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**Aldo Geuna & Federica Rossi, *The University and the Economy. Pathways to Growth and Economic Development*, Edward Elgar, 2015, 224 pp. \$120  
Hardcover.**

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## Book Review

In recent decades the interest for national higher education systems increased significantly, with particular attention to its functioning mechanisms, its organization and governance and to the contribution that it can provide to the wider community. *The University and the Economy. Pathways to Growth and Economic Development* authored by Aldo Geuna and Federica Rossi, together with the participation of some other co-authors, focuses precisely on this latter aspect. The book provides a comprehensive and accurate overview of the many ways in which higher education institutions contribute to the economy, combining theory and empirical research. It represents an updated and manageable reference for both for lay and academic readers interested in higher education economics and economics of innovation.

The book adopts the perspective of economic theory for explaining the interaction between higher education institutions and economic growth and provides rich empirical evidence on the actual contribution of teaching and research activities. Besides, the approach used by the authors is not narrowed on efficiency and efficacy considerations only, but encompasses a broader view: considerations on the spillovers of universities activities are attentive to social aspects as well, although are not the central focus of the book.

The authors pay great attention to the policy aspects implied in the theory and empirical analyses provided, with a thoughtful illustration of pros and cons per each topic under scrutiny and offers interesting recommendations for policies supporting the interaction between universities and economic agents. Indeed, policymakers and managers are explicitly mentioned in the introduction as a target audience of the book, alongside with academics and students. However, some of the chapters may sound too technical for a lay audience and too descriptive for an academic public. But overall the book is a complete and solid reference for those interested in studying the contribution of universities to the economic systems. An earliest versions of the book has been published in Italian by the same authors (“L’Università e il sistema economico” Il Mulino, 2013), but this book updates and further develops the work done in the Italian edition with some new chapters and adds a more international perspective.

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The essential role of universities as suppliers of qualified human capital and research has become ever more important in the transition to a post-industrial production organization based on services and knowledge, which made competitiveness depending chiefly on the amount of knowledge and innovation that goes into the goods and services produced. The advent of the knowledge society has focused attention on the fact that national economies need qualified human capital since competition is now based on intangible production factors such as scientific, technical and organizational skills. In this context, not only producing knowledge is crucial, but being able to make it useful as well. Knowledge can be used by firms in different ways: by acquiring coded knowledge, as expressed in patents or research reports; by acquiring innovative equipment which incorporates this knowledge; by employing human capital, or in other words by acquiring the knowledge incorporated in individuals. From this emerges clearly the central role attributed to universities in contemporary economies and the growing interest for socializing outcomes and assessing performances of university activities. On this latter aspect, the diffusion of the New Public Management (NPM) approach and the retrenchment of public spending also played a role. Since the 1990s, NPM had a strong impact in shaping reforms in all fields of the public, with higher education systems as all providers of public services subject to greater accountability of teaching and research. In addition, the constraints faced by governments in funding public universities brought about many changes in the way universities are conceived and ruled, introducing methods of allocation of public funds on the basis of performances and encouraging a diversification in the sources of funding.

This trend occurred with a high degree of variability across European countries, with wide differences between leading innovators (e.g. UK) and late comers (e.g. Italy) in reforming higher education, but as key transformations involving all higher education systems have been properly considered in the background of the book.

The book is organized in eight chapters divided in two main parts. The first part of the book (made by chapters 2, 3 and 4) addresses the key topic of the book: the multifaceted relationship between the university and the economy. It does so by: a) analyzing the ways in which interaction between universities and other economic agents can (and actually) take place; b) by presenting the economic returns of teaching and research at macro and micro level c) providing the key theoretical references and illustrating existing empirical evidence on the causal links between universities' activity and economic growth. The second part of the book (chapters 5 and 6) has a more pragmatic focus and uses existing empirical evidence to illustrate how universities' performance is measured, how different funding systems work and how mechanisms of technological transfer work in practice. In this section particular attention is devoted to policy issues, also providing suggestions for efficiently and effectively taking advantage of the potential of universities.

The first chapter of the book is a short introduction, which clearly points to the objectives and the target audience of the work and introduces the central character of the book -the university-with a concise overview of the main transformations that universities experienced in the last centuries.

The second chapter of the book *The University and the economy: a multifaceted relationship* presents the theoretical framework and the core thesis of the book. Starting from considerations about the central role that the university has acquired in the age of the knowledge economy, the authors illustrate the multiple contributions that university offers to the economic system. First, the authors identify the multiple ways in which higher education contributes to economic

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growth<sup>1</sup>, to the cultural environment and to the regeneration and maintenance of the physical capital of the areas in which universities operate<sup>2</sup>. Second, the authors identify the channels through which the contribution of the university to the economy can take place (increasing the stock of human capital, thus increasing labour productivity; facilitating the adoption of existing technologies and favoring process and product innovation as well as radical new technologies thanks to a highly skilled workforce). However, as not all universities can perform all activities (teaching, research and technological transfer) at the same level, and at the same time there are both advantages and trade-offs intrinsic to different degrees of specialization, the authors conclude with some interesting policy suggestions. Indeed, recognizing that the contribution of the university can take multiple forms is essential to contribute to move further the debate about the differentiation of higher education system.

The third chapter *Higher education and economic welfare* is written by Mauro Sylos Labini and deals with the first key function attributed to higher education institutions: the formation of human capital. The chapter focuses on the teaching function of the university and the potential of higher education in terms of economic growth. To do so the chapter offers a review of empirical literature supporting the positive contribution of higher education to individuals' (micro level) and countries' (macro level) wealth. The author introduces the subject referring to the positive correlation observed at macro level between the share of population with higher education and economic growth (namely GDP). Although the correlation may work in both directions and "education is at one and the same time both the seed and fruit of economic development" (p. 30), the author recalls that theoretical and empirical literature support a positive (in some studies causal) effect of higher education on economic growth and offers a review of empirical studies. On one hand, research on individual returns to education has provided consolidated and reliable results, assessing an advantage for university graduates (compared to high school graduates) in terms of lower risk of unemployment and higher salaries, in particular, on the long run and for those with low socio-economic background. On the other hand, macro-level returns to education are more difficult to estimate; evidence is less straightforward and does not provide univocal results. However, positive external effects have been shown in terms of favoring the adoption of new technologies and innovative activities, although not very robust as for microeconomic result. In addition, a non-strict focus on economic returns enable to encompass other important macro-level effects which are nonetheless important (higher health, political participation, sense of civic duties and interpersonal trust).

The fourth chapter *The economic role and impact of university research* focuses on the key role of universities as knowledge producers. It focuses on the production and distribution of knowledge as a good, its governance and foremost, the role of the public actor. The goal of the chapter is to illustrate how public policies can support the production and distribution of knowledge carried out by universities through research and knowledge transfer activities, in the most efficient way and with the greatest economic impact (p.47). The chapter proposes first, a review of

<sup>1</sup>a) producing new scientific information; b) training skilled graduates; c) supporting scientific networks and stimulating interaction with firms; d) expanding the capacity for problem solving; e) producing new instrumentation and methodologies or techniques; f) creating new firms; g) providing access to unique facilities such as rare tools and equipment (p. 14).

<sup>2</sup>Universities animate the cultural and sports activities, increase the social capital of the communities in which they operate, help to attract investments and develop economic partnership in the region. In addition, universities enable the recovery of industrial and architectural heritage, preserve and diffuse technology no longer in use (p.14).

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the main theories of knowledge and models of knowledge production and distribution that evolved through decades (from knowledge as information to knowledge as a complex phenomenon). It also shows how different models of knowledge imply different normative consequences regarding the appropriate means for supporting the production and transfer of knowledge. Second, the chapter proposes an extensive review of empirical literature identifying the impact of academic research to technological progress, both on macro and on firm level and differentiating between public and private investment. Finally, it provides a review of the main models of government funding and how they evolved through time, with particular attention to the role that the State has acquired recently. Indeed, with the spread of the idea of knowledge as complex phenomenon, governments have slowly (and at different pace) moved from simply public funding of basic and applied research to more complex and strategic forms of funding. The idea that governments should play the role of broker, stimulating the collaboration between sectors and between organizations has acquired growing consensus (p. 68).

The fifth chapter *Measuring universities' performances: an international comparison* opens the second part of the book and reviews methods for measuring the extent and efficacy with which universities carries out their institutional activities. As mentioned in the introduction, the trends toward accountability associated to New Public Management and reforms in HE funding created a tighter link between allocation of public funds and performances. Thus, criteria for evaluating teaching and research have been gradually developed and are increasingly used for informing performance-based mechanisms of funding that are implemented in many European countries (although with wide differences among countries). As an obvious consequence, universities have increasingly been required to measure and report their activities. The chapter provides a practical, detailed and critical review of the most common indicators used for measuring performances in teaching, research and technological transfer, with associated pros and cons per each indicator. To complete the framework, the second part of the chapter provides an empirical section comparing some of the performance indicators presented earlier (namely, those commonly used as “key performance indicators”). The aim of the exercise is to show indicators “at work” in an international perspective, using real data coming from the ETER database for the year 2011/12. In the conclusions the authors remind that these measurement are very useful for comparisons across countries or within national HE systems, but have to be handled with care. All of them are affected by some methodological or theoretical shortcomings, indicators often capture only part of the complex object of study and cannot be confused with the real quality of the object they measure, whether teaching, research or technological transfer. The policy suggestion coming from the authors is to exploit their informative power in relation to certain benchmarks or thresholds but not pretending they provide perfect information on quality or excellence.

The sixth chapter *University funding and research assessment: an analysis of Italian and British cases* by Aldo Geuna, Matteo Piolatto and Mauro Sylos Labini, provides an interesting comparison between Italy and the United Kingdom on the evolution of their respective funding systems, in particular regarding funding and assessment of research activities. The comparison is particularly interesting since the UK represents the leading innovator in this respect, while Italy is among the late comers in the adoption of performance-based funding systems. However, UK and Italy are the only two countries in Europe where a well-developed system of research evaluation and funding is in place (although established in mid 1980s in the UK and only very recently in Italy). The chapter is very detailed but useful for

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gathering information about the many aspects of the funding system in the two countries, also in comparison with some other OECD countries. The comparison between the newborn research assessment exercise (Valutazione della Qualità della Ricerca - VQR) in Italy and the well-established experiences of the Research Assessment Exercise (RAE) and Research Excellence Framework (REF) in UK is of particular interest because highlights the policy implications in terms of costs and efficiency of such complex mechanisms. Indeed, evaluation systems are very expensive, not easy to develop nor to implement and – not less important- not easy to be accepted. In addition, the potential benefit of relying on more competitive models rest on how much in terms of resources is already allocated through selective systems and to what extent this system has been previously put in place (p. 138), otherwise their efficiency ratio becomes unsustainable. For this reason the British and the Italian case represent the perfect juxtaposition: where the exercise is recent there are margins for efficiency improvements and the benefits gained through the selective systems can outweigh the costs. On the contrary, in countries where competitive funding is already extensive, as in the UK, a further increase in their use may result in minimal benefits which do not cover the additional costs (p. 138).

The seventh chapter *The governance and spatial dynamics of university-industry knowledge transfer* is written by Federica Rossi, Aldo Geuna, Isabel Maria Bodas Freitas, Federico Caviggioli, Paolo Cecchelli and Marco Riva. The chapter reports the main findings of two sample surveys involving firms, inventors and their collaboration with universities, realized by the authors in Piedmont (region in the North-West of Italy) between 2008 and 2010. The novelty of the research projects was to investigate the role that universities play in practice in the support of innovative processes of local firms and their contribution to the economic competitive advantage for the region (p.142). In fact, much of the literature focuses on features of universities and firms but the qualitative aspects of these interactions (the reasons behind and the actual functioning of university-firms partnerships) are often ignored. The findings have important policy implications inasmuch as they show that small firms do take part in the process of knowledge transfer, although through less institutional channels (often disregarded by international literature). In addition, geographical proximity between firms and research centers emerges an important feature when the interaction involves business consultancy and when the knowledge transferred is specific to the firms and to its environment. Thus, policies fostering direct interaction between firm and academic researchers may contribute to increase the innovative potential of firms that traditionally have few or no contact with the academic community and, in turn, the academic community may improve its collaborations with local firms by specializing in the competitive sectors of the region and in organizational and managerial skills.

The final chapter *Conclusions: governance and funding models for universities in transition* presents a useful summary of the main findings of each chapter, discusses some open issues on how to better taking advantage of the multiple contributions of the universities and finally, proposes some policy suggestions for the governance and funding of universities in times of transition. Against the challenge of combining freedom of research and teaching with the efficient management of a complex system in times of scarce public resources, the authors propose a model of governance and funding of universities aimed at combining autonomy, performance-based funding and effective assessment tools with a system of funding and reputational incentives.

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To wrap it up, the book by Aldo Geuna and Federica Rossi provides a thorough overview of the many ways in which universities contribute to economic growth through its key activities, teaching and research and technological transfer. The variety of theory, empirical work and original data reported in the book contributes to systematize a great amount of solid knowledge, which may not be easily accessible or directly usable by a wide public. Moreover, the book contributes to the debate on the restructuring on higher education systems with interesting and targeted policy suggestions for improving fruitful synergies between the university and the economy.



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