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The Pathways and Challenges of University Engagement: Comparative Case Studies in Austria

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The Pathways and Challenges of University Engagement: Comparative Case Studies in Austria

(book chapter by Harvey Goldstein, Verena Peer, and Sabine Sedlacek)

1 Introduction

Research universities fill a variety of roles within contemporary society (Goldstein, Maier, Luger (1995). Arguably the most important role has been providing advanced education to a segment of the population so that they have the requisite know-how to enter the professions. A second has been to generate knowledge through research that leads to scientific progress over time and indirectly often leads to productivity growth in the economy. These have been the traditional missions of research universities since their founding in the late 19th century.

An additional role of universities, often called the 'third mission', has recently become more prominent in Europe and North America, although its genesis can be traced back to the land-grant idea of the Morrill Act of 1864 in the U.S. Its recent increased emphasis relates to the recognition that in the increasingly competitive, global economy, knowledge capital has become widely recognized as the critical factor for long-term productivity growth and economic competitiveness. As such there has been increasing pressure for revising the historical social covenant between universities and societies, as articulated by Parsons and Platt (1973), so as to provide knowledge of wider value, beyond the ivory tower (Benneworth and Sanderson 2009). This pressure to revise the division of responsibilities of the university within society, not by accident, has coincided with the 'entrepreneurial turn' of higher education (Goldstein 2010). The 'third mission' literature refers to interactions between university researchers and external, non-academic organizations that are initiated and maintained either by the university as an organization or by its individual researchers (Perkman et al. 2013). We view this concept of the 'third mission' as encompassing a subset of the dyadic relationships in the triple helix model (Etzkowitz and Leydesdorff 1997). The non-academic organizations can *in principle* be businesses, government agencies, research institutes, or NGOs, though in practice they veer towards large corporations with well-developed R&D capability.

The term 'university engagement' has sometimes been used synonymously with 'the third mission'. In this chapter, however, we use it to describe a more restricted set of university interactions with external organizations. The conception of university engagement here is the use of know-how and expertise within universities for regional problem-solving, leadership, and the enhancement of regional development through the strengthening of the regional economy and civil society. This restricted definition can include technology development and technology transfer to businesses, but the geographic focus is the *region* in which the university is embedded, and the ultimate purpose is to build and sustain a healthy social economy in the region. In this sense we may refer to our conception as 'public engagement'. Here the term 'public' refers not to working for government organizations, but to acting towards enhancing the public, or 'common' good. Also, while the primary motivation of engagement should be directed to enhancing regional development, we recognize, in the case of public universities, that such activity helps to legitimate and maintain government funding for universities in an era of tight public budgets. In the cases of *both* public and private universities, successful efforts in

regional development help to make the city/region more attractive for inducing the 'best and the brightest' faculty, researchers, and graduate students to locate there within the increasingly competitive world of higher education.

With many regions facing challenging development problems, and the concentration of know-how and expertise across a wide range of fields within research universities, we ask why some universities become more active in engagement than others, and why some universities are more able to be successful in enhancing regional economic and social development through their engagement activities. We posit that the possible factors include institutional characteristics of the university, the particular leadership of the university, the region's economic structure and condition, and the demands placed on the university by various external stakeholders.

Among the possible institutional characteristics are:

- (i) the university's designated mission, often stipulated by (or in some cases negotiated with) the relevant government ministry,
- (ii) the type of university in terms of areas of expertise and range of subject areas (e.g., classical scholarly, technical, business/economics, medical), (
- (iii) the set of rewards/incentives in place for faculty to be involved in engagement activities, and
- (iv) the extent to which individual institutes or departments units have discretion or relative autonomy over the implementation of university policies.

It has been noted that distinct from the official mission and policies of the university, it is the particular leaders of the university that affect whether it becomes highly engaged or not. Does the rectorate have a strong interest in and vision for the university being engaged? Does the rector have the ability (charisma) to convince the faculty and staff to adopt and work for this vision? Are the university leaders already well-connected to external political and business leaders?

The regional economy in which the university is located may consist of competitive and innovative industry sectors and firms, or it may have an unfortunate legacy of an older industrial structure which is presently in decline. The key industries of the region may match well with the technical areas of expertise within the university, or on the other hand the match may be missing.

Finally many universities now feel the demands being placed upon them have outstripped the resources they have to fulfill all demands. If so, this requires either making tradeoffs among them, or else becoming highly entrepreneurial in attracting additional resources. If the former, then the university may feel it has to forego engagement activities because it has fixed obligations for teaching. With budgetary pressure, externally funded research may have higher priority than engagement since the latter often requires uncompensated resource expenditure. The region's particular political structure and political actors may make a difference in which engagement activities the university prioritizes, although in Austria the public universities tend to stay removed from political parties.

To summarize, there are a large number of potential factors that may shape and explain the variation in universities' commitment to engagement, the approaches they take, and success in their efforts. Our aim is to try to shed more light on which factors seem to be most salient.

The next section provides a selected literature review and a loose conceptual framework, followed in section 3 of a description of the empirical approach we have employed. Sections 4 and 5 describe the results our two case studies. In section 6 we compare our two cases and then interpret the meaning of the compared results for our understanding of university engagement. The last section provides concluding remarks and suggestions for further work.

2 Brief Literature Review and Conceptual Framework

There is an extensive literature on university engagement, albeit much of it using the broader definition that includes knowledge commercialization and academic entrepreneurship. Breznitz and Feldman (2012), for example, have identified in the context of the U.S. university engagement roles as knowledge transfer (which includes knowledge commercialization in the form of patents and licenses), policy development, and local economic initiatives, which might include workforce development, community development, and real estate development. In Europe, The League of European Research Universities (LERU) have identified 'public engagement' more narrowly. Public engagement for the LERU is described as academics contributing their expertise to public bodies so as to assist in the development of evidence-based, and more effective public policies, so as to "seek to improve the common good" (Boulton and Lucas 2008, p. 7).

In the U.S. the idea of the 'engaged university' is perhaps best exemplified as the 'Wisconsin idea' (Ward 1992), which explicitly states that the public university's primary mission is service to the state. What makes this vision of the public university particularly intriguing is that serving the state and being 'world-class' in knowledge production are NOT contradictory. A more recent description of the idea of the engaged university comes from the CIC Committee on Engagement (2005): ". . . the partnership of university knowledge and resources with those of the public and private sectors to enrich scholarship, research, and creative activity; . . . prepare educated, engaged citizens; strengthen democratic values; address critical societal issues; and contribute to the public good."

It has been noted by Clark (1998) that engagement is more often than not a peripheral activity of universities; it will remain peripheral until institutional change within universities provides for long-term and stable funding streams. Goddard and Valliance (2011) have identified a number of barriers to public engagement faced by university leaders in the context of the UK. These include resource constraints, but also that universities are NOT located within local political spheres, and therefore are not able to exert significant influence, compounded by the difficulty of forming strong relationships with political leaders because they often have short political 'lives'. They also describe external organizations often have a perception of universities as being unreliable, inefficient, or mostly self-serving, and hence are discouraged from forming collaborative relationships

Fontes and Coombes (2001) have found the problem of initiating collaboration between universities and businesses is increased if there is little match between the region's economic sectors and the areas of university specialization and expertise.

Gunasekara (2006) makes the distinction between university provision of direct services to external organizations, such as technical or managerial assistance to a particular company, which he calls a generative engagement activity, and a developmental engagement activity in which the university works to change the nature of the regional environment, by say, working with policy makers to fashion more effective policy instruments to support economic development.

A number of studies have examined the attitudes and motivations of individual academic researchers to become engaged, although again, engagement in these studies is heavily tilted toward academic entrepreneurship and patenting. D'Este and Perkmann (2010) found that collaborative research (university-industry) is motivated by research considerations, i.e., for learning and access to resources needed to conduct the research, while patenting and entrepreneurship are primarily driven by monetary incentives.

Ponomariov (2008) asked which university characteristics influence the propensity of individual scientists to interact with industry. The propensity was found to be negatively related to the university's academic ranking. Ponomariov and Boardman (2008) found that university researchers who already have informal interactions with industry researchers are more likely to become involved in collaborative research. Kenney and Goe (2004) found that being embedded in a department with a culture that is supportive of engagement can help counteract disincentives by the larger university environment.

To summarize, the extant literature collectively cites a number of factors that have affected both the interest and success of universities in engagement, as well as of individual researchers, but much of it is based on the activities of knowledge commercialization, which is not the focus of our concept of public engagement. Neither have we found a compelling theoretical framework that provides a systematic set of hypotheses about which factors, among many, are most important. Indeed, it seems that many factors are highly interactive and are difficult to disentangle from one another. However, our own experiential knowledge of working as faculty members and serving in various administrative positions within research universities, combined with the findings of studies on academic entrepreneurship, lead us to hypothesize that interest and commitment to engagement is a (university) cultural phenomenon. The many potential factors mentioned earlier can lead to a culture that is conducive to university commitment to public engagement (and maybe success), or not. There is not, however, one recipe for how this conducive culture can be built and maintained in part because of the effect of institutional histories and the interaction among institutional characteristics, leadership and vision of individuals, and conditions in the external environment. Our empirical study probes how such a conducive culture can be developed using two cases of public universities in Austria.

3 Empirical Approach

To study the commitment to, and success of, university engagement in Austria, we have selected two universities as cases: the Karl Franzens University (KFU) in Graz, Styria, and the Johannes Kepler University (JKU) in Linz, Upper Austria.

These particular universities were chosen so as to have some commonalities among the hypothesized factors and thus to control for these, and to deliberately have variation in other factors. Both universities are comprehensive in that there are faculties that span the classical disciplines in the

humanities, social sciences, and natural sciences, plus additional faculties in law, theology, etc. Although legally and fiscally they are federal government universities, both are popularly considered 'regional universities', located in provincial capitals and drawing a high percentage of their students from Styria and Upper Austria respectively. They are both medium size institutions in terms of the number of students and faculty when compared to the considerably larger public universities located in Vienna.

On the other hand, they vary considerably in age: the KFU in Graz was founded in 1585, while the JKU in Linz was only founded in 1966. Graz has several other major research universities, including the Technical University of Graz, while the university in Linz is the only research university in Linz and Upper Austria. The respective regional economies and their economic histories also differ in some important ways: while they are both examples of 'restructuring older industrial areas', their sectoral compositions are different (and which are described in more detail in the next two sections).

There is one critical event that profoundly changed the 'game' and institutional character of all public universities in Austria. A series of changes in the federal law that governed public universities, starting in 1999 and culminating in the University Act of 2002 (UG 2002) gave all public universities a significant increase in autonomy from the prior strict control of the federal Ministry of Science (Österreichischer Wissenschaftsrat 2009). Starting in 2004, the rectorates of the individual universities were given the authority to write and internally approve their own university development plans, and based upon negotiations with the federal ministry, sign a performance agreement and receive a lump-sum budget allocation from the federal ministry. While there were constraints imposed by the federal ministry, particularly in terms of teaching responsibilities, universities were for the first time able to decide their own priorities, goals, personnel, and budget allocation among activities. In essence, this 2003 change in the law governing public universities provides us with a natural experiment to observe, from the same starting point, to what extent different universities prioritized engagement.

The primary data sources were: (i) the websites of the respective universities, city governments, and regional governments; (ii) official documents concerning the respective universities including their development plans and performance agreements with the federal ministry; and (iii) interviews with key informants within the respective universities, city and regional governments, and semi-public and other interest-group organizations. The interviews were mostly conducted in-person (a few were conducted by phone) using loosely structured questionnaires that varied depending upon whether the interviewee was from the university sector, government sector, or third party sector. The average length of interview was between 60 and 75 minutes. There were eight interviews conducted in the case of KFU/Graz/Styria and eight for JKU/Linz/Upper Austria. Interviews were conducted during the period of May to July 2016 and were each recorded and transcribed. The list of interviewees by title and affiliation are in the appendix. Drafts of our interpretation of the information collected during the interviews were sent to the interviewees as a check on our accuracy and validity.

4 The Case of Karl Franzens University of Graz

4.1 Brief description of the university and the economy of the city and region

The Karl Franzens University of Graz is one of four universities in the provincial capital of Styria and is the second oldest university of Austria (founded in 1585). With 32,500 students (50% originating from Styria; 80% from Austria) and around 4,300 staff and faculty members, it contributes significantly to the local economy (University of Graz 2016) and the university is an important employer for the provincial capital city Graz. As a full university with six different faculties it offers a wide range of different study programs (120 study courses) and counts 3,500 graduates per academic year. After its autonomy in the year 2004 (all public universities in Austria became autonomous) the university changed its organizational structure and the medical faculty became an independent university. The annual budget accounts for 216 million euros including federal funding, third-party funds for research, and student fees.

Urban and regional development is one of the defined objectives of the university. One of the strategies to achieve this objective is to initiate and maintain cooperation with other academic institutions and businesses. In order to strengthen local and regional development the university has acquired a special position in the southeastern European region. The university promotes interdisciplinary partnerships especially within the network of the Styrian Higher Education Conference¹ ("Steirische Hochschulkonferenz") where five universities, two universities of applied sciences and two pedagogical HEIs successfully network with the aim of strengthening the HEI location Styria. Within the network of universities in Graz, KFU, the Technical University of Graz, the Medical University of Graz and the University of Music and Performing Arts Graz have founded an initiative at the city level under the name 'Sustainability4U'² in December 2008. The four presidents signed a cooperation agreement with the aim of contributing to and supporting the network of universities on their way to sustainability. Each university nominates three responsible stakeholders of their own institution as their representatives. KFU nominated the sustainability representative, the sustainability coordinator and the head of the RCE (Regional Center of Expertise) Graz-Styria, which has been founded in 2007. The RCE Graz-Styria is one key-actor for outreach activities aiming at establishing long-term regional activities and transformative education and fulfills the role of a knowledge transmitter (Sedlacek 2013).

KFU started quite early to integrate sustainability into its mission and vision. In the year 2005 the vision of "The Sustainable University"³ was integrated and assessed along the Global Reporting Initiative (GRI) guidelines (GRI 2011). This sustainability focus shifted towards social responsibility where the university detected the importance of bringing local and regional stakeholders closer to the institution, especially within the concept of life-long learning, where the university offers a comprehensive range of adult education courses for all generations.

The current rector, Prof. Dr. Christa Neuper, became the first female rector at KFU, elected in 2011. Her team consists of four vice-rectors. Of these, Ao.Univ.-Prof. Dr. Martin Polaschek (vice-rector for study and teaching) and Dr. Peter Riedler (vice-rector for finance, resources and location development) were considered to be most relevant for our study and both consented to be interviewed at length. Vice-rector Polaschek is one of the longest serving vice-rectors at KFU, as he had already served on the former rectorate team under rector Prof. Dr. Alfred Gutschelhofer (2003-2011). With Vice-rector Dr. Peter Riedler, the university gained an experienced expert who already functioned as

¹ See <http://www.steirischerhochschulraum.at/die-steirische-hochschulkonferenz/>

² See <http://www.sustainability4u.at/>

³ For more information see <http://www.uni-graz.at/en/university/interdisciplinary-affairs/sustainable-university/>.

economic advisor in the federal and regional government and worked for the automotive industry in Graz.

The city of Graz has four universities, two universities of applied sciences and two pedagogical HEIs. A total of almost 60,000 enrolled students (50,735 university students) live in Graz, the capital city of the federal province of Styria. (Graz Wirtschaft 2015). Given a total population of 274,207 in Graz the city population consists of almost 22% students (WIBIS Steiermark 2016), which indicates the importance of the tertiary sector in the city of Graz. Higher education institutions (HEIs) are therefore also one of the biggest employers with more than 10,000 employees in the city (Graz Wirtschaft 2015). The city promotes education with the slogan ‘Graz educates’⁴ and presents itself as a young and dynamic city with a lot of educational facilities. Graz is a very attractive science and research location and hosts besides the above mentioned HEIs other research institutions including Joanneum Research, Christian Doppler Laboratories, Institute for Space Research (IWF, Academy of Science). It is a hub for collaborative research where 14 out of 23 (47 in Austria) competence centres (Comet – competence centres for excellent technologies⁵) in Styria are located. Furthermore Graz is considered as the engine of start-ups for the surrounding region (“Graz als Gründungsmotor der Steiermark”, Graz Wirtschaft 2015). 23% of all start-ups in Styria are located in the city of Graz. The majority of the newly founded businesses (89%) belong to the service sector which is a general trend in urban agglomerations. Business consulting, architectural and consulting engineers are the most frequently founded start-ups (Graz Wirtschaft 2015).

Table 4.1: Regional Descriptive Statistics

	Graz	Styria	Austria
Population 2014	274,207	1,221,570	8,584,926
Employees 2015	179,963	477,477	3,448,745
Share on Austrian unemployment 2015 (%)	4	13	100
Unemployment rate 2015 (%)	13	8	9
Employers 2015	10,644	40,308	295,462
Enrolled students 2015	59,735	54,929	375,911
Start-ups 2015	1,380	5,892	39,563
Ratio of population to Start.ups (inhabitants per start-up)	198,7	207,3	216,9

Sources: WIBIS Steiermark 2016, uni:data; WKO Steiermark 2016

4.2 Stated commitment and policy towards engagement

⁴ See <http://www.graz.at/cms/ziel/4518272/EN>

⁵ See <https://www.ffg.at/programme/comet-competence-centers-excellent-technologies>

KFU is perceived as an important economic player in the city of Graz as it has been already quite active in promoting engagement within and outside the university since it became autonomous in the year 2004. It was the initiation of the former rector Prof. Dr. Alfred Gutschelhofer who created the slogan 'university partner for life' ("Lebenspartner Universität") in the early days of the university's autonomy. His idea was to define life-long learning and being a partner for industry as important engagement goals which are still in place under the current rectorate. The idea is not solely prioritising third-party funding, it is more interpreted in a way to convince opinion leaders that KFU is an important organization in Styria contributing in the long run significantly to the local economy. In essence it is seen as an investment into the future and can be seen as the overall mission of the university. Even though as all other public universities in Austria, KFU is not fully dependent on the region but the local and regional actors in Graz and Styria know that they benefit to a certain extent from the know-how of the universities in the region and in return the university benefits from close collaboration with local and regional actors. So it seems to be perceived as a win-win situation.

Local development as part of the engagement function is one of the core goals within this new mission which includes cooperation with other HEIs as well as industry. Here it is especially the rector who fulfils a key-role in keeping in touch with politicians and managers in industry but the university decided in 2011 to define city and regional development as a new function in the current team of the rectorate. Vice-rector Dr. Peter Riedler is responsible for finance, resources and local development. One of his responsibilities is to develop projects with the regional industry and here more specifically linked to cluster development. City/regional development is part of the three year (2013-2018) performance agreement of the university with the ministry, which makes this area part of the university's mission but with taking care of the principle of academic freedom.

Another defined goal besides life-long learning is the university's commitment to ecological, economic, and social sustainability (KFU 2015). Life-long learning falls under the responsibility of the "Uni Graz for Life" unit which is organized as an independent legal economic entity (GmbH.) and offers similar to other Austrian universities education for externals or more generally for citizens. They develop programs adapted to the needs of the city and region. An example here is a cooperation agreement with the Styrian parliament ("Landtag Steiermark") whereby the university and the parliament agreed upon three main pillars of their close cooperation: Further education and training for delegates, traineeship for students in the parliament, and joint events. Within the first round of this cooperation period a master program for public administration (MPA "Parlamentarismus und Landespolitik") has been successfully launched where the first alumni graduated in early 2016. KFU incorporated the 7th faculty for opening the university to the public which falls under the declared goal of communication of science in the current development plan and hosts initiatives like "Science to Public" (KFU 2015).

While the university states it supports employees who are interested in becoming more active in engagement, there are no *specific* incentive mechanisms in place. This means more concretely that the university leaders do not actively encourage employees to become more engaged but are willing to support those who want to participate in engagement activities when it comes to a shortage of time for teaching or other obligations within the core functions of the university. One example is the contribution of one professor within the "Science Busters"⁶ activities which is relatively time intensive

⁶ See <http://www.sciencebusters.at/>

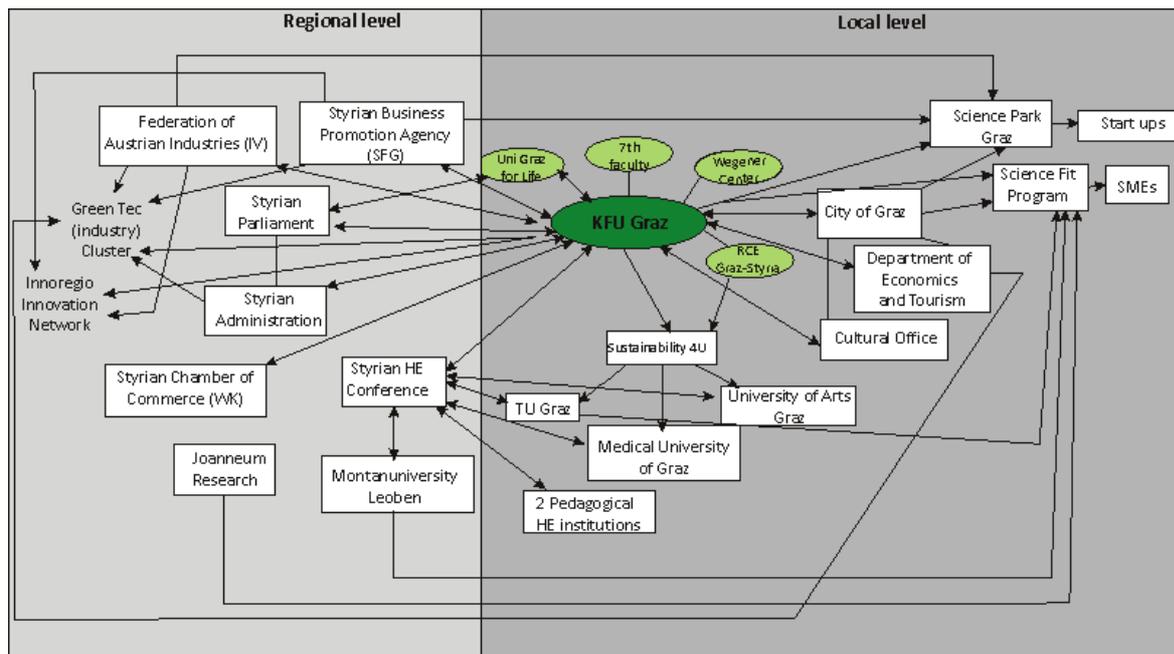
but the university sees it as a chance to present the university to the public which in this particular case goes far beyond the regional borders.

4.3 KFU's engagement activities

When it comes to the institutional understanding of engagement, the rector officially represents the university in the public but the whole rectorate team decides together who represents the university best at which event or activity. So it is understood as a joint responsibility. In addition there is no existing institutional representation of university members outside of the science and research realms. Political (government) and university agendas are strictly separated which results in the university not being institutionally represented on formal boards in the local or regional governments. Engagement at the local or regional level is therefore understood as collaboration between specific persons in the university and organizations shown in Figure 4.1.⁷

There is one official cooperation agreement between the university and the provincial parliament in place which is organized at the operational level by the "Uni Graz for life" initiative (mentioned earlier) within the university. This initiative goes back to the former president of the provincial parliament, who is also an alumnus of Karl Franzens University, and initiated the cooperative project five years ago. KFU has the second largest law and economics faculty in Austria, and thus many political leaders in Styria have a degree from the university and hence maintain contacts and working relationships with university officials. While this project focuses on short-term issues driven by the political cycle and not on longer-term development goals, this cooperative agreement has been recently renewed under a new political composition of the provincial government. It might therefore serve as an instructive example of how political and higher educational organizations can bridge their separate interests in becoming effective in regional problem-solving.

Figure 4.1: Engagement Linkages of KFU



In the city of Graz the mayor fosters knowledge transfer activities with all universities as well as with the universities of applied sciences. There are several activities going on where the city collaborates with the various rectorates. There is one particular program the 'Science Fit Plus' program focusing on SMEs where the City of Graz, TU Graz, KFU, Montanuniversity Leoben and Joanneum Research are actively involved. Besides these multi-university collaboration activities, the city of Graz is particularly collaborating with Prof. Gutschelhofer and sees him as a strong partner for start-up related city led initiatives. One overarching activity between the city of Graz, the Landtag Styria ('Referat für Wissenschaft und Forschung') as well as the Styrian chamber of commerce is the "Champions Day" where businesses are presenting themselves at universities.

There are other engagement activities in which where the university is represented not institutionally but by individual faculty. One example is the Green Tec (industry) Cluster⁸ where Prof. DI Karl Rose of KFU's Institute of Management and Entrepreneurship is a member of the strategy team. The shareholder committee consists of representatives of the city (Department of Economic and Tourism Development, see Figure 1) and provincial administration as well as organizations (SFG, see figure 1) and private businesses.

Furthermore KFU is represented by rector Prof. Dr. Christa Neuper in the Innoregio innovation network⁹. Rector Neuper is a member of the steering group together, inter alia, with Mag. Dr. Thomas Krautzer (IV Styria, see Figure 4.1) and Gerd Holzschlag (SFG, see Figure 1). The members of the steering group meet regularly to discuss and develop innovation strategies for Styria. All of the region's universities tend to be present and collaborate with industry, interest groups and other involved organizations. This can be seen as a fruitful vehicle to develop an entrepreneurial spirit within the universities and to make scientific discoveries more accessible to technology-oriented businesses in the region. At the moment SFG is specifically cooperating with KFU with the goal of establishing a new incubator for the city of Graz. The project is currently in the development phase and the final goal will be a new incubator which should function as a hub for innovation and start-ups in the city. On the labor qualification side, SFG is collaborating with the institute of management and entrepreneurship (Prof. Gutschelhofer) and Uni for Life in the KFU.

4.4 What difference has university engagement made on the region?

KFU's impact should be viewed and understood within the context of the changes within Styria over the last 20 or so years. Over this time period technology transfer had been identified as a critical element for Styria to participate and thrive in the knowledge-based economy. Hence there was an instrumental interest on the part of government and business leaders for bringing the region's universities and other research institutions closer to industry. This has been interpreted by many of our interview partners as bringing about changes in the universities' missions and mind-sets; there were many activities initiated within Styria in which universities became important stakeholders within the Styrian innovation system. There are a number of actors within KFU who view themselves as actively contributing to so-called the triple helix model (Etzkowitz and Leydesdorff 1997, 1998). For example the Wegener Center for Climate and Global Change¹⁰ works on solutions to regional problems and

⁸See <https://www.greentech.at/strategie/>

⁹ See <http://www.innoregio.at/>

¹⁰ See <https://wegcenter.uni-graz.at/en/>

consults policy in implementing adaptation and mitigation mechanisms in order to meet the climate change goals at the federal and regional level. Or for example Prof. D.Dr. Michael Steiner (Institute of Economics) who is a key-player for visioning and planning the economic development future in the region and can be seen as an important stakeholder in regional governance and has been involved in the Styrian cluster initiative.

Cluster strategy development in Styria has been an important set of engagement activities at KFU. In particular, it became quite active in the formation of the biotechnology cluster, when the faculty in the relevant disciplines perceived benefits for their standing and stature within the university, but this also occurred for other departments involved in other clusters. Previously the Technical University-Graz dominated involvement in regional industry clusters with its long-standing academic involvement in technology development for regional industries. But with the granting of autonomy, such involvement was perceived as an opportunity by other universities. At this time the KFU rector, Prof. Dr. Alfred Gutschelhofer, who by many accounts had a strong interest in collaboration, initiated a cooperative venture with TU-Graz for the formation of NAWI-Graz¹¹ in which teams of physicists, biologists, chemists, and mathematicians spanning both universities were assembled to work collaboratively on basic research. This can be seen as an engagement starting point for KFU since the former rector Gutschelhofer incorporated it into the university's official mission.

Although this early collaboration proved to be extremely successful, it also became apparent there were obstacles for replicating this model throughout the university since KFU covers because so many different disciplines for which the benefits for such collaboration were difficult to imagine by the faculty and other researchers. One direction that has gained traction has been to increase interdisciplinary research with applications to real-world problems. This has the advantage of providing a wider range of ways in which researchers from the humanities, social sciences, law, etc. can contribute their expertise and enhance their scholarship and research profiles at the same time.

Related to the above, some organizations, e.g. IV, now see themselves as intermediaries between industry and academic science by helping to translate the needs of industry to the scientists in the universities. The further development of a highly connected network of different types of organizations that can help to nurture the formation of more university-industry collaborative projects is seen as a next step for KFU, in which the benefits to the university go beyond merely gaining additional third party funding, but lead to fruitful scientific impacts that would have been more difficult to achieve without such partnering.

Within the last 15 years the COMET program (BMVIT) has had a strong impact on the interlinkages between universities and industries and it speeded up the process of bringing these different stakeholders closer to each other and the program started a process of moving staff from universities and industries which altogether initiated an exchange process between the two spheres. Many individuals with whom we spoke, for example, appreciate that Vice-rector Dr. Peter Riedler having had professional experience in *both* industry and academia, and able to translate that experience into helping to promote a change in the university's culture while still balancing and respecting a diverse set of interests. Another example is Dr. Thomas Krautzer (IV) who was an Assistant Professor at Karl

¹¹ See <http://www.nawigraz.at/en/>

Franzens University in the early 1990s and is now CEO of the Federation of Austrian Industries (IV) and never gave up his close connection to the university.

A more recent collaboration between SFG and the three universities based in Graz (KFU, Medical University Graz and TU-Graz) who act as the three shareholders, is the Science Park Graz¹² a business incubator for academics which is integrated in the Austrian network of incubators AplusB. Besides the classical incubator function the Science Park incorporates a network of regional and national organizations which functions as cooperation partners and offer a broad variety of services for young entrepreneurs. The Science Park Graz therefore contributes to the overall vision and presentation of Graz as the engine of start-ups (Graz Wirtschaft 2015).

5 The Case of the Johannes Kepler University in Linz

5.1 Brief description of the university and the economy of the city and region

The Johannes Kepler University in Linz was founded in 1962 as the Hochschule für Sozial- und Wirtschaftswissenschaften. It became operational in 1966 with two faculties: the Faculty of Social Sciences, Economics and Law as well as the Faculty of Technical and Natural Sciences. As the Austrian Ministry for Education had not considered Linz, the capital of Upper Austria, as a suitable location for a university, the federal and the city government established the Linzer Hochschulfonds (Linz University Funds - LHF). The LHF was organized as a public corporation with the purposes of financing the foundation as well as the operation of the Hochschule für Sozial- und Wirtschaftswissenschaften for a period of ten years.¹³ The focus was mainly on the establishment and operation of the institutes but also the acquisition or rental of property or buildings. The board of trustees of the LHF was split between half of the members from the federal government and half of representatives from the city government. In addition to their financial support, the board of trustees was comprehensively involved in the planning of the faculties and institutes of the JKU, study programs, research foci, budget planning etc. Thus the university started the first study programs in 1966 in the field of social economy, business administration, national economy as well as law, followed by technical mathematics, technical physics and – for the first time in Austria – computer science in the early 1970s.

The development of the university has to be seen in close connection to the political as well as economic environment of the federal province of Upper Austria and the city of Linz in particular. After World War II the economy of Upper Austria underwent a comprehensive modernization process: a wave of founding of industrial companies took place. This was due to the relocation of existing companies from the Soviet to the American occupation zone, the support through the Marshall plan as well as a sufficient skilled labor supply. Until the 1970s Upper Austria became the leading industrial region in Austria with the highest export and employment rate. Small but innovative enterprises grew to become internationally known enterprises, e.g. Voestalpine (metal production); BMW –Motorenwerk Steyr,

¹² See <http://sciencepark.at/en/>

¹³ The executive board as well as the managing director consist each of one representative from the federal government (the governor) as well as the city government (mayor). The financing is covered half by the federal and half by the city government. The Linzer Hochschulfonds as such is a. Austrian-wide unique instrument to finance – foremost infrastructure and buildings– the foundation and operation of a public university.

KTM, Bomardier-Rotax, Rosenbauer (vehicle construction and suppliers); Lenzing AG, Borealis AG, AMI (Chemistry and paper production). Simultaneously new study programs at the JKU were initiated in the fields of technical chemistry and business information systems. In 1987 the RISC Research Institute for Symbolic Computation as part of the Software Park Hagenberg was founded as one of the first technology centers close to Linz.

Due to the special history of origin of the JKU with the Linzer Hochschulfonds cooperation between public authorities, industry as well as the university was mostly 'taken for granted'. This was also the case for the foundation of the LIMAK Austrian Business School in the late 80s, an internationally focused academy offering postgraduate further training for managers. In the early 90s again a joint initiative of the federal government and the city of Linz as well as the university led to the foundation of LIZENS – Centre for Supercomputing in Linz which consists of laboratory spaces as well as high performance computers. They are available to enterprises as well as to researchers at the JKU.

Today the JKU offers 61 study programs, out of which 18 are Bachelor, three Diploma, 34 Master and six PhD programs. The number of students amounts up to 19,290, the majority of which is enrolled in study programs at the faculties of law and of social and economic sciences (see Table 5.1).

Table 5.1: Descriptive Statistics for the Johannes Kepler University

		WS 2004/2005	WS 2014/15
Students			
Students (overall)		12,845	19,290
Studien SOWI		9,600	9,190
Studien RE		3,751	7,873
Studien TN		3,361	4,186
University Personnel			
Overall		1.216	2,709
Academic personnel		694	1,339
<i>full professors</i>			121
<i>other academic personell</i>			1,219
Administrative		302	710
Third party funded personell		220	655
Financial situation			
Global budget (EUR)		66,6 Mio.	105,9 Mio.
Third party funding (§26 and §27)		23,3 Mio.	35,7 Mio.
<i>among which from FFG</i>			30.5%
<i>FWF</i>			23.8%
<i>companies</i>			17.0%
<i>Others (EU, public sector, CDG...)</i>			28.7%

Sources: uni:data, Jahresbericht 2005, Jahresbericht 2015

The university has 2,709 employees (2015), out of which about one-half (1,339) are academic personnel. The university is structured into four faculties: the faculty of social and economic sciences, the faculty of law, the faculty of technical and natural sciences and (since 2014) the medical faculty. The structure and focus of the faculties developed due to the prominent role of the federal and city government as well as regional industries in the orientation of the university. This helps to explain, for example, why a faculty of humanities, for example, does not exist. In 2012 the JKU achieved the 41st rank in the *Times Higher Education 100 Ranking Under 50*. The ranking applied 13 indicators from the fields of research, teaching, citations, third party funds and international activities on universities worldwide younger than 50 years. The JKU is the only “young” Austrian university that achieved a ranking in the worldwide best 100 (<http://sciencev2.orf.at/stories/1699381/>).

Linz, the capital of Upper Austria, has a population of 201,595(2016) and is Austria’s third-largest city. At the four Universities (JKU, University of Arts and Industrial Design Linz, the Anton Bruckner Private University for Music, Drama and Dance as well as the Catholic-Theological Private University Linz) 24.500 students are enrolled (winter term 2015/16). In addition, the two teacher training colleges count 2,800 enrolled students and the two Universities of Applied Life Sciences (Fachhochschule OÖ, Fachhochschule Gesundheitsberufe OÖ) amount up to 1,200 students. According to the interview partners more than 50 percent of the students at the JKU have their community of origin in Upper Austria.

Linz is one of the main economic centers of Austria with the highest rate of employment to population (see Table 5.2). The largest sector is manufacturing, in which 17 percent of all employees work. For several decades Linz had the image as a grey industrial city. Restoration and reutilization projects of former industrial sites (e.g. Tabakfabrik) into culturally interesting locations, an economic program which strived for a diversification of the local economy (supporting tourism and trade), as well as a comprehensive social program oriented to improving have all contributed to changing the image of Linz to a culturally active and economically aspiring city. In 2009 Linz was nominated European Capital of Culture.

Table 5.2: Economic Indicators for the City of Linz and Province of Upper Austria

	Linz	Upper Austria
Population (2015)	198,181	1,437,000
Employees	177,330	655,000 (2016)
Unemployment rate (2015)	8.0%	6.1%
Employers	14,793 (2011)	93,422 (2016)
Start-ups / new foundations	828 (2015)	5,665
R&D expenditures (in Mio Eur)	tbd	1,737.84 (3.15% of the regional GRP)
GRP / Regional GRP (2016 in Billions Euro)	tbd	59.6 (2 nd position in Austria; 348.9 in Austria)

Sources: Wirtschaft im Fokus, 2016, WKO Wirtschaftsstandort OÖ in Zahlen, Statistik Austria 2011

5.2 JKU’s commitment and policy towards engagement

Since its foundation in the 1960s the Johannes Kepler University follows the mission of a strong societal, economic and technological engaged university and aims to position itself nationally as well as internationally (JKU Entwicklungsplan 2006). Due to its special circumstances of its founding – the support through the Linzer Hochschulfonds – and the therefore the important role of the local government in addition to the provincial government, it is not surprising that the development plans of the university and further performance agreements¹⁴ with the ministry demonstrate a high degree of alignment with the federal strategy documents (see Table 4). These special circumstances point towards JKU’s alignment with local and regional needs.

Table 5.3: Comparison of Strategy Documents of the Federal Government Upper Austria and Regional Engagement in the Development Plans of the Johannes Kepler University Linz 2000 - 2018

	Federal Government Upper Austria	Development Plans JKU
Document	OÖ 2000+ (1998 -2003)	Strategiekonzept (2000 -2003)
Thematic focuses	<ul style="list-style-type: none"> - Technology and Technology transfer (Cluster policy, competence centers, impulse centers) - Professional qualification - Location marketing - Technology transfer 	<ul style="list-style-type: none"> -Foundation of the technology center RISC – Research Institute for Symbolic Computation -General participation in the federal competence centre program as well as Christian Doppler Labs -Foundation of the LIMAK – international management academy -Linzer Hochschulfonds supports the establishment of the study program “Mechatronics” -LIZENS : joint infrastructure project between the Johannes Kepler University, government of Upper Austria as well as city of Linz (super computer and visualization labs)
Document	Innovatives Oberösterreich 2010 (2005 – 2010) and 2010+	Development plan (2006- 2012) Performance Agreements 2007-09 and 2010 –12

¹⁴ Based on the development plans of the universities, the performance agreements have been introduced after the new University law in 2002 and form the basis for the budget negotiations between the university and the Federal Ministry of Science, Research and Economy.

<p>Thematic focus / Objectives</p>	<ul style="list-style-type: none"> - Research quota (target : 3% of the BIP) - strengthening Research and Development in the following future oriented fields: <ul style="list-style-type: none"> • Life Sciences • Information and Communication Technologies • Nano Sciences and Technologies • Mobility / Traffic • Environment / Energy / Sustainability • Humanities / Social and cultural sciences - Enhance the coordination between different regional actors 	<p>-The university strives to strengthen the following fields of excellence in research and teaching in accordance with the strategy “Innovatives Oberösterreich 2010”:</p> <ul style="list-style-type: none"> • <i>Life Sciences</i> => Biosystems Analysis • <i>ICT</i> => ICT, Pervasive Computing, Information Electronics, Computational Science and Engineering (foundation of an Institute of the Austrian Academy of Sciences at the JKU) • <i>Nano Sciences and Technologies</i> => Nano Sciences and Technologies, Mechatronics • <i>Mobility /traffic</i> => Mechatronics • <i>Environment /Energy /Sustainability</i> => Environmental Law <p>-The university strives to foster the cooperation between tertiary education institutions in the region, to enhance research and development and strengthen knowledge transfer.</p> <p>-Societal mission:</p> <ul style="list-style-type: none"> -Promotion of women in science -Support for students with special needs -Integration of health-wise affected students -Promotion of technology and knowledge transfer: <ul style="list-style-type: none"> -expansion of cooperative research -expansion of Public Private Partnerships; -knowledge exchange with other HEIs -support of spin-offs <p>-Further education:</p> <ul style="list-style-type: none"> - Lifelong Learning Strategy of the JKU
<p>Document</p>	<p>Innovatives Oberösterreich 2020</p>	<p>Development plan 2013-18 Performance Agreement 2013 -15</p>
	<p>Innovation Chain “Education – Research – Economy“</p> <p>Core strategies:</p> <ul style="list-style-type: none"> - Location development - Industrial market leadership - Internationalization - Future technologies <p>Core Topics:</p> <ul style="list-style-type: none"> - Industrial manufacturing - Energy - Health / aging society - Food / nutrition - Mobility / logistics 	<p>Focus on six fields of excellence (in accordance with the strategy paper “Innovatives Oberösterreich 2020” as well as “Universität Österreich 2025)</p> <ul style="list-style-type: none"> - Computation in Informatics and Mathematics - Management and Innovation - Mechatronics and Information Processing - Nano-, Bio- and Polymer-Systems - Social Systems, Markets and Welfare State - Commercial Law <p>Further education:</p> <ul style="list-style-type: none"> - Professorship for adult education - LIMAK Asutrian Business School <p>Social mission:</p> <ul style="list-style-type: none"> -Cooperations with other tertiary education providers in the region -Strategic cooperations with the TMG and UAR, Linzer Hochschulfonds -International cooperations, participation in exchange

		program (ERASMUS etc) -Equality policy and promotion of women (JKU received the certificate “Audit Hochschule und Familie” and certified as family friendly higher education institution) -Support for students with special needs (pilot project “Informatics for blind students”) -Special research fields in ICT/AT and Aging -Public relations: participation in public events to strengthen the perception of the JKU in the broader public as well as in primary and secondary schools -Strengthening the Alumni Network “Kepler Society”
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There is consensus among all the key informants that the level of the university’s commitment to regional engagement is high. The investigation of the development plans and performance agreements of the university as well as the statements from the interview partners indicate an understanding of regional engagement of the Johannes Kepler University as:

- *Research*: basic as well as applied research plays a dominant role at the JKU. Regional companies provide a high percentage of third-party funding. The JKU is very active in R&D cooperation (COMET Program, CD Labs etc.) with regional industry partners.
- *Teaching*: the study programs are aligned to the regional needs and demands of the regional labor market
- *Further education and lifelong learning*: the LIMAK ABS Business School offers MBA Programs and university trainings. Furthermore the university offers computer courses and Continuing Education programs for interested persons via the Kepler Society, the alumni association of the JKU.

Thus the understanding of “regional engagement” is focused on the traditional pillars of the university “teaching” and “research”. The understanding of the university’s societal mission focuses on the support of women in science, gender equality as well as the support of students with special needs.

The commitment to regional engagement of the JKU has not changed as drastically as it might have changed at other universities after the UOG 2002. Reasons for this include that the Johannes Kepler University *already* had a strong regional mission at the time when it was founded, a result of the financing instrument of the Linzer Hochschulfonds. Although the role of the Linzer Hochschulfonds has changed over time, and especially as a less important source of funding for the university, the strong cooperation between the federal government, the city government, industry partners and the university has remained. What changed over time was the amount and financial volume *of cooperation* with industry: while in former years the industry and especially industrial R&D activities received direct financial support, the funding programs within the last 15 years show an increased focus on research cooperation between industry and university or other (non-university) research institutions. Spatial proximity between the JKU and the industry in Linz and Upper Austria was mentioned as *the* key factor responsible for the amount and success of established cooperation.

Summing up, the university’s commitment and policy towards engagement, the JKU shows a high regional engagement, first of all in the field of research as well as in the field of teaching. The

alignment of university development plans to local and provincial development strategies is the result of the funding history of the JKU. Due to the political as well as economic engagement of various stakeholders the university was founded in the 1960s, with a clear mission to serve the regional industry and to support innovation and technology development in order to position Upper Austria as one of the leading industrial regions in Austria. The regional engagement activities of the JKU and their outcomes will be discussed in the subsequent chapter.

5.3 JKU's engagement activities

The engagement of JKU occurs both at the institutional and individual levels. While the interviewed government officials emphasize the institutional engagement of the JKU, representatives from the industry as well as advocacy groups cite the importance of individual involvement of university staff. The key institutional actors from the JKU are the rector Univ.-Prof. Mag. Dr. Meinhard Lukas and the vice rector for research Univ.-Prof. Dr. Alexander Egyed. The rector Prof. Lukas represents the university institutionally but also individually. Due to his background in law and his former position as a professor at the Faculty of Law at the JKU he was one of the main consultants of the city of Linz in their Swap scandal¹⁵. He acts as a role model for regional engagement and establishes many of the university's contacts to the provincial and city government, as well as to industrial partners and advocacy groups. As one key informant mentioned, *"There is no roundtable, platform etc. on the provincial as well as city level where the rector is not invited."* Although the university holds no official role in political bodies, the rector of the JKU is invited to participate in the development of the Strategic Program "Innovative Upper Austria 2020" (and also the former strategic programs "Innovative Upper Austria 2010" as well as "Innovative Upper Austria 2010+"). Apart from the rector also individual researchers from the JKU (as well as from the University of Applied Life Sciences Upper Austria) have been invited to contribute their expert knowledge to the subjects industrial production processes (o. Univ.-Prof. DI Dr. Hans Irschik), energy (former rector of the JKU o.Univ Prof. Dr. Richard Hagelauer) and food and nutrition (Univ. Prof. Dr. Gabriele Kotsis).

Furthermore the rector represents the JKU in the executive board of the "Platform Industry 4.0 Upper Austria", a cooperation between the Federation of Industry Austria, higher education institutions and non-university research institutions as well as the provincial and federal government, aiming at joining research competences and know how in the thematic fields energy and resource efficiency, robotics, broad band and internet as well as light weight construction (see Fig. 2). The vice rector for Research represents the JKU in the scientific advisory board of the Oberösterreichische Zukunftsakademie (Upper Austrian Academy for Future Development)¹⁶, a think tank initiated by the government of Upper Austria to discuss future developments and trends through an interdisciplinary setting.

The JKU is also part of the program "Knowledge Transfer Centers" of the Austrian Federal Ministry of Science, Research and Economy, striving for a better transfer of scientific knowledge into commercial practice. Together with the University of Innsbruck, the Medical University of Innsbruck (Tyrol), the University of Salzburg, the Mozarteum Salzburg (Salzburg) and the University of Art and Design Linz the JKU forms the Knowledge and Transfer Centre West (WTZ West) with a special focus on IPR relevant topics.

¹⁵ See <http://www.swap-linz.at/>

¹⁶ See <http://www.ooe-zukunftsakademie.at/>

Special forms of institutional engagement in the region are the businesses affiliated with the JKU. One example is the shareholding of the university at the Tech2be Foundation centre¹⁷, an incubator to support spin-off companies in cooperation with the Chamber of Commerce Upper Austria, the Business Upper Austria – Wirtschaftsagentur OÖ, the Upper Austrian Research GmbH and the Universities of Applied Sciences Upper Austria. The university is represented in the Board of Directors via Mag. Alexander Freischlager, Head of Operations Management at JKU. Together with the Upper Austrian Research Ltd. (a fully owned subsidiary by the province Upper Austria) the university holds shares of the RISC Software Ltd., with the vice rector for Finance Dr. Barbara Romauer as chairman. RISC Software Ltd. performs research and development for industrial partners in the fields of symbolic computation, mathematics and computer science since 1992. Further examples of such kind of F&E cooperation with the province of Upper Austria are: Center of Advanced Bioanalysis Ltd. (CBL GmbH), Research Center for Non Destructive Testing Ltd. (RECENDT GmbH), Transfer Center for Polymer Engineering (TCKT).

The university's engagement in innovation and technology transfer is also demonstrated through the Christian Doppler Labs. These are laboratories set up at the universities as joint university-industry research in several fields. Currently six Christian Doppler Laboratories exist at the JKU¹⁸. Furthermore the Austrian Center of Competences in Mechatronics has received funding as K2 centre in the COMET¹⁹ program of the FFG (Austrian Research Promotion Agency). In addition three institutes of the JKU are partners in other COMET centers. Further research centers and labs at the JKU include: the Research studio for Pervasive Computing Applications, the Research Studio for Chemistry and Life Sciences in cooperation with the University in Budweis, the Oracle Research lab at the Institute of System Software.

In the area of lifelong learning the university' engagement extends to the LIMAK Austrian Business Academy. The LIMAK offers internationally-oriented, extra-occupational studies and further postgraduate training opportunities for managers of companies and institutions. Furthermore the alumni club Kepler Society offers computer courses as well as extra occupational training for interested persons. When it comes to training opportunities a recently signed cooperation contract between the JKU and the provincial government Upper Austria deserves attention: the government of Upper Austria invites university assistants especially from the Faculty of Law to work in the constitutional office for a couple of months. Also students are welcome for an internship in the administrative court. These types of personnel exchange have contributed to the transfer of know-how from the university to external organizations.

The Chamber of Commerce Upper Austria as well as the Federation of Austrian Industry Upper Austria maintain formal cooperation with the JKU, especially with the rectorate, but also with individual professors and researchers. Representatives from the mentioned organizations pointed out, that

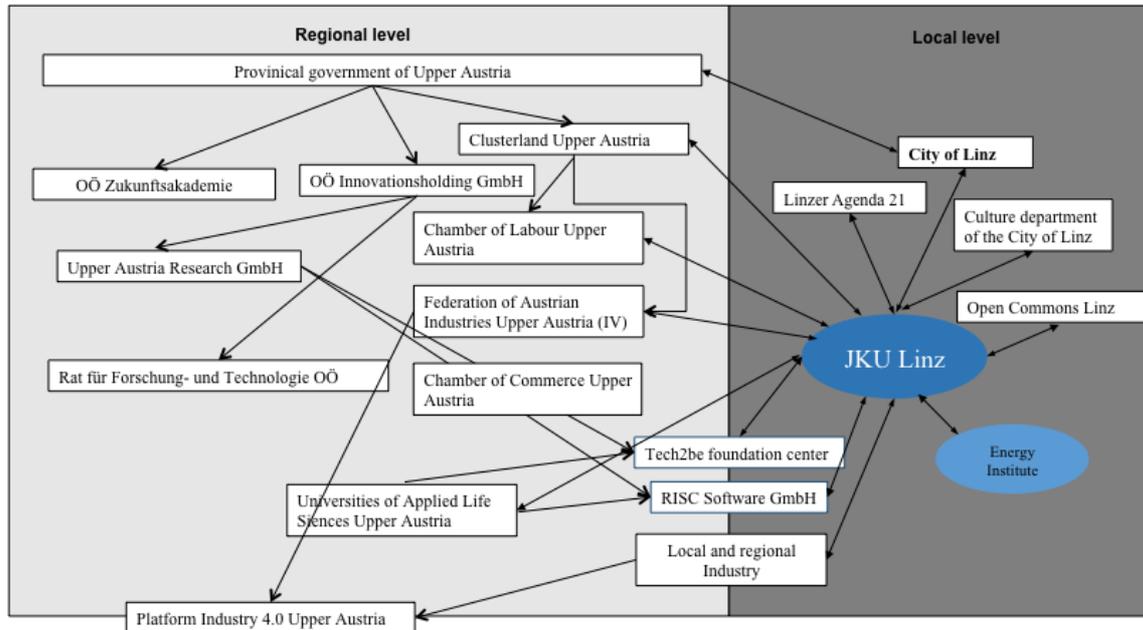
¹⁷ The Tech2be incubator is part of the AplusB Program of the FFG.

¹⁸ Microscopic and Spectroscopic Material Characterization - CDL-MS-MACH , Client Centered Cloud Computing - CDCC , Monitoring and Evolution of Very Large Software Systems - MEVSS, Combinatorial Oxide Chemistry – COMBOX, Structural Strength Control of Lightweight Constructions, Ageing, Health and the Labor Market, Multiscale Modeling of Multi-Phase Processes

¹⁹ The COMET Competence Centers for Excellent Technologies was launched in 2006. It is an Austrian technology policy initiative. The program provides financial support for the establishment of competence centers where scientist and industry partners bundle their expertise. While K1 describes the first phase of the development of a competence centre, K2 centers are already based on top-level research.

researchers who are already known through project collaborations have a higher chance to be invited for speeches or asked for informal advice outside the project setting.

Figure 5.1: Engagement Linkages of the Johannes Kepler University in Linz



In addition, a number of faculty members as well as institutes of the JKU are actively engaged in the city or region. Among the most prominent Prof. Gabriele Anderst-Kotsis from the Institute of Informatics and Assoz. Prof. Susanne Saminger-Platz from the Institute of Knowledge based Mathematical Systems are members of the Rat für Forschung und Technologie Oberösterreich (Council for Research and Technology Development Upper Austria). This is a ‘brain trust’ founded by the provincial government of Upper Austria in 2003 to advise the government in the thematic areas innovation and technology development, strengthening cooperation between the regional economy and research institutions as well as the future development of the provincial economy. The twenty members with a background in research and / or technology are appointed for a period of four years.

Prof. Klaus Zeman (Institute of Mechatronic Design and Production), Prof. Oliver Brüggemann (Institute of Polymer Chemistry) as well as Dr. Horst Steinmüller (Energy Institute at the JKU) are actively engaged in the advisory boards of the respective industry clusters (mechatronics cluster, synthetic material cluster as well as environmental technology cluster). The clusters are part of the initiative “Clusterland Upper Austria”, a joint initiative of the government of the province of Upper Austria, the Chamber of Commerce Upper Austria as well as the Federation of Austrian Industry.

Apart from these engagement activities in the field of innovation and technology development, there are various engagement activities which can be summarized as “regional problem solving activities”. Prof. Schneider from the Institute of Economics is well known for conducting numerous economy-related studies with a regional focus (for example a study on the profitability of cultural events in the region) and presenting them in the regional media on a regular basis. The Faculty of Law is an

important consultant for the city of Linz in matters of EU law as well as constitutional law. In addition to the rector Prof. Lukas, Prof. Leidenmühler is active as a member of the municipal council of the city of Linz. Apart from his contribution of expert knowledge he sees his role in bridging the demand of the city of Linz for scientific know how by recommending scientific experts from the JKU. Univ. Prof. Dr. Robert Bauer is actively involved in the Local Agenda 21 process of the city of Linz “Linzer Agenda 21” as well as in the advisory board of the Tabakfabrik Linz (a former industrial site which is now used as location for creative businesses). O.Univ Prof. Dr Gustav Pomberger (Institute for Software Engineering JKU) serves as president of the advisory board of the initiative Open Commons Linz of the city of Linz. The initiative strives to make data, especially government data, which has been elevated with public money, available for everyone. This project is accompanied by an advisory board of experts of different fields (technology, legal subjects etc.).

Several informants confirmed that sustainability is an inherent principle of the JKU, the Institute of Environmental Law, the interdisciplinary Energy Institute and the Department of Culture primarily focus on sustainability issues. The Energy institute is organized as an association with the Head of the State government office Dr. Watzl as president. The institute combines the expertise of the three departments of energy economy, energy law and energy techniques.²⁰

In summary, it is evident, that the university is highly engaged in its regional environment – mainly in the fields of innovation, technology transfer and regional problem solving – but there are few areas in which the university takes a leading role in formulating strategy and direction with its partners in government and industry.

5.4 Differences university engagement has made on the region

The contribution of the Johannes Kepler University Linz has to be seen in close connection to the economic development of the province of Upper Austria after World War II. As discussed in the preceding section, the development path of the university was highly influenced by the Linzer Hochschulfonds (Linz University Funds), the cooperation agreement between the university and governments of the city of Linz and the province Upper Austria as well as the regional industry. Although the university collaborated with the political bodies since the beginning of its foundation in the 1960s and was also invited in the development of the strategy programs, the direction for regional economic development is most influenced by political and industry leaders. The contribution of the JKU can be seen in its strong support for these politically decided development paths via its research, teaching and lifelong learning activities. Furthermore, the university is one of the larger employers in the region (2,709 employees in 2015). From the industrial side the university is described as engine for innovation and technology development in the region. Especially for the large national and multinational companies (VoestAlpine, Lenzing, AMI, etc.) the university is an important cooperation partner in research projects (COMET, CD laboratories, contract research), providing insights from basic and applied research as well as from pilot projects which are useful for the industry partner. A further contribution has to be seen in the provision of manpower; a large majority of the graduates have their first job in the region.

²⁰ <http://www.energieinstitut-linz.at/v2/>

It has been pointed out from the political side that a high amount of the universities third party funding comes from multinational businesses located in the region. To maintain this source of funding, the university is under pressure to keep abreast with leading-edge research that is relevant to the regional industrie. In this endeavor it has been successful so far, and especially evident in its COMET centers and its Christian Doppler laboratories. When it comes to projects funded by the European Union in cooperation with international partners, however, there is still room for improvement.

The university has been supportive of the formation of spin-off and startup businesses. The Institute for Entrepreneurship provides training and know-how for potential entrepreneurs, there are new facilities in the Science Park available for university spin-offs, and the JKU participates in the incubator Tech2be. Yet there is a feeling among some informants that the university could be doing more to increase the incidence of successful start-ups and spin-offs from university research projects.

Apart from the contribution in the fields of innovation and technology development, the role of the JKU as advisor and consultant for the local and provincial government is described as essential. Apart from providing the scientific basis for political decision making, the university – in this case especially the Faculty of Law as well as the Faculty of Social Science, Economics and Business – informally or formally (through contract research) advise the government in everyday matters as well as in topics on future developments (energy politics and solutions, open data etc.). Also the voluntary participation of several faculty members in different organizations and bodies contribute to the formation of public opinion.

6 Cross-Case Comparisons

It is apparent that the Karl Franzens University in Graz and the Johannes Kepler University in Linz are both highly engaged institutions, though *how* they are engaged and the *reasons* for engagement differ. These differences stem from variation in their historical missions and their institutional cultures, as we shall describe in this section.

For the KFU, engagement in practice is conducting applied research that potentially can benefit not only the regional economy but also civil society, primarily in Graz and Styria but not necessarily. KFU sees engagement, as part of its social contract, as a moral commitment rather than a legal requirement, to act to benefit society at large. JKU, on the other hand, sees engagement less from a voluntary moral obligation, and more to satisfy its immediate stakeholders that include the city of Linz and the province of Upper Austria, in addition to the federal ministry. Hence, KFU, although regarding applied research that may be useful for regional industry as an important engagement activity, has a more balanced perspective on what engagement activity can and should be, including forming linkages with other universities in the region, with an emphasis on lifelong learning, and with regional government agencies. Compared to KFU, JKU places a relatively greater emphasis on applied research as its *primary* engagement activity, supplemented by fulfilling a human capital development function in preparing its graduates for job positions needed by companies in the region. Thus, regional engagement became an explicit mission of JKU from its very inception in 1962 on the funding basis of the Linzer Hochschulfonds. KFU, on the other hand, added engagement to its institutional mission only after the university autonomy law of UOG 2002 came into effect. There was little pressure from the region and

city for KFU to become engaged prior to the UOG 2002 nor did KFU feel they had an opportunity to expend resources on regional engagement activities when it was under strict fiscal control of the federal ministry.

UOG 2002, of course, had the additional effect, besides granting greater freedom, of giving universities good reasons for acting more entrepreneurially in search of larger and more diverse sources of revenue. This affected both KFU and JKU, but it was new for KFU, whereas JKU already had seen and taken advantages of the opportunities for university-industry collaboration owing to its original stakeholders of Linz and Upper Austria. At around the same time as the UOG 2002, there was a shift of federal government research support from basic science through the FWF to applied research that could increase innovation and productivity in the economy and for individual businesses (FFG).

The differences in the original missions of the two universities, from the point of view of the range of study programs and academic departments, also had the effect of making engagement a more natural extension at JKU compared to KFU. JKU from its beginning had a 'tilt' in its academic specialties towards science and technology. Notably, there is no faculty of the humanities at JKU. KFU, on the other hand, had been a 'classical university' from its earliest beginnings, with strong traditions in the humanities, the social sciences, and the natural sciences. It was not apparent how a large portion of the faculty and scholars in many disciplines *could* become engaged through their research activities. As a classical university, KFU had an imbedded set of norms of the Humboldtian idea of a university, it would not be considered appropriate within these norms for the rectorate to use a 'heavy hand' in encouraging engagement by faculty who did not see its relevance to their research or scholarship. At JKU the norms of the Humboldtian idea of the university had not been embedded in the culture owing to it being a new university and the city and regional governments being its original important stakeholders. So while the initial idea was for the future JKU to become a 'full' university including having a faculty of humanities, this vision never came to fruition.

For universities without a long tradition of engagement activity, the institutional culture needs to change such that it becomes embedded. For this to occur, university leaders are important and indeed probably necessary actors. At both KFU and at JKU, the rectors and vice rectors since the UOG 2002 have been actively and strongly supporting engagement in many similar ways. The rectors in the past and presently serve on a number of advisory boards in their respective cities and regions, and both have been instrumental in forming university-industry partnerships. Within their respective universities, they have promoted engagement to their faculty and research staff as a worthy and beneficial activity for the development of their universities as well as for their regions, though they stop short in terms of providing specific incentives or rewards for faculty for participating in engagement activity. Career advancement for faculty is still heavily weighted towards the quality and quantity of scholarly publications and engagement activity tends to count little. These long-held criteria are implicitly reinforced by the federal ministry in its drive to advance the international reputations of Austrian universities, although in theory, individual universities are given *the opportunity* to negotiate in their performance agreements with the ministry the priorities and metrics for how they are evaluated.

The two universities from the vantage point of the rectorates both view engagement as a complement rather than a substitute to the more traditional missions of basic research and teaching. Both KFU and JKU have clear and explicit ambitions of moving higher in the international rankings of

universities. Applied research is seen as offering opportunities for enhancing individual researchers' and hence university's research profiles, not as a trade-off for scholarly reputation. This, as described earlier, may be less likely to be the case at KFU where applied research opportunities or funding to support such applied research just do not exist in many fields and disciplines. There is also a widely held perception that universities that focus their research on the region where they are located are condemned to remain provincial in the view of international colleagues. How to focus on regional issues and still be seen as an internationally renowned university remains a challenge for both universities. At KFU the building of strategic linkages in particular scientific disciplines across universities in the region, particularly with the Technical University of Graz, is seen as a way of both being engaged and enhancing research capability that can attract additional resources and funding. At JKU, the university-industry research collaborations are often with the branches of large, technology-oriented multinational corporations, which are perceived as enhancing the international profile of the university.

Finally, there are some subtle differences in the role and division of responsibility the respective universities have taken in the regional economic development policymaking process. Both universities can be described as 'neutral' actors in regard to particular policy directions, consistent with the maintenance of independence from politics and academic freedom. JKU, however, is seen as a highly valuable partner for supplying relevant expertise, know-how, and applied research for solving problems of regional industry and government. KFU, on the other hand, is more careful to separate itself from *any* role in policy development and decision-making. It produces new knowledge, some of which may be instrumentally useful for government and other policy officials. It is not, however, an organization 'on call' to provide solutions to regional problems, in contrast to JKU adopting this role.

In summary, we have found from the comparison of the two cases that: (1) the motivations for *why* universities want to become engaged can be quite different; (2) the set of engagement activities can vary widely, which in turn is influenced by the region's industry composition and the closeness (or not) of university-industry ties; (3) that the institutional culture and history makes a difference in the attitudes and strength of commitment towards engagement; and (4) that the individuals who are leaders of the university matter. They matter first in terms of the quality and their relationships with business and government leaders in the region (stakeholders), especially so when engagement has not yet been firmly embedded in the university's culture. But their relationships with other influential professors and researchers within the university also can have an important influence on the extent to which the engagement mission is actually put into practice when explicit rewards for doing so do not exist. Both universities have been able to *partially* succeed in creating cultures conducive to regional engagement, but there remains resistance owing to competition with career advancement goals of individual faculty (a potential principal-agent problem) and to a more constrained fiscal environment for publicly funded universities that accompanied greater autonomy. To some extent the issue of competing goals is less at JKU compared to KFU owing to JKU having clearly defined *regional* stakeholders and funding source.

7 Conclusions and Suggestions for Further Research

Our empirical studies of regional engagement by the two Austrian higher education institutions of Karl Franzens University of Graz and the Johannes Kepler University of Linz allow us to infer

relationships among certain institutional characteristics of universities, their regional economic environment (including external stakeholders), individual leadership, and a culture conducive for regional engagement. Although both universities are owned and funded primarily by the Austrian federal government, and both were given the same autonomy granted by the UOG of 2002, JKU is also a regional university owing to its original mission, stakeholders, and funding from the city of Linz and the province of Upper Austria. This, as well as a different mix of study programs and research specializations, provides us with some variation in the set of factors that we have hypothesized affect the interests of the two universities for regional engagement.

We have mentioned that the autonomy given to all Austrian federal owned universities was accompanied by greater budgetary constraints. Both provided clear incentives for the universities to become *entrepreneurial* in terms of new research and programmatic initiatives, and in discovering a more diverse set of revenue sources. Universities had new-found freedom to enter into collaborative relationships with industry, to be involved in knowledge commercialization by the patenting and licensing of new technology as well as spinning off businesses from university research, and/or to become more regionally engaged in the more limited sense we are using it here. Entering into university-industry collaborations and knowledge commercialization activities is often believed to lead to generating greater resources for the university, but also has the potential to enhance the status of the university in terms of rankings and international reach if the industry partners are highly capable in R&D and have prestigious international pedigrees. Regional engagement activity, on the other hand, does not usually come with (much) additional revenue, while the university partners and clients tend to have rather limited visibility.

In this situation, regional engagement activity becomes ‘a tough act to sell’ to faculty and researchers. There are still two apparent incentives for universities’ regional engagement. The first is a moral responsibility for the university to ‘give back’ to society, in exchange for the public funding and freedoms they receive, in terms of the earlier social covenant (Parsons and Platt 1973). The second is that by strengthening the city and region in which the university is located both economically and socially, the university should become more successful in attracting the best faculty and graduate students, and hence more competitive in applying for research funding and other resources.

Our case studies support the view that dynamic and committed university leaders can make a significant difference in instilling into the institutional culture a moral obligation for giving back to the region, although cultures and norms change rather slowly, and perhaps especially so in higher education institutions. They can also be persuasive about the more selfish incentive for university engagement. What seems to be critical is having university leaders who are able to build and maintain close and collaborative working relationships with local industry and government leaders. The case of JKU in Linz indicates that ‘selling regional engagement’ by university leaders has somewhat less resistance owing to its founding as a university with an explicit regional-serving mission and funding source. We agree with Clark (1998), however, that until public universities are provided dedicated and ample funding streams for regional engagement activities, engagement will remain largely peripheral. In the case of Austria, this may be further inhibited by the fact that the public universities are federal government institutions, whereas in Germany (and in the U.S.) they are primarily funded by the provincial or state governments.

It is always somewhat risky to advance (causal) inferences based upon two observations, or cases. Strategically enlarging the number and of cases of universities/regions so as to get additional variation on such factors as regional industry composition, regional economic well-being, types of universities, institutional history and culture, and leadership styles would provide a richer empirical base for our understanding of the regional engagement interests and outcomes of universities. A potentially fruitful research topic would be to investigate the extent to which the principal-agent problem is a cause of the hypothetical gap between the regional engagement mission statements of universities and the extent to which engagement is carried out in practice.

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Appendix
Names, Titles and Affiliations of Interviewees

University Officials

Mag. Thomas Drage, RCE Graz-Styria

Dr. Alexander Egyed, Vice-Rector for Research, JKU

Assoc. Prof. Franz Leidenmuehler, Institute for European Law, JKU

Mag. Bernhard Nussbaumer, Head of Research Transfer, JKU

Prof. Dr. Martin Polaschek, Vice-Rector for Studies and Teaching, KFU

Dr. Peter Riedler, Vice-Rector for Finance, Resources and Location Development, KFU

Government Officials

Mag. Andreas Morianz, Deputy Head of the Department of Economic Development and Tourism, City of Graz

Mag. Alexander Pircher, Deputy Director of the parliamentary administration, Styria

Dr. Julius Stieber, Director of the Cultural Office, City of Linz, and CEO Linzer Hochschulfond

Dr. Bettina Vollath, Landtagspräsidentin, Styria

Dr. Erich Watzl, Head of State Government Office, Upper Austria

HR Mag. Dr. Maximilian Weiss, Director of the parliamentary administration, Styria

Mag. Alexander Pircher, Deputy Director of the parliamentary administration, Styria

Other External Organizations

Dr. Joachim Haindl-Grutsch, CEO of Federation of Austrian Industry, Upper Austria

Gerd Holzschlag; Authorized Officer in charge of "Economic Development & Public Awareness", Styria

Dr. Thomas Krautzer; Managing Director of the Federation of Austrian Industries (IV), Styria

Mag. Josef Schachner-Nedherer MBA, Chamber of Commerce of Upper Austria