



**The Role of
Universities in
Innovation and
Regional Development**

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

WORKING PAPER 02/2017

Sergio Manrique

Department of Business – Universitat Autònoma de Barcelona
SergioAndres.Manrique@uab.cat

Huong Nguyen

Department of Business – Universitat Autònoma de Barcelona
HuongThu.Nguyen@uab.cat



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Marie Skłodowska-Curie grant agreement No. 722295.

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

Abstract

Beside education and research, universities are increasingly recognised as important actors in innovation and regional development. At the same time, in a globalised context, internationalisation and quality of education and research are complementary to each other. Accordingly, there is a need for universities to implement strategies to promote their international engagement. Do regional mission and internationalisation appear paradoxical? This paper explores the phenomena through a case study of the Autonomous University of Barcelona (UAB) and the region of Barcelona city and Catalonia's AP-7/B-30 industrial agglomeration, by analysing UAB's infrastructure, capabilities and its collaborations with external stakeholders such as firms, public institutions and communities. As a top ranked institution in Spain and Europe, UAB has a strong point of view towards the importance of internationalisation focusing on three central actions of mobility, collaboration, and attraction of talent. UAB also aims to contribute to innovation and regional development beyond its educational and research activities. The role of UAB in innovation and regional development has been strengthened especially since 2008 when Barcelona city expressed its particular interests in engaging universities as a joint strategy to improve the international competitiveness of the economy and later in 2009 with UAB's achievement of Campus of International Excellence. The study reveals that UAB has a strong impact by its intensive knowledge spillovers, technology transfer, and several projects developed to solve regional public concerns. Lastly, UAB is increasingly considered as a key stakeholder in negotiating and decision-making process for innovation and regional development.

Keywords: Universities, Innovation, Regional Development, UAB, Barcelona.

JEL: I23; O20; O30; R10; R58

This paper version was presented at the 12th Regional Innovation Policies Conference, which was held in Santiago de Compostela, Spain on October 26th-27th 2017, and is currently under further work and improvement for becoming a book chapter in the framework of RUNIN project.

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

Table of Contents

Abstract.....	2
1. Introduction.....	4
2. Contextualization.....	6
2.1. The University.....	6
2.2. The Region.....	9
3. Current Practices in Research and Innovation.....	10
3.1. Research Activities.....	12
3.2. Collaboration Practices.....	13
4. University Initiatives.....	15
4.1. Creating Social Impact by Immigrants Education.....	15
4.2. Training Change Agents for Sustainable Development.....	16
5. Discussion on University Engagement.....	17
5.1. Passive role.....	18
5.2. Active role.....	19
6. Conclusions.....	20
<i>Case Study Limitations</i>	21
<i>Acknowledgements</i>	21
7. References.....	22

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

1. Introduction

The role of universities in innovation and regional development is a relevant issue for practitioners, politicians and academics, and receives growing attention from different knowledge bodies and disciplines such as economics, sociology, politics and business. Universities have been facing new challenges and changes in their role in society and economy, especially in the last decade. While knowledge production relates more and more to economic competitiveness at -developed and developing- countries and regions, new demands on higher education and national research institutions come up as part of their mission in terms of education, research and, particularly, regional development (Perkmann & Walsh, 2007; Göransson & Brundenius, 2011). This third mission affirms a new role for universities in regional innovation systems (Cooke, Uranga, & Etxebarria, 1997).

The third mission of universities can be reflected through two main concepts of quadruple helix model of innovation and regional innovation systems, among others. The knowledge-based regional development asks for certain types of activities, actors and collaborative practices. On the understanding that such development should not be based on a set of traditional top-down policies but on a complex and multi-actor discovery process, the quadruple helix model is proposed (Kolehmainen *et al.*, 2016). The quadruple helix model encourages the collaboration among university, government, industry and a wider community of civil society/citizens/ users to enhance product and knowledge transfer (Arnkil *et al.*, 2010). It is a general process where the four mentioned stakeholders engage to meet both economic and societal needs with the production of new knowledge and technology (Kolehmainen *et al.*, 2016). The bottom-up initiatives from society reinforced with top-down programs and policies of university, government and firms will lead to the more successful results, other than ignoring the role of any of the four helixes (Etzkowitz, 2003). The role of university in innovation and regional development is also reflected in the regional innovation systems concept. Regional innovation systems are associated with the "*network of institutions in the public and private sectors*" which acts to improve local conditions for technologies and knowledge transfer (Freeman, 1987; Etzkowitz, 2002). In this case, university is considered as a significant actor, even placed at heart of the region's economy (Hudson, 2011). On a separate point, the only requirement to define "*region*" in

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

this concept is that it should have an integrated productive arrangement (techno-economic) and an institutional one (political-legal) (Vilalta *et al.*, 2011). Hence, region is flexibly discussed in current literature as a city, metropolitan area or district/ county inside metropolitan area (Vilalta *et al.*, 2011). The increasing interest in the role of universities in innovation and regional development has also caused a change in the conception of innovation practices in countries and regions. The appearance of new policies involving research and innovation practices is evidence of the interest from regional and local authorities in involving universities and research institutions in the social and economic development of regions. European Union (EU), through the Horizon 2020 – Research and Innovation Framework Programme, has overseen and promoted the regional development of EU Member States basing these efforts in actions and projects with an active participation of higher education institutions (European Commission). In the case of Catalonia region in Spain, the local government has designed and implemented policies and projects aligned with the Horizon 2020, as part of the Research and Innovation Strategy for the Smart Specialisation of Catalonia (RIS3CAT) (Generalitat de Catalunya, 2014).

Universities have roles to play in innovation and regional development, at the same time, it should be noted that in a globalised context, universities are also encouraged to implement strategies to promote their international engagement. It is based on the understanding that internationalisation and quality of education and research are complementary (Association of Catalan Public Universities - ACUP, 2010). It triggers the curiosity on how a university with an internationalisation orientation can significantly contribute to region's innovation and development. This paper reveals the answer for this phenomena through a case study of The Autonomous University of Barcelona (Universitat Autònoma de Barcelona, hereafter referred as UAB). UAB is a public higher education institution located in Barcelona province in Catalonia, Spain. The UAB counts with more than 35,000 students; which is in the third place of Catalan universities in the number of students (OECD, 2010). UAB has become an important actor for its surrounding region and is expected to be a relevant entity for innovation and regional development. The region considered in this study includes the B30/AP7 highway central section, mainly composed by Vallès Occidental county municipalities, which

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

is relevant for UAB due to proximity and collaboration with municipality councils; and Barcelona city, given the historical link between UAB and the town, which is still observed through university-city collaboration and joined research and education projects. UAB has a strong view on internationalisation presented in its mission, which can be considered itself as an internationally-oriented university. As a top ranked institution in Spain and Europe, the UAB also acts beyond its educational and research activities, and develop a strong connection with the external world through collaborations with firms, public institutions and communities. It aims for creating welfare and development in society. This research explores the role of UAB in innovation and the regional development, through a judicious study of its infrastructure and capabilities (innovation potential), and its collaborations with other actors, such as local authorities, industry and society.

2. Contextualization

The first step to understand the role of UAB is going over the characteristics of the university and its region.

2.1. The University

The UAB is considered a young university with less than 50 years of history. It was established in June 1968 when the conception of the university in Europe was evolving due to the nascent access of women and middle-class students to higher education institutions. The political context in Spain was different from the rest of Europe after a civil war and almost thirty years of dictatorship. Apart of a massified university system with a huge disproportion between academics and students, there was also a growing demand of democratic values in its classrooms. In this political turmoil with frequent demonstrations and strikes, it was decided to create two new universities located in Madrid and Barcelona as part of an experiment to develop institutions with some flexibility and independence. This is the reason why these two universities were labelled with the name "autonomous". The Autonomous University of Barcelona (UAB) and the Autonomous University of Madrid, because they had the possibility of limited self-governance to respond to the new societal demands. UAB started its activities with a reduced number of

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

students in improvised and limited facilities. Afterwards, a suitable building land of about 120 hectares, 20 km away from Barcelona town, was acquired by UAB with the support of Barcelona and Sabadell city councils. The autonomous character of the institution, together with the difficulty of developing a new campus within the town, meant a location outside but with a strong link with the city of Barcelona. The university campus was built from scratch in the Bellaterra district with the 4 first faculties: Philosophy and Arts, Medicine, Science and Economics, under a model based on the respect for the basic principles of autonomy, student participation and social commitment (UAB, 2017). With a lot of difficulties these principles were translated into: i) independence in selecting teaching staff; ii) accessible admission of students; iii) freedom to create its own study plans and; iv) freedom to control the University's capital.

After the end of Franco's dictatorship in Spain in the 1970's, the UAB created other faculties in different disciplines, and its research activities became widespread thanks to collaboration with the Spanish National Research Council (CSIC) and the Government of Catalonia, among other institutions (UAB, 2017). In 1990's, cultural and social life became stronger in UAB campus with the inauguration of Vila Universitària as a student village in 1992 and a number of services in Plaça Cívica in 1996. Vila Universitària, with the capacity of more than 2,100 people, is a residential complex located in the campus, surrounded by forest and well-connected with Barcelona City. UAB is among few universities in Spain having the luxury of owning such a complete campus. This decade brought an increase in social responsibility actions and programmes, as an evidence of UAB commitment with society and surrounding communities. After 2000, UAB gave relevance and started developing important activities for knowledge transfer to the productive sector, which led to the creation of the UAB Research Park (Parc de Recerca) in 2007. The last decade brought new challenges for UAB in terms of a great growth combined with an economic recession which also affected public universities finances. However, UAB has maintained as a leading university with the achievement of Campus of International Excellence in 2009 aiming to promote knowledge and innovation. Recently, the university is also one of the first European universities offering massive open online courses (MOOC), considered as an innovative form of teaching. Towards celebrating the 50th anniversary, the UAB has

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

been classified as the leading university in Spain obtaining a maximum score in 26 of the 33 indicators based on the European Commission's U-Multirank. Furthermore, it has been classified in the position nine in the world by QS Top 50 Under 50 Ranking.

The UAB Campus of International Excellence (CIE) sphere includes the UAB core (departments, research groups and scientific facilities), the research and technology facilities (research institutions and centres, new technology based firms) and other territory agents (firms, local authorities and neighbour organizations). Therefore, not only the academic community (students, teachers, researchers and other staff) attends daily to UAB campus, but also many industry-related and government-related people work within university facilities. However, UAB counts with a large academic community composed by 3,517 professor and researchers, 2,348 administrative employees and 37,077 students (including bachelor, master and doctoral levels) in the 2015-2016 academic year. Besides, UAB also attracts around 1,000 visiting researchers and professors annually. To harbour this great population, UAB counts with 55 academic departments of several knowledge disciplines, organized in 14 faculties and schools. In this regard, unlike other universities in Europe, UAB is under a shared governing system with decentralised and democratic structure.

The university hosts several education and research centres and institutions, research clusters, as well as firms (spin-offs, start-ups, new technology based firms (NTBFs) and affiliated and derived companies). UAB Research Park (Parc de Recerca), headquartered in campus, aims to *"promote and enhance the technology and knowledge transfer activities of its members, encourage entrepreneurship through the creation of new businesses based on research and generally facilitate interaction between research, business and society"* (Parc de Recerca, 2017). Its activities are carried around several topics, especially in new technology-based disciplines like biomedicine, climate change and communications. On the other hand, UAB also hosts foundations such as Solidarity Autonomous Foundation (FAS), Association of UAB Friends and UAB Foundation, institutions in charge of

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

October 2012. The municipalities on this stretch of route create the leading industrial agglomeration in Catalonia particularly and in Spain generally (Solà, Sàez, & Termes, 2010). 14 out of those 23 municipalities belong to Vallès Occidental County. B30 covers a 50km route, a surface area of 485km² with the population of 1,018,166, a total of 30,173 companies and 387,478 jobs with 195 industrial estates. B30 is a project promoted in accordance with Catalan economic and industrial policies such as the Research and Innovation Strategy for the Smart Specialisation of Catalonia (RIS3CAT) over the 2014-2020 period and the Industrial Policy Plan of Catalonia for the 2010-2020 period. B30 aims to identify the potential of the area and to implement the joint strategy among companies, research centres, universities, local councils, business organisations, trade union and governing organisations for the industrial and technological development of region. It is important that such representatives work together to promote B30 as the most potential area for innovation of Catalonia, Spain, and possibly one of the best areas in Southern Europe. Additionally, UAB main campus is 20 km far away from Barcelona city, the capital of Barcelona province as well as of Catalonia region. Due to the historical background of university as mentioned above, Barcelona city is claimed as the home of UAB. In this case study, the impact of UAB in the region development is explored putting in the context of B30 and Barcelona city.

3. Current Practices in Research and Innovation

Missions stated by the university should be considered to find out the consistency of its goals towards innovation development of the region. Oriented by the Association of Catalan Public Universities (ACUP), UAB has a strong point of view towards the importance of internationalisation focusing on three central lines of action: mobility, collaboration and cooperation, and attraction of talent (UAB, 2017). Internationalisation is considered as one of the means to achieve the objectives of offering high quality education, research and knowledge transfer (UAB, 2017). Based on such understanding, UAB develops extensive strategic alliances with other higher education institutions through many consortiums and networks. These include over 1,000 partnership links within Europe, many collaboration agreements with Latin America, and several joint programmes with Asian universities (UAB is the first Spanish university has those programmes).

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

Do those missions and actions appear paradoxical to indicate the significant role of university in regional development? The proposed answer is “Not necessarily”. In fact, there are two trends recognised about the role of universities in regional development processes. Some universities indicate their role in improving the regional competitiveness through accessible and valuable education and research, while many universities purely pursue international (or global) approaches to education and research hence possibly ignore the region where they are located (Kolehmainen *et al.*, 2016). Goddard and Vallance (2013, p. 47) argued that the regional and international views are not necessarily contradictory. Universities with an international orientation can also have great impacts on economic development regionally since strong international collaborations serve as the basis to enhance innovation and knowledge transfer in a variety of fields, later affects to the wider economy (Goddard & Vallance, 2013, p. 47). In terms of human capital, international orientation allows to achieve international standards which has both international and local value. For instance, scientific production with international quality by researchers should also serve technology transfer and consultancy at regional level.

In European context, international collaborations –in several fields such as training, research and technology transfer- are usually supported by regions since they consider that such network of excellence will help connecting regional systems, hence, have positive impacts on regional development (Charles, 2006, p. 128). It appears to be the case for UAB since it makes part of ACUP which demonstrates a strong internationalisation orientation observed in its Internationalisation Plan recently (e.g. 2010-2015). In 2009, Barcelona city council also expressed its desire in building UAB as Campus of International Excellence to *“reinforce the international standing of the UAB and of the Barcelona Metropolitan Area, by attracting talented researchers and entrepreneurs”*. The action showed the joint approach to international competition for Barcelona and UAB. Barcelona City's international presence of a wealthy capital is considered as a *“calling card”* for UAB's international cooperation, while university campus development assists the city in attracting knowledge-intensive organisations and employees (Benneworth *et al.*, 2010). In fact, UAB proves itself as a university with a commitment to

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

innovation and regional development through knowledge exchange with industry, society and public sector (government), as will be examined in the next section.

3.1. Research Activities

When having a look at UAB research activities, one can certainly state that it is a research-oriented university, in which maintenance and creation of knowledge are core practices. The scientific production (articles, reviews, editorial materials and preceding papers, among others) at UAB in the last 10 years has had an increasing behaviour, in harmony with the university growth. **Figure 2** shows the positive tendency of research production, especially evident after 2010, with a 50% increase, when the effects of Research Park Creation and Campus of International Excellence development started manifesting, as well as specific efforts from university and faculty directives to enhance research activities.

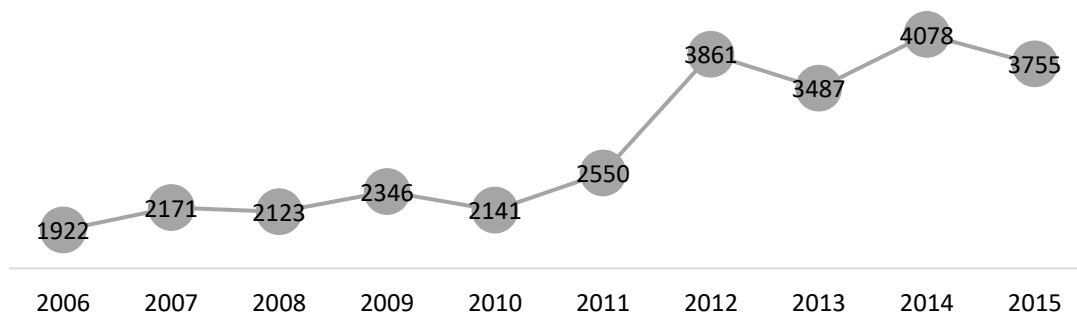


Figure 2 - Scientific Production Evolution of UAB 2006-2015

2014 has been the year with the greatest scientific production (4,078 items), doubling the number of the first years of the analysed period. With more than 3,300 articles published, it is the most representative category in UAB scientific production in 2015. After articles, reviews and editorial materials are the most relevant scientific production items; however, articles represent more than 88% of UAB's production, while the next most important category (reviews) only represents a little more than 5%. The quartile classification of journals where articles produced at UAB were published is an evidence of the quality level of

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

university scientific production, with 54% and 22% of papers classified in the first and second quartiles respectively in 2015. UAB has not only evolved in the scientific production size, but also in the research value and authors assertiveness. The high-quality dominance in UAB scientific production has been a common denominator during the last decade. UAB has been ranked among the best Spanish universities in different rankings related to research activity: 2° in Scimago Institution Rankings World Report -SIR WR 2014- for volume and impact of scientific activity, 2° in Leiden Ranking 2016 for volume of papers, 2° in ISSUE Rankings 2017 for research productivity, and has twelve scientific disciplines among best 100 in the world in QS WUR By Subject 2017 (UAB, 2017).

3.2. Collaboration Practices

In this section, UAB agreements with different stakeholders are studied. The records of number of agreements signed by UAB since 1983 have been provided by the responsible unit at university (UAB Data Exploitation Office, 2017) and can be observed in **Figure 3**.

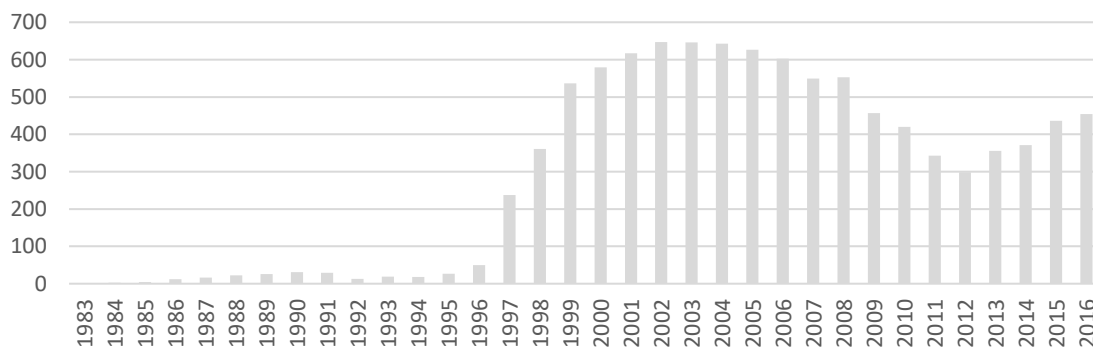


Figure 3 - UAB Agreements Evolution 1983-2016

Data shows that the real launch of university collaboration practices at UAB took place by 1997 (200+ agreements), and got to its highest point in 2003 (646 agreements). Next years showed the effects of economic recession until 2013, when growth is observed again. Last year (2016), 454 agreements were signed. These signed agreements include research and education projects, public

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

innovation programs, patents developments, university services provision and grants/subsidies, among others, either in the framework of university-firm collaboration (Valmaseda-Andia, Albizu-Gallastegi, Fernández-Esquinas, & Fernández-de-Lucio, 2015), or in other collaboration taking place with other region stakeholders like communities and public institutions.

For analysing the country distribution of agreements during the period 2010-2016, **Figure 4** is presented. Spanish institutions and firms represent an 83% of the historic agreements. Excluding Spain, this is the list of countries from which firms and institutions collaborate with UAB, led by USA, followed by France and Belgium.

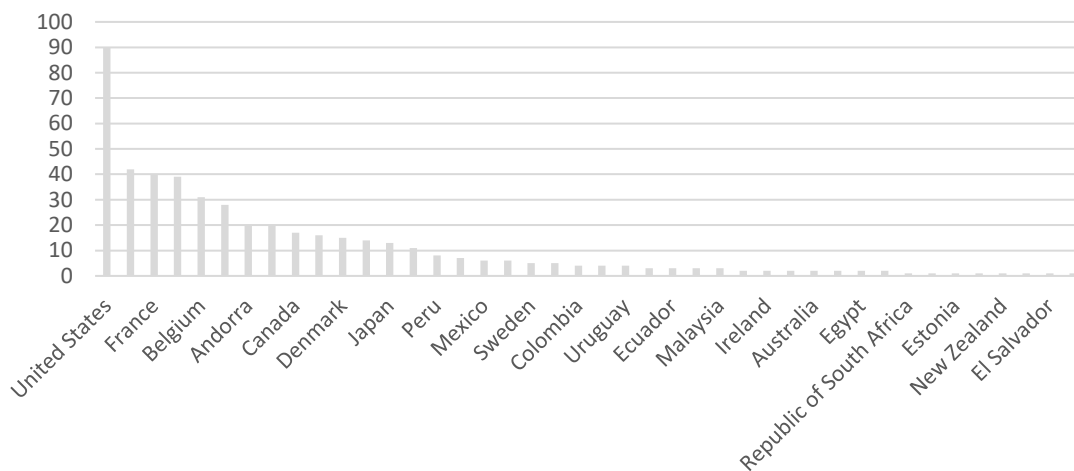


Figure 4 - Country Distribution of UAB Agreements 2010-2016

A 15% of UAB agreements taking place abroad may indicate partly its internationalisation goals. However, most agreements taking place at a national level reflects UAB will to collaborate within its surrounding region. In fact, the UAB Campus of International excellence is *“known for creating highly fruitful relations between neighbouring municipalities”* (UAB, 2017). In fact, many of these relations are seen clearly in areas in which synergies have been created among business, departments, institutes and research centres, through the development of training programmes, services, cultural and sports facilities, enhancing the attraction of

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

talent and creating added value for neighbouring regions. In the case of university-firm collaboration, it should facilitate the innovation and development of products, practices and governance at the firm level, which would in turn lead to a higher performance. Additionally, this collaboration should facilitate the economic growth and social development of the regions where the interaction takes place (Perkmann & Walsh, 2007). The interaction between universities, firms, institutions and citizens require coordination and coherence in their actions to generate an impact within and among regions, like reducing social, economic and territorial gaps.

4. University Initiatives

UAB has developed several projects and programmes in alliance with other regional players including local governments, firms and other higher educations and research institutions. Through these initiatives, UAB has got to generate a positive impact on the region with both education and research activities. This section describes two recent representative initiatives led by UAB.

4.1. Creating Social Impact by Immigrants Education

The **Ítaca Campus** counts with the participation of UAB, the Cerdanyola del Valles (UAB home town) city council, the Institute of Education Sciences (ICE), Santander group and Solidarity Autonomous Foundation (Fundació Autònoma Solidària - FAS). This social-educational programme was promoted by UAB since September 2004, under the management of the ICE and town council with the finance support from Santander group (UAB, 2017). Since 2015, FAS took responsibility to organise the programme. It offers a summer school of 3-4 weeks to local 15-year-old students and primarily aims at non-EU migrants. The training activities take place under the tutorship of university lecturing and research staff from different faculties and affiliated centres appointed under a public selection process.

There was a noticeable flow of immigrants to the region in recent years. The Ítaca Campus was established to respond to the issue of low level of education participation among immigrants. The purposes of the program are: 1) to provide

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

an overview about university life and 2) to encourage students to move to higher education level. The programme also offers the opportunity for students with diverse social background to understand each other while encouraging using Catalan as operational language (OECD, 2010). The pilot plan in 2004 had the involvement of 40 students, but the number of students joining the programme keeps growing. In the 13th edition of Ítaca Campus in 2016, there were 60 participants more than in previous edition, which made it up to 388 students. Up to now, a total of 33 town councils from 7 counties in Barcelona province and 77 centres have participated in the programme (UAB, 2017). The typology and structure of the activities are flexibly designed and changed based on the feedback from monitors, students and staff. The universities and centres which would like to join in the tutorship needs to pass the public selection process; this rule makes the programme more competitive and helps improve the quality of the programme. However, while the programme gets the increasing involvement of students, it is still rather small in scale and should be extended aiming to a variety of participants. Ítaca Campus project contributes to internationalization goals of UAB in terms of training and attraction of foreign talent. Additionally, trained immigrants are meant to become change agents and contribute positively to the development of the region.

4.2. Training Change Agents for Sustainable Development

At an institutional strategic level, UAB counts with three Strategic Research Communities (Comunitats de Recerca Estratègica) in different areas: CORE Smart and Sustainable Cities, CORE Cultural Heritage and CORE Mental Health. These three research communities participate in several initiatives of innovation and regional development in collaboration with other regional players, normally led by UAB. This is the case of **Digital and Green Skills Vallès** (UAB, 2017), a programme born in the first trimester of 2017 that makes part of the Smart and Sustainable Cities CORE. Undertaken by UAB, Western Valley County Council and Eurecat (Technology Centre of Catalonia), this initiative combines training and employment for young people with the promotion of innovative and sustainable economies. This first edition of the programme is aimed at young professionals who are keen to participate in open innovation and co-creation projects motivated by social and economic transformation. Subsidized by the Catalan government and the

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

European Social Fund (ESF), this project seeks to: 1) develop and disseminate digital and green competences -skills- among academics, practitioners, citizens and firms, 2) allow citizens to access digital and sustainable transformation by mobilizing social agents, 3) develop new employment opportunities in unexplored fields, 4) fit new professionals profile into current and future tendencies, and 5) make these professionals become change agents for developing a new economic and social framework. (UAB, Western Valley County Council, & Eurecat, 2017)

This initiative is carried out by the Department of Telecommunications and Systems Engineering, which shares training tasks with Eurecat and other UAB research groups. The programme includes training for potential change agents in technology and green skills (e.g., digital manufacturing, big data, programming), personal and methodological competences (e.g., teamwork, communication, analysis) and entrepreneurship (e.g. leadership, innovation, business models), to be done through talks, workshops and visits to firms. Afterwards, participants are introduced into a network for detection of new opportunities through a platform of open innovation and co-creation. In the end, the programme expects to count with several proposals and pilot experiences to be included in a catalogue, open to firms, which should help participants to improve their profiles and to develop new employment opportunities. Through this initiative, UAB, in alliance with other regional players, gets to cover different work fronts relevant for regional development and university goals. This programme firstly promotes circular economy based on open innovation as a way of economic development (Ghisellini, Cialani, & Ulgiati, 2016) in the region of Catalonia. It also creates employment opportunities and green/sustainable business ideas to be developed, and both region and university can gain competitiveness with this collaboration. The 25 selected participants (out of more than 100 eligible interested applicants), internationally competitive professionals coming from different municipalities of the county, are expected to generate proposals and pilot projects in areas such as 3D printing, internet and product eco-design, among others, with a social impact on the county and a contribution to the improvement of its citizens' life quality.

5. Discussion on University Engagement

There is no doubt that the presence of UAB in B30 area and Barcelona city does have impacts on innovation and development of the region. The role of UAB may be distinguished in two types of passive role and active role. The passive role refers

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

to the pure economic benefits that UAB brings as a large university in the region, while the active role reveals the university's impacts on innovation and regional development thanks to its dynamic activities. Within the framework of this research, the active role is focused since it discloses more clearly the strategy that university is pursuing. However, the passive role is briefly discussed to reinforce the importance of UAB in the region. Generally, compared to centralized university system in some other countries in Europe, the large and decentralized structure of UAB can create a time-consuming and cumbersome decision-making process with the involvement of several stakeholders. However, the decentralized structure is increasingly connected to university's ability to respond to societal needs (OECD, 2010). The engagement of external stakeholders in such organisational structure normally assists in establishing the links with other sectors.

5.1 Passive role

As a top ranked university in Spain, UAB is an important element of economy of B30 area and Barcelona city, especially in the stage when the region aims to become an innovation and knowledge-based economy, in alignment with Catalanian strategy (Marinelli, Elena-Perez, & Alias, 2016). The economic impacts can be evaluated in three forms: university employment and expenditure in regional economy; the positive impacts of student and academic populations on the living and working environment of region; and the human capital effects by providing graduate workers in regional labour markets (Goddard & Vallance, 2013, p. 23).

UAB's employment and expenditure has positive impacts in the economy of the region. As mentioned above, UAB is one of the largest employers in the region, offering up to 6,000 working positions. Furthermore, with the yearly budget of almost 312 million euros, the university is believed to enhance regional economy by spending partly for facilities and infrastructure. Together with 35,000 regular students, the university also attracts around 1,000 visiting researchers and professors as mentioned above, who can impact the economic development of the region through variety of goods and services consumption. The second impact is less tangible where many students and academic staff in the region may also have

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

positive economic impacts by creating an attractive working and living environment. It mainly improves the environment in term of society and culture. The final role of the university noticed in this section is in providing knowledgeable and skilful human capital for the regional labour market with a large number of graduates. Studies suggest that the graduates' presence in the region positively links to levels of regional innovation (Faggian & McCann, 2006). UAB provides approximately 7,000 graduates per year which is 20% of the total students in Catalonia (UAB, 2017).

5.2 Active role

To begin with, it can be confirmed that UAB has strong impacts to innovation and development of the region by its intensive "knowledge spillovers" and "technology transfer". Although some studies argued that the effects of "knowledge spillovers" and "technology transfer" have been overemphasised towards regional development, these two elements stay as one of the primary direct engagements of universities with their regions (Goddard & Vallance, 2013, p. 35). Given the large size of UAB compared to other universities in Catalonia, the university implemented many researches, R&D contracts and services. In addition, UAB also builds important science/research centres and other programmes to promote new business (e.g. spin-offs) and intellectual property (e.g. patents). These investments do not only provide UAB with research and economic incentives, but also assist in accomplishing its role as a significant element in regional knowledge-based economy. In respect to this area, it is worth noticing that UAB actively self-financed the development of its own centres (OECD, 2010, p. 127).

Although human capital effect has been mentioned in the passive role of UAB in innovation and regional development, it is vital to bring the effect back here considering several good practices carried out by UAB. The university succeeds in going beyond its border of a typical university by having active contributions in solving several public concerns in the region. Relevant examples are Ítaca Campus which address the needs of immigrants and tackle cross-cultural issues; and Digital and Green Skills Vallès to train young people in aiming for a sustainable economy. Although the scale of Ítaca Campus is rather small, it successfully illustrates the

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

active role of UAB in integrating their education and research missions with the priority of the region. This suggestion goes along with Charles (2006, p. 128) that the university's special contribution is the "*breadth and potential in joined-up governance*", and should be observed through the ability to connect the research priorities with public concerns, and to include culture activities.

Lastly, UAB is increasingly considered as a key stakeholder in negotiating and decision-making process for innovation and regional development. It is based on the fact that B30 area consistently pursues the strategy of linking local actors for innovation and its development. UAB has actively participated in activities to exchange knowledge with firms, society and the public sector (Urbano & Guerrero, 2016).

6. Conclusions

In general, the main goals of a university can be defined as: maintaining the knowledge of mankind, generating new knowledge (research), transferring knowledge to next generations (education) and to society (dissemination), and generating economic development (Holten-Andersen, 2015). There is no doubt about the compliance and positive role of UAB in terms of education and research both internationally and regionally. This study results indicate noticeable achievements and an enormous potential of UAB for regional innovation and socioeconomic development. The university has succeeded in going beyond its border of a typical university by having active contributions in solving several public concerns in the region. UAB is also proved itself as a key stakeholder in connecting private and public sectors with several initiatives recently putting society/ citizens in the centre of innovation and regional development. However, the role of UAB has some improvements opportunities. Regardless of the existence of numerous contracts and agreements that make evident the presence of university collaboration with other stakeholders in the UAB case, there is no certainty about the impact of this interaction on the performance of firms and on the social and economic growth of B30 area and Barcelona city, due to lack of tracking and assessment. The policy design at regional governance institutions, through projects and programs, counts with the necessary elements to promote

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

and put in practice innovation and economic growth adequately; however, the implementation and follow-up of these actions can be improved, as one can observe a bunch of unchained individual efforts without evidence of cohesion (coordination and coherence) among actors and practices.

Firms in the region of Catalonia in general do not have culture/ideas to collaborate with universities. Several firms may perceive that collaboration with other stakeholders (e.g. university) is costly with long-term investment required while the outputs of those collaborations are not identified clearly (Segarra-Blasco & Arauzo-Carod, 2008, p. 1283). Hence, it is important to effectively manage the interface (e.g. cluster associations), at the same time, develop evaluation framework based on some good practices in the region to encourage the collaborations. It is noted that university funding is partly associated with its impact on society. However, from university's perspective, there is a challenge in the ability of fully engaging in such collaborations. This is due to the fact that the need of publication from university normally does not go along with the priorities and goals of industry or community (Miller *et al.*, 2016, p. 393). Further investigation on how to fit the university mission of regional development, later to specify reciprocal benefits, should be carried out.

Case Study Limitations

Despite this study approaches to the role of UAB in the innovation and regional development of the region, the single case study approach limits the generalizability of the findings. As any other regional system, the Catalan one is complex, and this study has not been able to address all the actors, relations and practices that could lead to different reflections on the subject.

Acknowledgements

Funding: Marie Skłodowska-Curie European Training Network for Early-Stage Researchers. European Commission Horizon 2020 – Research and Innovation Framework Programme.

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

PhD Supervisors: Gratitude to Prof. Emili Grifell-Tatjé and Dr. Pilar Marquès Gou for their advice and guidance on this case study elaboration.

Data Gathering: UAB Data Exploitation Office – Data Management Unit.

7. References

- Association of Catalan Public Universities (ACUP). (2010). *Internationalisation plan of the Catalan public universities 2010-2015*. Barcelona: Nexe Impressions, SL
- Arnkil, R., Järvensivu, A., Koski, P., & Piirainen, T. (2010). *Exploring the quadruple helix. Report of quadruple helix research for the CLIQ project*. Tampere: Work Research Centre. University of Tampere.
- B30 Association. (2017). *B30 Website*. Retrieved from http://www.b30i.cat/B30/p/B30Area_cat.asp
- Benneworth, P., Charles, D., & Madanipour, A. (2010). Building Localized Interactions Between Universities and Cities Through University Spatial Development. *European Planning Studies*, 18(10), 1611-1629. doi:10.1080/09654313.2010.504345
- Charles, D. (2006). Universities as key knowledge infrastructures in regional innovation systems. *Innovation: the European journal of social science research*, 19(1), 117-130.
- Cooke, P., Uranga, M., & Etxebarria, G. (1997). Regional innovation systems: institutional and organizational dimensions. *Research Policy*, 26, 475-491.
- Etzkowitz, H. (2002). The Triple Helix of University-Industry-Government Relations - Implications for Policy and Evaluation. *Working Paper*, 11.
- Etzkowitz, H. (2003). Innovation in innovation: The triple helix of university-industry-government relations. *Social Science Information*, 42(3), 293-337.
- European Commission. (n.d.). *Horizon 2020: The EU Framework Programme for Research and Innovation*. Retrieved April 2017, from <https://ec.europa.eu/programmes/horizon2020/>

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

- Faggian, A., & McCann, P. (2006). Human capital flows and regional knowledge assets: a simultaneous equation approach. *Oxford Economic Papers*, 58(3), 475-500.
- Freeman, C. (1987). *Technology and Economic Performance: Lessons from Japan*. London: Pinter Publishers.
- Generalitat de Catalunya. (2014). RIS3CAT: Research and Innovation Strategy for the Smart Specialisation of Catalonia. *Catalan Ministry of Economy and Knowledge, Policy Document*. Retrieved from http://catalunya2020.gencat.cat/web/.content/85_catalunya_2020/documents/angles/arxiu/07_ris3cat_2014_en.pdf
- Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114, 11-32. doi: 10.1016/j.jclepro.2015.09.007
- Goddard, J., & Vallance, P. (2013). *The University and the City*. New York: Routledge. Regional Studies Association.
- Göransson, B., & Brundenius, C. (2011). *Universities in Transition: The Changing Role and Challenges for Academic Institutions*. Ottawa, Canada: Springer. International Development Research Centre.
- Holten-Andersen, P. (2015, March). Copenhagen Business School - President Article. *The Role of Universities in Modern Societies*. Copenhagen, Denmark: CBS - Senior Management News. Retrieved from <http://www.cbs.dk/en/about-cbs/organisation/senior-management/news/the-role-of-universities-in-modern-societies>
- Idescat. (2017). *Statistical Institute of Catalonia (Idescat) Website*. Retrieved April 2017, from Official Statistics Website of Catalonia. Vallès Occidental, the municipality in figures: <http://www.idescat.cat/emex/?id=40&lang=en>
- Kolehmainen, J., Irvine, J., Stewart, L., Karacsonyi, Z., Szabó, T., Alarinta, J., & Norberg, A. (2016). Quadruple Helix, Innovation and the Knowledge-Based Development: Lessons from Remote, Rural and Less-Favoured Regions. *Journal of the Knowledge Economy*, 7(1), 23-42.

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

- Marinelli, E., Elena-Perez, S., & Alias, J. (2016). Universities and RIS3: the case of Catalonia and the RIS3CAT Communities. JRC Science for Policy Report. *Joint Research Center - European Commission. Smart Specialisation Policy Brief, 18*.
- Miller, K., McAdam, R., Moffet, S., Alexander, A., & Puthusserry, P. (2016). Knowledge transfer in university quadruple helix ecosystems: an absorptive capacity perspective. *R&D Management, 46*(2), 383-399.
- OECD. (2010). *Higher Education in Regional and City Development: Catalonia, Spain*. OECD Publishing.
- Parc de Recerca. (2017). *UAB Research Park Webpage*. Retrieved May 2017, from <http://www.uab.cat/web/about-the-park/-strong-uab-research-park/-strong-1345674962855.html>
- Pareja-Eastaway, M., & Pradel-i-Miquel, M. (2010). New economy, new governance approaches? Fostering creativity and knowledge in the Barcelona Metropolitan Region. *Creative Industries Journal, 3*(1), 29-46.
- Perkmann, M., & Walsh, K. (2007). University–industry relationships and open innovation: Towards a research agenda. *Journal of Management Review, 9*(4), 259-280.
- Ray Hudson. (2011). From Knowledge-based Economy to ... Knowledge-based Economy? Reflections on Changes in the Economy and Development Policies in the North East of England, *Regional Studies, 45*:7, 997-1012
- Segarra-Blasco, A., & Arauzo-Carod, J. (2008). Sources of innovation and industry–university interaction: Evidence from Spanish firms. *Research Policy, 37*(8), 1283-1295.
- Serra-Ramonedà, A. (2008). Dos tiempos, dos contextos: el nacimiento de una nueva Universidad (Two times, two contexts: the birth of a new University). *Inaugural session of the 2008 academic year*. Barcelona, Catalonia, Spain: Universitat Autònoma de Barcelona.
- Solà, J., Sàez, X., & Termes, M. (2010). *Estructura industrial i tecnològica dels municipis del tram central de la AP-7/B-30* (Vol. Document d'Economia Industrial # 36). Barcelona, Catalonia, Spain: Centre d'Economia Industrial. Universitat Autònoma de Barcelona. doi: ISBN 978-84-935324-7-5

Balancing Regional Engagement and Internationalisation

The Case of Autonomous University of Barcelona

- UAB. (2017). *Autonomous University of Barcelona Webpage*. Retrieved April 2017, from About the UAB: <http://www.uab.cat/web/about-the-uab-1345666325480.html>
- UAB Data Exploitation Office. (2017). *Spanish and Foreign Firms with Signed Agreements 2010-2016*. Cerdanyola del Vallès: Universitat Autònoma de Barcelona.
- UAB, Western Valley County Council, & Eurecat. (2017, March). *Digital & Green Skills Vallès: For a sustainable economy*. Retrieved October 2017, from <https://digital4circular.com/>
- Urbano, D., & Guerrero, M. (2016). *Autonomous University of Barcelona - HEIBusiness/External relationships for knowledge exchange*. Retrieved May 2017, from HEInnovate. An initiative of the European Commission's DG Education and Culture in partnership with the OECD Local Economic and Employment Development Programme (LEED): <https://heinnovate.eu/en/resource/autonomous-university-barcelona-hei-businessexternal-relationships-knowledge-exchange>
- Valmaseda-Andia, O., Albizu-Gallastegi, E., Fernández-Esquinas, M., & Fernández-de-Lucio, I. (2015). La relación entre las empresas españolas y el CSIC: motivaciones, mecanismos y beneficios desde la perspectiva empresarial. *Revista Española de Documentación Científica*, 38(4), E109. doi:10.3989/redc.2015.4.1263
- Vilalta, J., De-la-Rubia, M., Ortís, M., Martín, M., Berbegal, J., & Betts, A. (2011). Using the economic crisis as an opportunity for engaging universities in regional development. *Background report of the First EU-DRIVERS Annual Conference*, (pp. 1-34). Barcelona.