independent of growth. In this way, the discussion has supported the idea that the integration into analysis of factors determining the individual occupational choice was very important. Under the circumstances, relative rewards have been recognised as the variables through which arises the endogeneity of entrepreneurship and growth.

A second argument concerned the allocation of entrepreneurial supply between socially productive and unproductive projects. This allocation relies also on an arbitrage. It also determines economic growth.

[17] Extrema would be high rent-seeking and low growth rate, or high active and socially productive entrepreneurship and high growth rate.

The last question is the one that will probably keep the attention of the policy maker. In contrast to the entrepreneurial supply, which is ultimately explained by the distribution of skills and abilities in the population and on which it is difficult to intervene, the allocation presents some opportunities for public actions (Baumol, 1990, 1993). It could for example take the form of (additional) fiscal measures in favour of innovation rewards. Another way could consist in (heavier) penalties on socially unproductive activities. Referring more particularly to economies that are developing or in transition, Dutz, Ordover and Willig (2000) stress the primordial role that could be played by governments by creating (or reinforcing) the institutions that foster entrepreneurship.

References

ACEMOGLU, D. (1995), "Reward structures and the allocation of talent", *European Economic Review*, 39, 17-33.

AGHION, P. and P. HOWITT (1998), *Endogenous growth theory*, Cambridge, Massachusetts: MIT Press.

AUDRETSCH, D.B. (1994), "Small business in industrial economics: the new learning", *Revue d'Economie Industrielle*, 67, 21-39.

BALAND, J.-M. and P. FRANCOIS (2000), "Rent-seeking and resource booms", *Journal of Development Economics*, 61 (2), 527-542.

BARON, J. and D. FRISCH (1994), "Ambiguous probabilities and the paradoxes of expected utility", in WRIGHT, G. and P. AYTON, ed., *Subjective probability*, Chichester: John Wiley and Sons, 273-294.

BAUMOL, W.J. (1990), "Entrepreneurship: productive, unproductive, and destructive", *Journal of Political Economy*, 98, 5(1), 893-921.

BAUMOL, W.J. (1993), *Entrepreneurship, management, and the structure of payoffs*, Cambridge, Massachusetts: MIT Press.

BUCHANAN, J.M. (1980), "Rent seeking and profit seeking", in BUCHANAN, J.M., R.D. TOLLISON and G. TULLOCK, ed., *Toward a theory of the rent-seeking society*, College Station: Texas A&M University Press, 3-15. [Reprinted in *The economic analysis of rent seeking*, ed. R.D. CONGLETON and R.D. TOLLISON, The International Library of Critical Writings in Economics, 49, Aldershot: Edward Elgar, 1995, 46-58.]

BURKE, A.E. (1995), "The Re-emergence of entrepreneurial analyses", in BURKE, A.E., ed., *Enterprise and the Irish Economy*, Dublin: Oak Tree Press, 4-20.

CASSON, M. (1982), *The Entrepreneur. An Economic Theory*, Oxford: Martin Robertson.

CONGLETON, R.D. and R.D. TOLLISON, ed. (1995), *The economic analysis of rent seeking*, The International Library of Critical Writings in Economics, 49, Aldershot: Edward Elgar, 1995.

DUTZ, M.A., J.A. ORDOVER and R.D. WILLIG (2000), "Entrepreneurship, access policy and economic development: lessons from industrial organization", *European Economic Review*, 44, 739-747.

JOVANOVIC, B. (1994), "Firm formation with heterogeneous management and labor skills", *Small Business Economics*, 6, 3, 185-193.

KANBUR, S.M. (1979), "Of risk taking and the personal distribution of income", *Journal of Political Economy*, 87, 4, 719-748.

KIHLSTROM, R.E. and J.J. LAFFONT (1979), "A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion", *Journal of Political Economy*, 87, 4, 719-748.

LUCAS, R.E. (1978), "On the size distribution of business firms", *Bell Journal of Economics*, 9, 508-523.

MURPHY, K.M., A. SHLEIFER and R.W. VISHNY (1991), "The allocation of talent: implications for growth", *The Quaterly Journal of Economics*, CVI, May, 503-530.

MURPHY, K.M., A. SHLEIFER and R.W. VISHNY (1993), "Why is rent-seeking so costly to growth?", *American Economic Review*, Papers and Proceedings, May, 409-414.

SCHULTZ, T.W. (1975), "The value of the ability to deal with disequilibria", *Journal of Economic Literature*, 13, 827-846.

SCHUMPETER, J.A. (1911), *Theorie der wirtschaftlichen Entwicklung. Eine Untersuchung über Unternehmergewinn, Kapital, Kredit, Zins und den Konjunkturzyklus* ; translated by R. OPIE, *The Theory of Economic Development. An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, Oxford: Oxford University Press (1963 (1934)).

SCHUMPETER, J.A. (1942), *Capitalism, Socialism and Democracy*, New York: Harper and Row.

TOLLISON, R.D. (1997), "Rent seeking", in *Perspectives on public choice*, ed. D.C. MUELLER, Cambridge: Cambridge University Press, 506-525.

TORNELL, A. and P.R. LANE (1999), "The voracity effect", *American Economic Review*, 89, 1, 22-46.

TULLOCK, G. (1967), "The welfare costs on tariffs, monopolies, and theft", *Western Economic Journal*, 5, June, 224-232. [Reprinted in *The economic analysis of rent seeking*, ed.

R.D. CONGLETON and R.D. TOLLISON, The International Library of Critical Writings in Economics, 49, Aldershot: Edward Elgar, 1995, 3-11.]

WENNEKERS, S. and R. THURIK (1999), "Linking entrepreneurship and economic growth", *Small Business Economics*, 13, 1, 27-55.