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# Policy Brief

NUMBER 1, 2011

## Overview

How does innovation impact on development? How, and under what conditions, do entrepreneurs in developing countries innovate? And what can be done to support innovation by entrepreneurs in developing countries? This policy brief addresses these questions and explains the relationship between entrepreneurship, innovation and development. Policy lessons are drawn from historical, cross-country and individual country experiences.

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ISBN 978-92-808-3093-4  
ISSN 1814-8026

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## *Innovation and Entrepreneurship in Developing Countries*

**N**OBODY CAN BE LEFT IN ANY DOUBT AS TO THE importance of innovation for prosperity upon reading that “people living in the first decade of the twentieth century did not know modern dental and medical equipment, penicillin, bypass operations, safe births, control of genetically transmitted diseases, personal computers, compact discs, television sets, automobiles, opportunities for fast and cheap worldwide travel, affordable universities, central heating, air conditioning . . . technological change has transformed the quality of our lives.”<sup>1</sup>

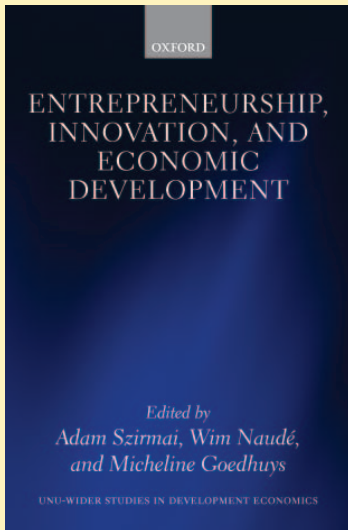
Despite this, most of the work on understanding the process of innovation and its relationship to public policy has been conducted in economies at more advanced stages of development. Several authors have even downplayed the importance of innovation for developing countries. In a similar fashion, there has been a resurgence of interest in the role of entrepreneurship in innovation, employment creation and economic growth, but here the primary focus has been on the advanced economies. In this Policy Brief we deal with these relatively neglected issues and argue for a better understanding of the roles that entrepreneurs can play in innovation in even the world’s poorest countries. We focus in particular on the entrepreneurship–innovation nexus in the context of development and refer to the findings contained in the book *Innovation, Entrepreneurship and Economic Development* edited by Adam Szirmai, Wim Naudé and Micheline Goedhuys.

### Definitions

The discipline of entrepreneurship generally studies the why, when and how of opportunity creation, recognition and utilization for providing goods and services through the creation of new firms (start-ups) and within existing firms for both profit and non-profit purposes. Not all opportunity creation will necessarily be in society’s best interest. The reward structure of a society can also lead to a destructive allocation of entrepreneurial talent. We focus here on productive entrepreneurial activity. This consists of the creation, recognition and utilization of *positive* opportunities in such a way that involves “innovation”—or the provision of “new combinations”—of products and/or processes.



### About this Policy Brief



This Policy Brief is the result of a joint UNU-MERIT and UNU-WIDER initiative and accompanies the book *Entrepreneurship, Innovation, and Economic Development* edited by Adam Szirmai, Wim Naudé and Micheline Goedhuys (2011, Oxford University Press).

“I learnt a lot from this book. Innumerable books discuss innovation and entrepreneurship, on the one hand, and specific problems of developing countries, on the other, but connecting them in Schumpeter’s and Gerschenkron’s spirit is rare. The volume edited by Szirmai, Naudé, and Goedhuys stands above the literature with its thorough research, clarity of discussion, and relevance of conclusions for society.”

**János Kornai**, Professor of Economics, Emeritus, Harvard University and Collegium Budapest

Three main conceptual approaches to entrepreneurship are found in the literature. The first—a functional approach—is concerned with the dynamic actors that make key decisions on investment, production, innovation, location, research and development.

From this perspective, entrepreneurship is a psychological trait referring to dynamism, creativity and originality. This approach also includes managers of multi-national firms, state enterprises or non-profit organizations, and a variety of dynamic entrepreneurs within organizations. The second approach focuses on the firm as the key economic actor. The firms included here are owner-operated firms, incorporated joint stock companies, state-owned firms’ joint ventures and subsidiaries of multinationals. These firms are the units that make the key decisions on investment, on branching into new activities or sectors, or relocating to other countries. There exists a large literature on firm-level behaviour in developing countries which examine firm characteristics, including their economic performance, innovative performance, capabilities and business strategies.<sup>2</sup> The third conceptual approach focuses on owner-operated enterprises. Within this approach, the entrepreneur is the person who is both owner *and* is actively involved in running the business. This relates to mainly small and medium-sized enterprises (SMEs), start-ups and self-employment.

As stated in the *Oxford Handbook of Innovation*,<sup>3</sup> the concept of innovation refers to the putting into practice of inventions. A narrow, strictly-technological approach focuses specifically on product and process innovations, or technological innovation, which is often said to be the result of technology entrepreneurship. A

broader approach refers to innovation as not only the development of new products, new processes and new sources of supply, but also to the exploitation of new markets and the development of new ways to organize business.

Innovative performance has been measured in a variety of ways: using patents, trademarks, R&D inputs and other secondary indicators such as publications or citations. Since the 1980s, increasing use has been made of innovation surveys amongst firms. Starting with the European Community Innovation Surveys (CIS), innovation surveys have since spread to the developing world (in particular to Latin America, but also to Asia and southern Africa). In innovation surveys, firms are asked whether they have introduced innovations. The main focus in most innovation surveys is on technological innovations resulting in new products or new production processes.

### Innovation, Stages of Development and Lessons from Developing Countries

Different types and degrees of innovation may take place across different stages of development. For example, Acz and Szerb<sup>4</sup> recently made a renewed case for Michael Porter’s distinction between factor-driven, efficiency-driven and innovation-driven stages of development. In the factor-driven stage, high rates of unemployment results in a large informal sector and a high rate of small business start-ups; at this stage low-cost and resource-based production dominates. Innovation may account for only five per cent of economic activity in factor-based economies. In the efficiency stage, the rate of start-ups will start to decline as capital and other production



factors are used more efficiently, raising their rate of return. As a result, firms become larger and start to exploit economies of scale. In this case, innovation becomes more important and poten-

disregards the fact that the conditions under which developing countries embark upon catch-up change over time and that past patterns are not repeated unchanged. There used to be a

## “Rapid economic catch-up depends on countries’ entrepreneurs being able to absorb and creatively adapt international technological knowledge.”

tially contributes to around 10 per cent of economic activity. Finally, in the innovation stage, knowledge becomes the driver of growth as countries already on the production possibility curve try to shift this out. In this scenario, innovation can contribute to more than 30 per cent of economic activity.

Though these distinctions are useful, they understate the importance of innovation by entrepreneurial innovation in the early stages of development. One reason is that differences between incremental innovations and more radical innovations need to be distinguished. The former is often important in advanced economies where competition is intense and where many firms are already producing on the production-possibilities frontier. In developing countries which are in the process of catching up, incremental innovation may be more important. It is also important to distinguish between innovation that is new to a country or firm, and innovation that is new to the world. The former type of innovation is called imitation and involves developing country entrepreneurs adopting new products or processes from other parts of the world. Such innovation can play an important role in technological upgrading, and increasing the utilization and the efficient allocation of production factors. Finally, stage theory

clear distinction between traditional sectors such as beverages, agriculture, and textiles and shoemaking, and high-tech sectors such as aerospace, IT, pharmaceuticals and electronics; but, in the modern global economy, all sectors are technology-driven, creating an innovation challenge for developing countries.

In an increasingly unequal world economy, several developing countries have experienced rapid economic catch-up, including Chile, China, Korea and Taiwan. These countries were able to absorb and creatively adapt international technological knowledge and, thus, achieve accelerated growth. Gerschenkronian and evolutionary growth theories argue that latecomer economies may profit from the advantages of technological backwardness. They can benefit from a global diffusion of technology and can access new technologies without bearing all the costs and risks of investment in new knowledge. Such technological adoption goes beyond mere imitation; it is an example of creative and innovative behaviour.

### **What Kind of Entrepreneurs Drive Innovation?**

An important question in the developing-country context is who the innovative firms are. Are they large domestic firms, subsidiaries of

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multinationals, owner-operated SMEs or micro enterprises?

Alice Amsden suggests that large privately-owned enterprises (POEs) are the innovative firms in developing countries.<sup>5</sup> She argues that POEs are much more flexible and innovative than

more advanced production techniques. In another chapter, Bascavusoglu-Moreau<sup>8</sup> argues that Turkish growth in the last decade has relied heavily on SMEs, whose dynamism derives from profitability and flexible labour markets. Elsewhere in the book, Stam

“Private indigenous-owned enterprises in East Asia explain the economic success of this region as compared to the foreign-dominated economies of Latin America.”

the subsidiaries of foreign-owned firms (FOEs) and that the strength of private indigenous-owned enterprises in East Asia explains the economic success of this region, as compared to the economies of Latin America which are more dominated by multinational enterprises. The importance of large, dynamic domestic firms is also stated elsewhere and has also been suggested as being valuable in places such as India.<sup>6</sup>

Elsewhere in the book *Innovation, Entrepreneurship and Economic Development*, the authors emphasize the importance of SMEs both in advanced economies and developing countries. SMEs employ a substantial number of people in developing countries across the globe. Most small-scale entrepreneurs, however, are survival entrepreneurs who are hampered by weak infrastructure, lack of finance and a lack of capability. The systems of innovation are often not providing the best incentives for entrepreneurs to become more innovative. However, Jaap Voeten and co-authors<sup>7</sup> provide an encouraging case study of innovative behaviour amongst clusters of handicraft enterprises in Vietnamese villages which are being transformed through the development of new products or

and van Stel<sup>9</sup> even go so far as to suggest that small owner-operated firms will be the prime movers in the process of structural change in developing countries and transition economies.

The mix of types of entrepreneurship will vary from country to country and region to region. A tentative conclusion one might derive from this interesting debate is that absorptive capacity and capacity for upgrading depends on some kind of appropriate balance between privately-owned and foreign-owned enterprises. Where foreign-owned firms predominate and large privately-owned indigenous enterprises and entrepreneurs are weak or absent, the country may be hampered in its technological and economic development. Furthermore, it is not only the large firms, but also a dynamic sub-set of firms in the SME sector which can make positive contributions to innovation and catch up.

### **Policy Implications**

#### *Market Development*

Promoting innovation by entrepreneurs across the stages of development therefore seems justified, but how? Answering this question first necessitates

raising another question: Why do entrepreneurs innovate? This question has been answered long before Joseph Schumpeter's important contributions to entrepreneurship. The answer is: They are driven by profit motives. Adam Smith's important insight was to

the reasons why trade functions as an engine of growth. Where markets are restricted by inappropriate regulations or strangled by predatory governments or monopolies, there is little incentive for entrepreneurs to introduce innovations that are new to the firm. And

“The degree to which the entrepreneur will engage in technical innovation and specialization depends on the size and functioning of the market.”

realize that although entrepreneurs act in pursuit of their own profits, they may generate benefits to the broader society in the process. The degree to which the entrepreneur will engage in technical innovation and specialization depends on the size and functioning of the market. Markets can thus be seen as important drivers of growth and development.

In the poorest developing countries, markets unfortunately fail to fulfil this role. They are hamstrung in a variety of ways, many of which are analysed by Adam Smith in his *Wealth of Nations*. Developing-country markets are often small, fragmented and imperfect due to lack of infrastructure, low per capita incomes, misguided policies and institutional constraints. The political stability, predictability and transparency, peace and other institutional prerequisites for the functioning of markets are often absent. With fragmented, small and uncertain markets there is often insufficient incentive for entrepreneurs to innovate. Where markets are restricted because of barriers to trade (either natural barriers such as lack of infrastructure or man-made barriers) it is difficult for innovations to spread. Through the ages, international trade has exposed entrepreneurs to new ideas and technologies. This is one of

where inappropriate property rights and contract enforcement makes any returns on innovative activity risky, there will be little incentive for entrepreneurs to invest in innovations new to the domestic market or new to the world.

#### *Capacity Building*

While the broadening of the market may be one of the necessary conditions for innovation, it will often not be sufficient. The reason is that innovation is increasingly knowledge- and skill-intensive. Because of the positive externalities inherent in investment in knowledge, technological advance and human capital, public policy has an important complementary role to play in fostering entrepreneurial innovation. Innovation requires not only highly-knowledgeable, experienced and skilled entrepreneurs, but also highly-skilled labour. Thus, educational policies and capability-building are important public policies.

Recognizing the importance of these complementary policies, and the need for appropriate incentives for entrepreneurs to innovate allows one to identify why well-meaning donor and development organization policies often fail to encourage innovation. For example, trade liberalization is often



prescribed for small developing countries as a development strategy, assuming that knowledge will automatically and without friction flow to these countries, but not taking into account the need for absorptive capacity. Another example is in to be found in donors' private-sector development programmes, where the promotion of competition is seen as important to stimulate market development. However, under too much competition, there may be little opportunity for entrepreneurs to recoup investments in innovative activities, particularly if domestic financial markets are underdeveloped and the entrepreneur has to finance innovation out of profits. Thus, in the absence of careful government interventions and policies, the operation of markets may result in

under-investment in knowledge and innovation. Nowadays, "innovation policy" and "national innovation systems" have become a standard part of the economic growth discourse in both advanced economies and developing economies.

### *National Systems of Innovation*

In developing countries, the benefits of innovation by entrepreneurs depend on the characteristics of the system of innovation within which they are embedded. The better the system of innovation, the more able a developing country will be to tap into global technology. Knowledge will circulate better within the domestic economy and the economy will embark on the process of technological upgrading more rapidly. The weaker the system of innovation, the less the efforts of individual entrepreneurs will contribute to accelerated economic development and catch-up.

The interplay between market development, systems of innovation and government science, technology and innovation policies is an important theme of the book *Innovation, Entrepreneurship and Economic Development*.<sup>10</sup> In Chapter 9, Sunil Mani<sup>11</sup> discusses the innovation system that gave rise to rapid growth in technological entrepreneurship in India. He identifies five relevant broad facilitating factors; namely, 1. the liberalization of the economy that created many new market opportunities; 2. the general increase in financial resources for innovation and entrepreneurship, including in particular venture capital; 3. more government support programmes and public-private partnerships; 4. the emergence of private institutions and initiatives to complement government support programmes for innovation; and 5. the increased availability of skilled labour

essential for high-tech products and services.

Many developing country governments have in recent years attempted to improve the national system of innovation by supporting business incubators. These business incubators are increasingly being adopted in order to overcome some of the weaknesses in institutional environments. Within *Innovation, Entrepreneurship and Economic Development*, İ. Semih Akçomak<sup>12</sup> discusses the potential of incubators as tool for innovation in developing countries and concludes that the challenges faced by incubators should not be underestimated. There is no guarantee that an incubator will succeed in fostering innovation and the creation of sustainable new (innovative) firms. However, to maximize the chances of success Akçomak sets out eight dimensions of good incubator policy including 1. clarity of mission and purpose; 2. clear selection, entry and exit criteria; 3. managerial capacity and incubator management skills; 4. engagement in constant monitoring and performance evaluation of participating firms; 5. strategic selection of services; 6. minimization of start up costs and red tape; 7. a focus on intangible services rather than tangible services such as office space or infrastructure; and 8. promotion of networking as a deliberate strategy and finally financial sustainability. Incubators should eventually become financially self-sustaining.

### *Institutional Development*

Finally, in designing a system of innovation conducive to support innovation by entrepreneurs in developing countries, sometimes a complete overhaul of existing institutions is necessary in order to remove obstacles to innovation. This is illustrated by Suma

#### **Related UNU Publications**

Naudé, W.A. (ed.) (2011) *Entrepreneurship and Economic Development*. Basingstoke: Palgrave Macmillan.

Naudé, W.A. (2010) "Promoting Entrepreneurship in Developing Countries: Policy Challenges", UNU Policy Brief No. 4.

Naudé, W.A. (ed.) (2010) Special Issue of *Small Business Economics Journal* devoted to Entrepreneurship, Developing Countries and Development Economics, 34(1).

Minniti, M. and W.A. Naudé (eds) (2010) Special Issue of the *European Journal for Development Economics Research* devoted to Female Entrepreneurship across Countries and in Development, 22(2).

Athreya<sup>13</sup> who focuses on India and tackles the puzzle of how entrepreneurs succeeded in innovating in an often deeply-adverse environment characterized by over-regulation, high costs of doing business, weak enforcement of property rights, poor capital markets and under-developed markets. Remarkably, Indian software firms found a way around all of these obstacles by creatively choosing appropriate business models and capitalizing on abundant and cheap high-skilled labour. In this case, adversity promoted creativity. Athreya found that the very success of the software industry was a source of subsequent improvement in the institutional environment: “the spectacular growth of industry in the 1990s was also marked by an improvement in the institutional infrastructure surrounding the software outsourcing industry, which generally served to ease constraints on the industry’s further growth. These included capital and labour market reform, better access to finance, improved IP right protection and contract enforcement.” The crux is that improvements in the institutional environment for innovation were brought about not by government taking the lead, but through institutional entrepreneurship; “[the] impetus for institutional reform has not come from government, international institutions or their advisors, but primarily from the business sector itself”.

### Concluding Remarks

The impact of innovation is important across countries and institutional contexts. It can play an important role in catch-up and growth in a global economy. This is the case due to the varied innovations of local entrepreneurs.

Most of these entrepreneurs work within SMEs where the extent of their innovativeness depends on the characteristics of the entrepreneur (education, age, experience, networks), as well as the region (location) and the sector (technological intensity) in which the firm is active. There is no shortage of entrepreneurship in developing countries. But the policy and institutional environment is an important determinant of innovative behaviour. Government support for innovation is important. This can take many forms

ranging from reform of the environment for doing business to providing venture capital, to tapping into migrant workers and diasporas, provision of technical and managerial education, infrastructure and more active state–private-sector partnerships. Sometimes, even an adverse environment can spur innovative behaviour and entrepreneurs may become the drivers of policy and institutional change, rather than only being determined by the policy and institutional environment.

### Notes

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4. Acs, Z. and L. Szerb (2009) “The Global Entrepreneurship Index (GEINDEX)”, *Foundations and Trends in Entrepreneurship*, 5(5): 341–435.
5. Amsden, A. (2011) “Firm Ownership and Entrepreneurship” in A. Szirmai, W.A. Naudé and M. Goedhuys (eds) *Entrepreneurship, Innovation, and Economic Development*. Oxford: Oxford University Press, Chapter 3.
6. See Mani, S. (2011) “Promoting Knowledge-intensive Entrepreneurship in India” in *Entrepreneurship, Innovation, and Economic Development*. Chapter 9; and Athreya, S. (2011) “Overcoming Adversity in Entrepreneurship-led Growth. Evidence from the Indian Software Sector” in *Entrepreneurship, Innovation, and Economic Development*. Chapter 11.
7. Voeten, J., J. de Haan and G. de Groot (2011) “Can Small Firms Innovate? The Case of Clusters of Small Producers in Northern Vietnam” in *Entrepreneurship, Innovation, and Economic Development*. Chapter 5.
8. Bascavusoglu-Moreau, E. (2011) “Entrepreneurship and the National System of Innovation: What is Missing in Turkey?” in *Entrepreneurship, Innovation, and Economic Development*. Chapter 7.
9. Stam, E. and A. van Stel (2011) “Types of Entrepreneurship and Economic Growth” in *Entrepreneurship, Innovation, and Economic Development*. Chapter 4.
10. See, in particular, Part III Institutions, Policies, and Incentives for Innovation.
11. Mani, S. (ibid.).
12. Akçomak, İ.S. (2011) “Incubators as Tool for Entrepreneurship Promotion in Developing Countries” in *Entrepreneurship, Innovation, and Economic Development*. Chapter 10.
13. Athreya, S. (ibid.).



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**INSIDE:**

# Policy Brief

## *Innovation and Entrepreneurship in Developing Countries*

Innovation by entrepreneurs can play an important role in catch-up and growth in a global economy. This brief provides some guidelines for innovation policy in developing countries.

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