

## **Palgrave Studies in Democracy, Innovation, and Entrepreneurship for Growth**

Series Editor: Elias G. Carayannis

The central theme of this series is to explore why some areas grow and others stagnate, and to measure the effects and implications in a transdisciplinary context that takes both historical evolution and geographical location into account. In other words, when, how, and why does the nature and dynamics of a political regime inform and shape the drivers of growth and especially innovation and entrepreneurship? In this socioeconomic and socio-technical context, how could we best achieve growth, financially and environmentally?

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- Which cultural characteristics serve to promote or impede innovation? In what ways is wealth distributed or concentrated?

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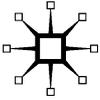
*Entrepreneurial Universities in Innovation-Seeking Countries: Challenges and Opportunities*

Marina Dabić, Jadranka Švarc, and Miguel González-Loureiro

ENTREPRENEURIAL UNIVERSITIES IN  
INNOVATION-SEEKING COUNTRIES  
CHALLENGES AND OPPORTUNITIES

Marina Dabić, Jadranka Švarc, and  
Miguel González-Loureiro

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## PREFACE

*It is paradoxical, yet true, to say, that the more we know, the more ignorant we become in the absolute sense, for it is only through enlightenment that we become conscious of our limitations. Precisely one of the most gratifying results of intellectual evolution is the continuous opening up of new and greater prospects.*

—Nikola Tesla

The global financial crisis and budget cuts have brought to the forefront new models of universities dominated by the concept of an entrepreneurial university that emphasizes the market orientation of universities and their contribution to economic growth and competitiveness.

The concept is pursued regardless of the research intensity of production sectors and technological competences of the business sector within a certain country. In moderate innovation countries, the entrepreneurial role of the university is hindered by a lack of business partners, low absorption capacities for research-driven company innovation, lack of demand for research, etc., which are needed for research commercialization and science–industry cooperation.

In this context, the book analyzes the concept of an entrepreneurial university in moderate innovation countries using the example of Spain and Croatia. Although different in size, they share many similarities in terms of innovation capacities and the role of universities within the innovation system. Since the universities in these countries are also increasingly exposed to globalization and international competition they are forced to change, but these changes should correspond to the abilities of the business sector while preserving the social and cultural impacts of universities.

The university mission is linked to the value it can offer to its environment in the knowledge-based society in which we are currently embedded; that is, act as a knowledge pivot: creating, absorbing, storing, sharing, spreading, filtering, adapting, teaching, etc. valuable knowledge for progress in every plane of society. Several expressions come to mind to describe the university and its socioeconomic role in such a context: competent, innovative,

politically neutral, pro-European, defenders of the knowledge interest, multilingual, multicultural, purposeful, proactive, ambitious, focused, and, of course, entrepreneurial. A good portrait would be a mix of these adjectives.

Therefore, the entrepreneurial university is an ethos above all. Professors who support the concept do not necessarily have to share the same attitudes toward an “entrepreneurial university” by reason of their support.

These are the highlights of the theoretical and empirical work done here. A shift is needed at the university if it is to become a more entrepreneurial one, which should be based on the key drivers of change in large organizations: its human capital.

Marina, Jadranka, and Miguel  
Croatia, Spain, and United Kingdom, 2015.

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## EXECUTIVE SUMMARY

Intellectual assets, human resources, and professionalism of all kinds, based on scientific research and cutting-edge technologies both in service and manufacturing, have become the essence of the new postindustrial economy. Growth in the knowledge economy largely depends on the production and transmission of new knowledge, mainly through education and training. Universities are at the center of both these processes, which has led many to assign the university a leading and strategic role in any knowledge economy. One might easily conclude that since 1990, universities have become powerful institutions that determine the fate not only of a new generation of young people thirsting for education, but also the economic development of entire regions and nations.

However, those familiar with the situation of European universities are aware that the knowledge economy puts the universities, especially in the innovation less developed countries, in somewhat ambiguous position. On the one hand it is undeniable that universities today are centers for cutting-edge research in fields from software to biotechnology and important sources of new technologies and spin-off companies. The modern economic activity has become massively dependent on up-to-date knowledge and governments throughout the world have launched numerous initiatives to link universities to innovation more closely. On the other hand, universities are faced with budget constraints, cutting down of allocated funds for research as well as growing political and social pressure to justify their efficiency. Their scientific productivity, teaching methods, and efficiency are subjected to the various methods of evaluation, measurement, accreditation, and reaccreditation. University in knowledge economy is losing its knowledge producing monopoly rather than being strengthened.

A possible reason may be that knowledge economy has brought the growing *scientification* of the economy and the mass education that has dispersed the scientific approach and its methods as well as highly educated staff throughout the economy and society. It has led,

paradoxically, to a weakening of the university. The role of universities as a pillar of the knowledge economy has come into question because they are forced to compete with many other subjects in knowledge production and diffusion that were in essence emanated from the university. As pointed out by Mode 2 of the new knowledge production, knowledge is produced in a diverse variety of organizations, resulting in a very heterogeneous practice. The range of potential sites for knowledge generation includes besides the traditional universities, institutes and industrial labs, research centers, government agencies, think-tanks, high-tech spin-off companies and consultancies. Although these sites are linked through networks of communication and research is conducted in mutual interaction, these sites also take over research that would be previously located exclusively at universities. By contrast, their “competitors,” be they research consortia, private companies, or labs, are far more prepared for a knowledge economy since they are focused on the direct commercialization of knowledge, which directly contributes to innovation-driven economic growth with no regard to scientific curiosity or the public availability of scientific results.

The uncertain and ambiguous status of the university was intensified in the early 1970s when economists reconsidered the sources of economic growth and devised the concept of systems of innovation, stressing the importance of national innovation systems in the development and international competitiveness of each country. They came to the conclusion that business innovation located in companies is equally, if not more, important for economic growth as the creation of knowledge itself. The struggle for innovation-based competitiveness has transformed the crisis of the university into a global phenomenon in the 1990s.

However, neither the crisis of the university nor the concept of an entrepreneurial university is new. Universities are in a continuous transformation and reforming process since the 1970s as the rise of knowledge economy and globalization has intensified. The novelty is that both phenomena have crossed national boundaries under the pressure of globalization and become European and global phenomena driven by the European process of integration in both the sphere of research through the European Research Area (ERA) and in higher education through the Bologna process for establishing the European Higher Education Area (EHEA).

It paved the way for new concepts of the university such as entrepreneurial universities and academic entrepreneurialism as a method of transforming research into market goods and services.

Most European countries encourage universities to engage in the so-called third task and entrepreneurial activities. Besides supplying education and research, universities need to also take an active part in the diffusion of knowledge to the commercial sector. This new role implies developing new functions and structures within the universities, which are today recognized as entrepreneurial university. Universities that are not able or ready to transform are still faced with the various uncertainties and public pressures since in a knowledge economy, the creation and transmission of knowledge is a necessary but not sufficient condition for economic growth. The emphasis is on the capitalization of knowledge, its transformation into new competitive products, and processes in international markets.

This puts the university in an entirely new position, seeking a transformation from the traditional Humboldt type of university into a new type known today as the entrepreneurial university. Since the mid-1970s, scientific and university systems have been undergoing such major changes, at least in developed countries, that many have noticed a transition in research systems toward new knowledge production while the university stands on the threshold of its second revolution.

In essence, the second academic revolution involves a transition from the traditional Humboldt type of university into an entrepreneurial university. The concept owes much to the pioneering idea of a hybrid university, which is based on complementing its research and educational functions with a technological one focused on applied and industrial research. This technological function of a university soon grew into the numerous models of an entrepreneurial university closely connected to the recent concept of new knowledge production (e.g., Mode 1 and Mode 2) and science–industry interactions (e.g., triple-helix model and public–private partnership). Simultaneously, universities are faced with a crisis of identity that has emerged from the clash between the traditional concept of a university as an autonomous and self-organized institution of scientists who follow an ethic of scientific freedom, and the concept of a university as an entrepreneurial organization subjected to market needs, evaluations by policy-makers, and criticism from the wider community. Although the entrepreneurial role of a university is heavily criticized it cannot be denied that position of the university has changed due to the changed role of scientific knowledge. The university environment has changed and evolved toward a knowledge-based economy. Therefore, the university must turn into a modern knowledge-based organization that transforms the obsolete manufacturing-based model of the

industrial era. History teaches us that reverting to former practices is hardly possible. The same is true of a return to the old university paradigm.

### WHAT IS THE BOOK ABOUT?

Universities are challenged today to maintain their leading role in a society of knowledge that requires strategic, structural, and organizational changes to enable them to take a greater part in technological change and economic development. In this context the European universities have undergone different reforms since 1995 mainly shaped within the Bologna process. The final aim was to strengthen their role in education, economic, social, and cultural prosperity. For example, quality assurance and accreditation systems have been one of the major reform themes while funding mechanisms based on uniform and “nondistinctive” budget funding were altered through lump sum systems with more of an emphasis on outputs. Strengthening linkages between public research and private industry to improve national economic performance is also one of the main concerns of policy-makers in many countries. However, reforms have taken place at various levels and in various policy areas in different countries.

The majority of reforms, especially regarding the orientation toward entrepreneurialism, are much more emphasized in technologically advanced countries, which are classified by the European Innovation Union Scoreboard (IUS, 2014) as innovation leaders (e.g., Sweden, Germany, Slovenia, France, and Great Britain). Less advanced innovation countries consist of modest and moderate innovator countries, which are much less involved in transitions between university and research systems. The modest innovators include mainly new European member states (Romania, Bulgaria, Latvia, and Lithuania) while moderate innovators mostly include countries from Southern Europe and the Mediterranean like Spain, Portugal, Italy, and Croatia. Those countries are not only the most affected by the global financial crisis but also share similar difficulties in their research and higher education systems such as low investment in research especially by the business sector, low patenting activity, the domination of the public sector in R&D, with universities taking a leading role in both research manpower and knowledge production but perhaps not in diffusion or transference.

At the same time, the scientific output of universities does not match their dominant position, meaning that their scientific quality is unsatisfactory. This has a negative impact on their recognition

on any international scientific and higher education map. Interactions and cooperation between universities and industry at present are also rather deficient for knowledge exchange and its subsequent successful influence on innovation. Accordingly, the concept of an entrepreneurial university has not taken deeper root in many Southern European countries. It remains an ambiguous and vague concept that so far does not have many supporters either among policy-makers or scholars themselves. For example, faculty promotion practices tend to emphasize seniority and publishing competences in current content journals, rather than innovation or cooperation with industry. The intersectoral mobility of staff between industry and academia is almost nonexistent and it is usually not well regarded among most academics. The business sector is hardly interested in cooperating with universities due to their low technological capacities and absorption of innovation, as well as the fact that universities do not clearly meet the needs of the majority of small and medium-sized enterprises (SMEs).

The purpose of the book is to shed some light on the role and success that the model of an entrepreneurial university could have for countries that are lagging behind in cutting-edge technologies and science-based innovation. The main reason is that the transformation of traditional university from the conceptual point of view is global, while its practical realization is local. The readiness of innovation following countries for radical changes toward entrepreneurial university is still doubtful since these countries have not attained the level of structural adjustment of national economies to the knowledge economy that influences the role of universities and their transformation into the entrepreneurial university. Innovation-leading countries have not only built the foundation and rationale of knowledge economy but also determine the direction and dynamic of its further development. They seek an entrepreneurial university, which could meet the requirements of accelerated knowledge production and capitalization to retain the position of global winners and innovation leaders. By contrast, innovation-seeking countries mainly follow, sometimes uncritically, the trends and directions shaped by world leaders.

To address these questions we have pointed out some historical and theoretical aspects of emerging entrepreneurial universities on a global scale, which still influence the paradoxical position of universities including the new paradigm of entrepreneurial university. The challenges and prospects of entrepreneurial university in innovation-seeking countries are analyzed using the experience of Spain and Croatia.

Although Spain and Croatia represent at best the position of entrepreneurial university in the Southern European and Mediterranean countries (Spain, Portugal, Italy, Greece, Malta, and Croatia), the conclusions could also be applied to the rest of moderate innovators (Czech Republic, Hungary, Lithuania, Serbia, and Slovakia) and modest innovators (Romania, Bulgaria, Latvia, Poland, Turkey, and FYR Macedonia) that are defined as such in the Innovation Union Scoreboard for 2013 and constitute innovation-seeking countries referred to in this book. These are all countries that belong, to a greater or lesser extent, to the European scientific and higher education periphery, with insufficient scientific merit and innovation strength to compete on the same footing with scientific core countries and innovation leaders on a large scale. They share some common features of university and research sector development such as the lack of business partners, low absorption capacities for research-driven innovation of companies, absence of the cutting-edge technologies, and low diffusion or transference of knowledge within the sectors, which are needed for research commercialization and science–industry cooperation.

Although Spain and Croatia differ significantly in many aspects relative to size, such as population (Spain has ten times more inhabitants than Croatia), GDP, their research communities, and absolute investment in R&D, some structural problems in the economy and national innovation systems, including the role of universities within the innovation system, are very similar. Furthermore, the selection of two different countries sought to reinforce the findings by discovering what such different instances have in common.

For example, both countries are severely affected by the global financial crisis, have had negative economic growth over the last few years, and high rates of unemployment among which there is an increasing share of the young and educated. Their economies are dominated by small- and medium-sized firms, oriented toward less innovative traditional sectors and with tourism accounting for a large share of their GDP. As reported by EUROSTAT, they are also similar in terms of level of exports, turnover from innovation, employment in knowledge-intensive service sectors, and other indicators regarding innovation and research capabilities.

Besides, both the countries have established rather complex systems of innovation that consist of specialized institutions and programs devoted to promoting links between public research bodies and industry. However, the achievements of these systems of innovation as

well as the levels of excellence in universities and public research organizations are far from being satisfactory.

Therefore, the main goals of the book are as follows:

1. Explain the historical roots of the conceptual ambiguity of entrepreneurial universities, which are still strong among academics and policy-makers;
2. Provide an empirically based comparative analysis of the role of entrepreneurial university in two moderately innovative countries—Croatia and Spain;
3. Draw certain conclusions about the role that an entrepreneurial university might play in the social and economic development of moderately innovative countries under circumstances of a knowledge-based economy and globalization.

The basic message of the book is that the transition from traditional to entrepreneurial university on the global scene has intensified since the 1970s due to the transition from industrial to knowledge society. Historical development of modern university coupled with the scientific revolutions showed that the knowledge industries, which ultimately lead to today's knowledge economy, are based on cutting-edge technologies, university–industry interaction, and commercialization of university research through company start-ups and licensing. However, the transition to the knowledge economy is not only incomplete but is saturated with a number of unknowns coming from globalization and the emergence of service economy. The latter blurs the insight into what sectors and activities today are the backbones of development. Knowledge economy linked with globalization creates a great uncertainty and complexity for individuals and organizations in social and economic life including universities. It is also characterized by a series of global processes with a very uncertain outcome such as shift of production to the Far East, global unemployment, the rise of creative and service economies, etc. Such global economic uncertainty, insecurity, and vagueness of the role of industrial development, technological innovation, and related higher education and scientific research leads to slowdown of the transition from traditional to entrepreneurial university.

Universities in both innovation leading and following countries are in flux, reflecting issues specific to the transition from an industrial to a knowledge society. It is certain, however, that the concept of

entrepreneurial university suits much better innovation leaders than followers. Innovation leaders need a university that is able to capitalize scientific research with the aim to preserve their position of global techno-economic leaders. By contrast, innovation followers suffer from the absence of science-based innovation, cutting-edge technologies, as well as a clear discourse about their own position in the global knowledge economy. Innovation followers have to respond not only to the challenges of transformation of universities toward entrepreneurial university but above all they are challenged to transform their economies from industrial to knowledge economies. Economy of innovation followers, especially in the Southern European and Mediterranean countries, is still the economy of industrial societies, while world competition is growingly based on advance technologies, research-intensive innovation, and other intangibles subjected to the rules and norms of the knowledge economy. Since innovation-seeking countries are lacking the clarity of strategic goals, the policies and mechanisms to achieve the transformation from industrial to knowledge economy as well as transition from the traditional to entrepreneurial university are also lacking determination and dedication.

Our analysis revealed that, in addition to unfinished transition, innovation followers suffer from several specific factors that hinder and slow the emergence of entrepreneurship university, as follows:

- dysfunctional innovation system that lacks the business sector interested in cooperating with universities;
- poor scientific output of universities and their international visibility;
- centrally governed university system with a weak support for market-oriented activities;
- unsatisfactory level of entrepreneurship.

These factors create a specific socioeconomic environment, which is the main barrier to entrepreneurial university in innovation followers. The change toward the new university paradigm is not possible as an isolated social phenomenon but only within the relevant socioeconomic and institutional context. Innovation-seeking countries lack the sociocultural environment strongly supportive to entrepreneurial university and technologically advanced economy that would provide natural and strong incentives to it.

Although entrepreneurial activity is undoubtedly a future of university on a global scale, the following functions of the current

universities in innovation-seeking countries seem more important at the moment than the radical change of university paradigm:

Attaining excellence in education and scientific research,  
Becoming internationally competitive in education and research;  
Fostering entrepreneurship education;  
Developing all kinds of cooperation with the business sector.

A radical change from traditional to entrepreneurial university with a lack of real ground in the innovation system can lead to a derogation of universities and further weakening of the national educational and scientific basis. Therefore, our analysis suggests that transition to entrepreneurial university must be considered with caution and critics. It should take into account the compliance between the socioeconomic environment and the mission of entrepreneurial university.

The book consists of seven chapters. The first five chapters are more theoretically oriented and discuss the concept, history, and characteristics of entrepreneurial universities, while the remaining chapters provide the empirical results of a survey about the attitudes of professors toward entrepreneurial universities in Spain and Croatia. The **first chapter** addresses the concept and definition of an entrepreneurial university and presents some criticism as well as supporting opinions. The **second chapter** provides the socioeconomic and theoretical antecedents that gave rise to the entrepreneurial university and its ambiguous position. It explains the historical roots of the interaction between science and industry and the emergence of knowledge-based industries that initiated the first and second academic revolutions and changed the university paradigm from a traditional to an entrepreneurial university. The **third chapter** addresses the critics and the change required in knowledge production toward more industry-oriented research that fosters the business and entrepreneurial component of universities. The **fourth chapter** analyzes the theories of transition in scientific systems, with particular attention paid to the triple-helix model. The **fifth chapter** discusses the wide diversity of activities that entrepreneurial universities undertake, namely cooperative research projects, commercialization of research results, academic entrepreneurship, venture capital, and facilities such as science, research, and technology parks. The key issue here is the university as a factor for regional development.

The **sixth chapter** provides empirical results about the attitudes of university professors toward entrepreneurial universities in Spain

and Croatia. It was found that faculty members in both countries have a strong desire to participate in the commercialization process. However, faltering support systems, weak incentive structures, centrally governed systems and regulations, plus the university culture, all work to make the creation of efficient links between universities and the market difficult. The main definition of entrepreneurial university applied by faculty members is analyzed, as well as their opinion regarding what the main entrepreneurial universities are worldwide. Their opinion regarding the context is analyzed by means of identifying barriers and needs at faculty level, and changes due to the Bologna Declaration. The personal attitudes toward the entrepreneurial university dimensions are also analyzed.

The **seventh chapter** presents the most relevant findings and challenges to be faced by universities in innovation-seeking countries in their path to entrepreneurialism, in their role of key agents to boost economic growth and welfare in the knowledge-based economy. Critical challenges identified are those related with the unfinished transition to the knowledge-based economy, the dysfunctional innovation system, the poor scientific output of a number of universities in each country, the centralization of university managerial system instead of faculty units of decision, and the unsatisfactory level of entrepreneurship.

Finally, the **eighth chapter** contains the outlooks and conclusions on entrepreneurial universities in innovation-seeking countries, essentially, a process-based view of the shift required at multiple levels of analysis with a view on inputs, processes, and outputs in the value creation by the university. The alignment between the three pillars of the university mission and the way how the university creates value for each of the stakeholders involved is explained. By means of an intangible-based view, university managers should devote time, effort, and resources to guide the process of value creation. This is related with how the university creates value by means of the intangible elements, namely its human, structural, and relational capital.