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**Building a knowledge economy:
is Hungary turning the right screw?**

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Building a knowledge economy: is Hungary turning the right screw?

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Abstract

Between 2010 and 2014 the Hungarian education system was restructured. It is the explicit aim of the Hungarian government to make education better match the needs of the labor market. One of the key aspects is the closer cooperation between educational institutions and local companies. The Hungarian policy is guided by German ideals and refers explicitly to the model of the Baden-Wuerttemberg Cooperative State University, which applies the model of a *Practice-integrating degree program*. This contribution discusses the appropriateness of the youngest reforms in Hungary's higher education system against the background of the development of a modern knowledge-economy. It focuses on tertiary, especially on higher education and presents a first and in certain detail necessarily superficial snapshot regarding preconditions, goals and the institutional framework of a "dual approach" in higher education.

Keywords: Competitiveness, Knowledge-Economy, Education Economics, Dual Studies, Vocational Education and Training

JEL-Classification: O31, E22, F66, I21, I23, I25, I28

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1. Introduction

In the last decades, extensive research has underscored the highly dynamic changes of the global business environment. Technology and global connectivity are leading to accelerated processes (see Dobbs et al. 2014, Werr/Greiner 2008), and to both ample profit opportunities and greater risks. The technology explosion “is rapidly redefining the marketplace, the competition, and organizations themselves” (Zehner 2005, 2). These factors, primarily technical development and interconnectivity, describe the phenomenon which is exhaustively discussed under keywords such as “knowledge economy” (see Arvanitidis/Petrakos 2011) or the increase of “knowledge intensity” within businesses (see e.g. Smith 2002).

Advantages in knowledge are the key factor of competition. For the situation today it is without any doubt determinative, that competing companies, and hence nations, face a never recognized pace of change. Therefore, the research concerning the problem of competitiveness focused on the role of knowledge in modern economies: “Knowledge is perhaps the most critical competitiveness factor. As countries move up the economic scale, the more they thrive on knowledge to ensure their prosperity and to compete in world markets.” (Garelli 2006, 610).

According to this, *education* always has been a central topic of competitiveness research. Within the European Union education is – according to the principle of subsidiarity – a *national* challenge, and there are significant differences. Especially the Eastern European candidate countries of 2004 still show a noticeable backlog regarding several economic indexes. Provided that the global economy is accelerating and provided that the resource of knowledge is increasingly important, there is a lot to do for national governments to acquire and manage the appropriate knowledge, or: to build a modern “knowledge economy”.

The following paper discusses the appropriateness of the youngest reforms in Hungary’s higher education system against the background of the development of a modern knowledge-economy. It focuses on tertiary, especially on higher education and presents a first and in certain detail necessarily superficial snapshot regarding preconditions, goals and the institutional framework of a “dual approach” in higher education.

The second section outlines the background, more precisely the theoretical basis and discusses the role of education related to the viewpoint of national competitiveness. The second subsection comments on the so called “dual studies” and gives some short notes on paradigms for Hungarian policy. The third section briefly treats the actual situation in Hungary regarding key aspects of its competitiveness. The fourth section focuses on the actual reforms in the Hungarian higher education system. After a short comment on the actual institutional background the second subsection presents the new “dual approach” in higher education. The fifth section critically summarizes the actual policy referring to the basis presented in sections two and three and gives a short outlook for further considerations.

2. Background

2.1 Some remarks on competitiveness and knowledge

First of all we have to draft our understanding about competitiveness regarding firms and nations explicitly. The last decades have shown a vast amount of literature regarding the topic of competitiveness (see e.g. Nijkamp/Siedschlag 2011; Mitschke 2008; Jessop et al. 1993): “There are no agreed definitions of competitiveness and the term seems to mean different things to different people — some may stress a country’s low costs or the level of its exchange rate, others a country’s technological or even its growth rate.” (Boltho 1996, 2). For our perspective it is important to point out that competitiveness should not to be confused with particular aspects of economic performance. It rather provides a framework “(...) how nations and enterprises manage the totality of their competencies to achieve prosperity or profit.” (Garelli 2006, 607). Referring to the principle of subsidiarity and focussing on the unit of *nations* we take the holistic definition provided by Garelli (ibid., 608) as a starting point:

“Competitiveness of nations is a field of Economic theory, which analyses the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people.”

The increasing complexity of products and markets gives us a hint of the importance of *knowledge* in modern economies in the broadest sense. The knowledge economy index (KEI) of the World Bank Institute illustrated clearly, that the higher a country’s ability *to use knowledge* for economic development, the higher the economic outcome measured in GDP per capita.¹ The structure of the KEI, which ranks the average of the performance of a country in four pillars of the “knowledge economy framework” – economic incentives and institutional regime, education and human resources, the innovation system and ICT – (see Chen/Dahlmann 2005) is feasible. The simplicity of the key argument behind it – the more the knowledge, the more the money – is impressive. Several scholars have broached the issue that knowledge is *increasingly* important, moreover, there is emerging a new economic structure, the *knowledge economy* (see Arvanitidis/ Petrakos 2011, 15f.).²

But – regarding the claim for competitiveness – whether a country provides an environment which is beneficial for knowledge to be used in an economically reasonable sense is a different question: What exactly is the knowledge which can be the basis for value creation? And who is responsible – which knowledge should be provided by nations, which is the knowledge the firms should create? At first sight these seem to be unsolvable questions, because competition is a discovery procedure which discovers and creates *unpredictable* knowledge (Hayek). If we take in account the aspect of Garelli’s definition of competitiveness that nations face the task of generating (more) *prosperity* for their people by providing an appropriate *environment* we get a hint of the task sharing between policy makers and firms. The World Competitiveness Yearbook (IMD 2015) gives a sound reference for both poles. But “there is no single ‘recipe’ for competitiveness” (Garelli 2006, 609). It must be emphasized here that in an economic world with open barriers nations need to develop their *respective comparative advantages*. Hence nations need to adapt wisely both to international division of labour and their internal economic, cultural and political conditions.

¹ Last data provided for 2012. See World Bank (2012).

² See e.g. Neef et al. (1998); Burton-Jones (1999); Brinkley (2006); Hagemann (2011).

2.2 Knowledge economy and education: a “dual approach” as magic bullet?

In this context *education policy* is a key factor in building the competitiveness of a country. But obviously it is not enough to simply put more money into the education system (see Török 2008).³ As value creation gets more complex, prosperity is harder to create. Regarding the dynamics of the world economy, governments face the increasingly serious challenge of reshaping education systems in regard to their structure and content (see e.g. Schlotter et al. 2008, Piopiunik/ Ryan 2012, Link 2012). According to the mentioned indexes this seems particularly challenging for Eastern Europe.

If nations compete in providing a better environment for the use and creation of knowledge, skills or competencies of the *workforce* come into focus. Because of the increasing dynamics it seems to be “surprisingly difficult, to make professional education and training fit the needs of the workplace” (OECD 2014A, 56). The environment for value-creation has to adapt and if economic change accelerates it seems to be the most feasible challenge to connect the world of work and the world of education more closely (see OECD 2013, 18). In the last years a vast amount of literature documented the need for a closer relationship.⁴ To complete traditional classroom situations with learning in the workplace is an arising demand, because economic development seems to outpace traditional education practises. Learning in the workplace provides adaption to complexity: It “...allows young people to develop ‘hard’ skills on modern equipment, and ‘soft’ skills, such as teamwork, communication and negotiation, through real-world experience.” (ibid.). Soft skills seem to be acquired more easily in workplace situations. But the technology explosion obviously causes a shift regarding the “hard skills” needed. Recent surveys reflect a clear trend towards knowledge in technical domains: “Nearly two-thirds of overall employment growth in the European Union (EU25) is forecast to be in the ‘technicians and associate professionals’ category (CEDEFOP, 2012, cited in OECD 2014A, 11).”

In general, the German System of Vocational Education and Training (VET) is one of the most successful models in tertiary education for keeping up with the needs of the employment market (see e.g. Hyslop 2012). The “dual approach” well known from the German model of “Berufsausbildung”, which combines learning in the workplace with traditional classroom education seems to be a proper solution to face the mentioned problems.⁵ Similar systems have been developed in France, Canada, Australia, Switzerland or Austria (see OECD 2014A, 22; Graf 2013). According to several surveys of the OECD, the dual approach is seen to be beneficial for employers by the productive benefit through the work done by trainees (OECD 2014A, 57), for employees because of a strong learning environment (ibid., 56) and for nations, because it ensures a better linkage between the labour market and demand (ibid.).

However, regarding not only the shift towards more technical and more complex tasks in every day work (see OECD 2013, 6), but also regarding the value added, a *highly* educated workforce is the key factor in a modern economy: higher knowledge intensity and higher education levels are required (see e.g. Tremblay et al 2012, 16). There is an “increasing demand for higher level technical and professional skills” (OECD 2014A, 23). “Barro and Sala-i-Martin (1995) found that higher education has the largest effect on growth compared to both secondary and primary

³ A claim of the latest OECD Country Note on Hungary (see OECD 2014C).

⁴ See e.g. Frank et al. (2007); Etzkowitz (2008); Powell/Solga (2010); McLaughlin/Mills (2011); Chen et al. (2013); Graf (2013).

⁵ See previous investigations as Dötsch/Okruch (2014) or Dötsch (2014).

schooling” (Arvanitidis/ Petrakos 2011, 18). Therefore the shape of *higher education* comes into focus. Not only because it obviously has a greater effect on the knowledge economy, but also because it is traditionally less linked to the “world of work”. This seems to be a core problem. McLaughlin/Mills (2011) called it the “isolation of the sectors”, which is obviously applicable for the new member states.

Undoubtedly the recent economic developments question the traditional university model (see Powel/Solga 2010). Market developments outpace the subjects taught. In addition “many professional, technical and managerial jobs require only one or two years of post-secondary career preparation, and employment growth in this sector is rapid” (OECD 2014A, 22; see also Veugelers / del Rey 2014). Therefore, new types of institutions within higher education arise as alternatives to traditional universities in many countries (see Tremblay et al. 2012, 19). Based on the mentioned surveys and considerations regarding the VET System and the shifts in the labour market we assume, that a structural change towards a “dual” model in higher education, similar to the basic principles of the VET-system, could make the knowledge of graduates fit better the needs of the workplace and keep up better with the challenges of the modern world economy.⁶ The general claims of the OECD (2014, 58), that apprenticeship needs to be made an *essential and integrated element* of the vocational programme seems to be transferable for higher education. Is hence a “dual approach” for higher education the magic bullet to make higher education system fit the dynamics of the economy? Hungary based its actual structural reforms in higher education on this assumption. The following sections provide a brief first and in certain detail necessarily superficial snapshot.

3. Recent situation in Hungary

The following subsections present a brief overview of the situation of Hungary regarding its competitiveness and higher education system. The first subsection provides a holistic starting point and depicts the results of the IMD World Competitiveness Report as the recently most relevant approach. The second subsection shifts the focus to the Hungarian education system, the role of knowledge and presents the main challenges.

3.1 Competitiveness

There is a couple of different indexes of assessing economic conditions, potentials and outcomes on national or regional level.⁷ Restricting the holistic starting point of Garelli to its economic content, the concept and ranking of the World Economic Forum (WEF) provides the perhaps mostly renowned and accepted starting point for considerations regarding competitiveness and provides a sound basis for analyzing the concrete needs of the education system for adaptation. The WEF defines competitiveness as “the set of institutions, policies, and factors that determine the level of productivity of a country” (WEF 2013, 8). Similar to the World Bank’s concept of knowledge societies, the World Economic Forum maps its view in the *Global Competitiveness Index Framework*. It is built on a 12-pillar structure, the “12 pillars of competitiveness” (ibid., 4). The twelve pillars are related to three different categories, each representing a subindex for competitiveness: The *basic requirements subindex* is composed of the pillars’ institutions (1), infrastructure (2), macroeconomic environment (3), as well as health and primary education (4). The *efficiency enhancers subindex* includes the pillars higher education and training (5), goods and market efficiency (6), labor market efficiency (7),

⁶ This assumption is underpinned by recent research by Graf (2013) and OECD (2014).

⁷ See Booyesen (2002), Freudenberg (2003), Sharpe (2004).

financial market development (8), technological readiness (9), and market size (10). The *innovation and sophistication subindex* includes the pillars business sophistication (11) and innovation (12). Each subindex is a key indicator of different types of economies: The *Basic requirements subindex* for “factor-driven economies“, the *Efficiency enhancers subindex* for “efficiency-driven economies” and the “innovation and sophistication factors subindex for “innovation-driven economies”. Remarkably, the pillars (4), (5) and (11) refer to the education systems. Innovation (pillar 12) is named as a key factor for knowledge-based economies explicitly. “Business sophistication” focuses on the network effects and sophisticated business practices. In turn, sophisticated business practices require a highly skilled workforce.

Table 1: 5th pillar of the Global Competitiveness Index, higher education and training, Hungary

	Value	Rank/144
Secondary education enrollment, gross %*	101.6	27
Tertiary education enrollment, gross %*	59.6	44
Quality of the education system	3.3	96
Quality of math and science education	4.3	60
Quality of management schools	4.3	66
Internet access in schools	5.4	35
Availability of research and training services	3.9	85
Extent of staff training	3.6	108

Source: Schwab (2014), 208.

Table 2: 12th pillar of the Global Competitiveness Index: Innovation, Hungary

	Value	Rank/144
Capacity for innovation	4.0	52
Quality of scientific research institutions	3.3	97
Company spending on R&D	3.2	59
University-industry collaboration in R&D	3.9	48
Gov't procurement of advanced tech products	3.5	68
Availability of scientists and engineers	3.6	100
PCT patents, applications/million pop.*	0.0	124

Source: Schwab (2014), 208.

According to the actual Report of the WEF, Hungary is now in the *transition stage* from an *efficiency driven* economy to an *innovation-driven* economy (see Schwab 2014, 208). In other words, its economy has to reach a new status of knowledge-intensity. Focusing on “the facts and policies shape the ability of a nation to create and maintain an environment” (Garelli 2006, 608) this is obviously a concrete challenge for education policy.

3.2 Challenges for the educational system

Considering that, according to the terminology of the WEF, Hungary is in the *transition stage*, Hungary's position in row 2-5 in table 1 (highlighted), and in row 1,2,4, and 6 in table 2 (highlighted) seem to be eye-catching: Hungary has a lot of homework in enhancing an appropriate workforce, particularly in knowledge-intense areas.

The results of the WEF are similar to the diagnosis of the European Competitiveness Report (2014, 33) regarding the shares of high skilled labour in the value added in global value-chains. Moreover, the European Competitiveness Report reflects the situation from another viewpoint: it shows a perceived *mismatch* between skills and duties (ibid., 36). Against the background of the high manufacturing share of total value added, which is according to the latest EU Competitiveness Report the fourth highest in the EU (ibid, 22)⁸, the shift to knowledge-intense and especially technical domains challenges the education system exactly as described in section 2.2.

But it seems that until now there have been less adaptations: Former full OECD country reviews (latest dates from 2008) already reflected the harmful dividing line between the world of work and the world of education; focusing on the VET system “the current VET system is strongly school-based with relatively few links to the labour market” (OECD 2008, 5). This statement is true for higher education as well. Actual expert recommendations show the same line of arguments: “Hungary will also need to invest heavily in education and research and development” (IHS 2014). Hungary has a demanding need to adapt its educational system to come up with the needs of a quickly developing industry and to achieve in this manner the level of an *innovation-driven* economy.

4. Actual Developments in the Hungarian higher education system

4.1 Background

Traditionally higher education in Hungary emphasizes theoretical skills. VET has relatively low status and many students are oriented to VET because of poor academic performance (see OECD 2008, 9). Moreover, lecturers of institutions of higher education often do not have industrial, often no practical experience at all, and curricula do not match the expectations of modern industrial employers. According to this employers often claim a lack of soft skills and the ability of graduates to solve problems in teams or independently.

4.2 A dual approach for higher education

Actual reform processes in higher education are linked to the change of government in Hungary in 2010. At present there is no accessible research guiding or assessing the content and structure of reforms.⁹ According to this our description in the following refers to the official statements

⁸ According to the Competitiveness Report 2014, manufacturing's share of total value added comes to approximately 22%. The OECD economic survey of Hungary 2014, which presents basic statistics from 2012, shows a share of the industry of 30,6% and a share of 64,7 % of the services (see OECD 2014B).

⁹ Noelke/Horn (2014) provide an excellent study regarding “Social Transformation and the Transition from Vocational Education to Work in Hungary” and focus on the traditional VET-system, not on higher education. However, their statement that “existing studies neither focus on detail on the changing situation of VET graduates nor try to directly measure the role of a specific institutional mechanism, causing the outcomes of VET graduates to change” (ibid., 432) formulates a desideratum for considerations regarding the change of higher education, too.

of the government and the respective higher education act as the currently only reliable sources.¹⁰ Between 2010 and 2014 the education system was completely restructured.¹¹ According to this the organizational and financial responsibility for public education now belongs to the state, not to municipal or regional administration. As many other nations, Hungary shows a distinct divide in post-secondary education between vocational education and higher education.

It is the explicit aim of the Hungarian government to make education better match the needs of the labor market and to increase the attractiveness of education. One of the key aspects is the closer cooperation between educational institutions and local companies. According to this a cornerstone of the reform is the reorganization of the vocational education and training system corresponding to German standards (see Szigeti 2015b, 4f.). It is notable, that the key arguments for the reorganization of vocational education and training are used for a new, dual approach in higher education (see Czomba 2015).

The changes forced in the educational system are, first of all, answers to the industrial structure in the light of the “reindustrialization” plans of the government (Czomba 2015; see also EUCR 2014 for the European perspective). According to official statements of the government Hungary plans to increase the share of industrial production in GDP from recently 23 % to 30% (Czomba 2015). This means an increased need for technical degrees, which is underpinned by the results of WEF (Schwab 2014, 11, 208). Hungary seeks to achieve a significantly more adequate workforce in a short time. The improvement in skills should range to the soft skills as well (see Szigeti 2015a, 5).

4.3 Steps towards the German model

The Hungarian policy is frankly guided by German ideals and refers explicitly to the model of the German Duale Hochschule Baden-Württemberg (Szigeti 2015b), a “university of cooperative education” which applied the approach of dual studies for almost forty years and advanced to the status of “Baden-Wuerttemberg Cooperative State University” in 2009, offering Bachelor degrees according to the Bologna-System (see Graf 2013).

In general, Germany put different models of dual studies into practice and there are a wide range of continuously developing forms (see BIBB 2014, 50). A sound orientation is provided by the guidelines given by the German Science Council (Wissenschaftsrat 2013, 9), which differentiates six different models. Of these only two are dual studies in a stricter sense, meaning a designed linkage regarding institutions and content:

- *VET-integrating degree programs* (“Ausbildungsintegrierende Studiengänge”: combine bachelor degree programs with VET-programs at companies, which are traditionally supervised by the chambers of commerce, which invigilates the exams for the VET-part and issues the certificates. Students get both a certificate for the VET-program and a university (often of applied sciences) degree. A part of the VET-program can be creditable as a part of the studies. This is mostly practiced for combinations in

The comparative study of Vasilache et al. (2012) focuses on structure, history and financing of the higher education system and the implementation of the Bologna-Process.

¹⁰ See Szigeti (2015)

¹¹ Almost all information is accessible only in Hungarian. A good overview in German is provided through the bq-portal (2015) of the German Federal Ministry for Economic Affairs and Energy.

the field of business (e.g. Bachelor in Business Economics and the VET-based “merchant”), technology (e.g. mechatronics) or informatics.¹²

- *Practice-integrating degree programs* („Praxisintegrierende Studiengänge”): This model combines degree programs with coordinated forms of apprenticeship. This requires a good fit between the contents taught “in school” and practiced at the company. Due to this, the schedule of the curriculum – semesters, examinations, free time – is differently structured than at regular universities. There are various forms of arranging the time spent at the university or at the company, e.g. alternating months there, as at the University of Applied Sciences in Baden-Württemberg and Bielefeld. Students are paid during their studies by the companies and get an average salary of 869 EUR¹³. In contrast to the form of the VET-integrating degree programs dual studies students do not get a VET-certificate at the end of their studies. Students have to apply to the company first before applying at the respective institution of higher education.

Obviously the Hungarian approach is oriented towards the second form; but, so far, without breaking up the traditional structure of higher education curricula and schedule.

In July 2014 the Hungarian government modified the higher education act to enable a dual approach in higher education. § 108. § 1a defines engineering, computer sciences, agricultural sciences and business or economics (or related subjects) as possible areas of dual studies. The higher education act defines dual studies to be “in step with actual practice” and is possible for both bachelor and master degree courses. Dual degree programs must be designed as full-time programs. The concrete content regarding curriculum, the terms of admission and completion, methods and evaluation of the knowledge to be acquired has to conform with a framework given by the especially created *Council for Dual Education* (“Duális Képzési Tanács”), which accredits the partner companies as well.

The Council for Dual Education is the key institution of the reform process and is responsible for setting standards for the dual studies’ outcomes and quality. According to the official information given by the Hungarian Ministry of Human Capacities (HMHC 2015) it has 13 members, which represent the society of the multinational companies located in Hungary, two universities, two colleges, the agrarian sector, three ministries concerned with economic duties, the German foreign investor Audi and Hungary’s biggest oil and gas company, MOL. It seems debatable, if this composition reflects the needs of the stakeholders.

Based on the new higher education act the council defines the possible areas of dual education, elaborates parameters regarding quality and evaluation for all institutions, organizations and experts taking part in dual education. It qualifies the workshops of the companies and follows up the cooperation between institutions of higher education and the companies taking part in dual studies. As a part of the new higher education strategy the Hungarian government plans that students taking part in higher dual education should reach 8 % in 2020. In January 2015 the council decided to facilitate the first enrollments in dual education in September 2015.

While vocational education and training, as in the German system, mainly addresses youth unemployment, the dual approach in higher education explicitly addresses the demand of the modern manufacturers in Hungary and the political goal to develop a more knowledge-intensive

¹² For the recent situation in Germany see the German platform ausbildungplus.de.

¹³ According to the German platform <http://www.duales-studium.de/fuer-schueler-und-studenten/auswertung-der-gehaltsstudie>, accessed October 8, 2015.

economy. One of the main expectations is that graduates of dual studies already have experiences which traditional graduates lack e.g.

- Specific knowledge regarding *applying* the subjects taught
- Ability to work autonomously
- Ability to work in teams
- Trained to work effectively
- Practical knowledge regarding company and working culture

The conception of dual studies is based on explicit expectations towards the economy and the society shown in table 3.¹⁴

Table 3: Expectations of Stakeholders in Hungary

Expectations of the <i>economy</i>	Expectations of <i>society</i>
<ul style="list-style-type: none"> • The theoretical basics acquired during the semesters have to be put into practice at the partner companies immediately • Learning at the working place should provide deepening of specific competencies • Students should acquire the latest knowledge of the industry in their working places 	<ul style="list-style-type: none"> • The student's knowledge should respond to the demands of the employers to ensure a quicker return on investment • Institutions of higher education have to match the demands of the employment market • Employment rates should improve among students with dual degrees

Source: Szigeti (2015 4f.).

According to this framework the *Council for Dual Education* framed responsibilities of the companies taking part in dual studies:

- Long-term commitment to the partner institutions and the concept of dual studies
- Partner companies have to ensure expert support
- The entrance examination takes place both at the institutions of higher education and at the companies, independent of each other
- During internship the partner companies provide excellent conditions
- Students draw wages based on a contract with the company

Only companies qualified by the council are allowed to take part. Regarding processes and content the *Council for Dual Education* gives concrete prescriptions. Institutions of higher education have to promote their dual degree programs in the same way as traditional

¹⁴ The information of the following subsection are drawn from information given by the Hungarian Ministry of Human Capacities and recently accessible only in Hungarian.

programs.¹⁵ That means that students have to apply twice: once to the institution, once to the selected company. Each academic year consists of 48 weeks of which students are supposed to spend 26 weeks at the university, 22 weeks at their company (Szigeti 2015b, 13). Regarding the fact, that according to the new regulation the curriculum of a “dual” degree course has to accord with the traditional version of the course for 90%, the “dual” version means a remarkable higher workload for students. It means a plus in experience and workload. But is not a new form of interlinkage between academia and world of work.

Dual degrees can be offered based on a collaboration contract between institutions of higher education and companies.¹⁶ The suitability of the partner companies is generally based on an existing regulation, the general prescriptions for internships (230/2012. VIII.28. Kormányrendelet). Among other (formal) criteria the collaboration contracts define the length of the cooperation, the parameters of the entrance qualification, the modes of evaluation of the acquired knowledge, and explicitly define the role of the companies within the curriculum and the modes of student evaluation. Institutions of higher education and companies develop curricula together, but only to a certain extent: It is important to note, that 90 % of the curricula have to conform with “traditional” degrees. The 10 “deviant” percent is only allowed to be realized at the companies. That means, existing degree programs are extended by the common development of a practical complement of 22 weeks. But the “traditional content” cannot be modified – but only replaced to an extent of 10%. Generally, the training curriculum has to include 1) the deepening of theoretical knowledge relevant for the tasks at the workplace, 2) a laboratory course, 3) autonomous project work and 4) a part of skills and competence development, e.g. communication-training or project management.

4.4 Participants: a comparative perspective

In January 2015 the Hungarian *Council for Dual Education* accepted applications of 21 institutions of higher education, which submitted proposals for 30 different types of bachelor degrees. Over all 79 dual bachelor degrees got registered. According to this in September 2015, up to approximately 1000 students have been able to enroll in a dual bachelor degree course. With regard to 72,000 first semester students enrolled in the winter term 2015, overall (FELVI 2015), the share of students in dual degree programs would be 1.3%. This is still far below the proportions we can observe at the ideal level of the German DHBW: The DHBW is situated in the federal state of Baden-Württemberg, which has – quite similar to Hungary – approximately 10 million inhabitants.¹⁷ Overall 62702 first semester students have been enrolled in the winter Term 2014/2015.¹⁸ 11644 of them have been enrolled in dual study programs of the DHBW¹⁹; this is a share of 18,57%. The first launch of dual programs produced a diversity of 30 programs (over all 79 dual bachelor degrees registered in Hungary) – while Baden-Württemberg offers 20 different bachelor degrees and 100 fields of study.

¹⁵ In Hungary the enrollment process is centralized by a nationwide application platform (“Felvi.hu”).

¹⁶ Statutory source: 230/2012. (VIII.28.) Kormányrendelet, § 16.

¹⁷ According to the latest reliable data of the statistical authority: http://www.statistik.baden-wuerttemberg.de/BevoelkGebiet/Landesdaten/bev_altersjahre.asp (accessed October 8, 2015).

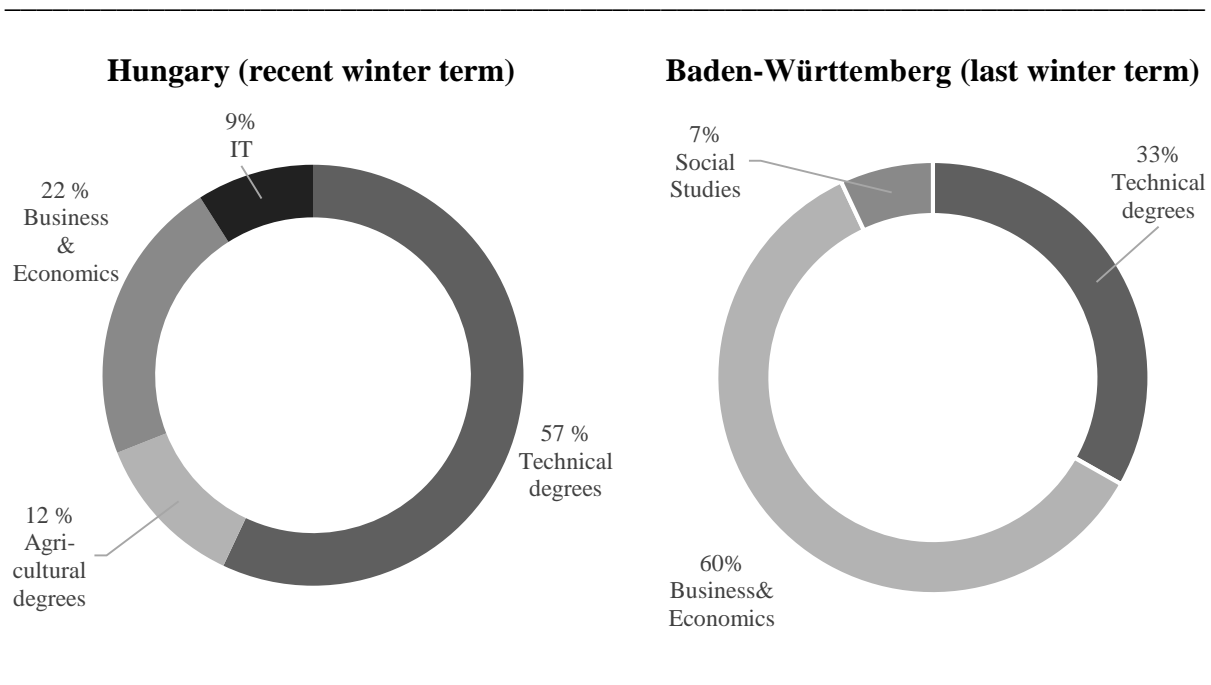
¹⁸ According to the latest reliable data of the statistical authority: http://www.statistik.baden-wuerttemberg.de/BildungKultur/Landesdaten/HS_StudentenAkt.asp (accessed October 8, 2015).

¹⁹ Geilsdörfer (2015, 20); according to the statistical authority of Baden-Württemberg 10.660 were enrolled – this would make a share of 17%.

Another striking fact is the different diversity regarding partner companies. The Hungarian institutions contracted with approximately 350 companies as external partners. According to the information given by the Hungarian government one third of the companies are big companies, two third are SMCs (Data according to Szigeti 2015a, see Fig. 1 and 2). The DHBW in Germany may be proud of 25 times more partner companies: 9000.²⁰

On the level of the federal state of Baden Württemberg the distribution of students in dual degree programs according to subject is quite similar to the situation in Hungary – 43.5% technical degrees, 44.8% Business and Economics, 11.7% Social Sciences/Welfare, likewise the distribution in all of Germany. The following graph gives an overview regarding the distribution of Students according to subject in Hungary for the winter term 2014/2015 and is the latest reliable data for the term of 2014 in Germany.

Fig. 1: Distribution of students in dual degree programs according to subject in Hungary and Baden-Württemberg



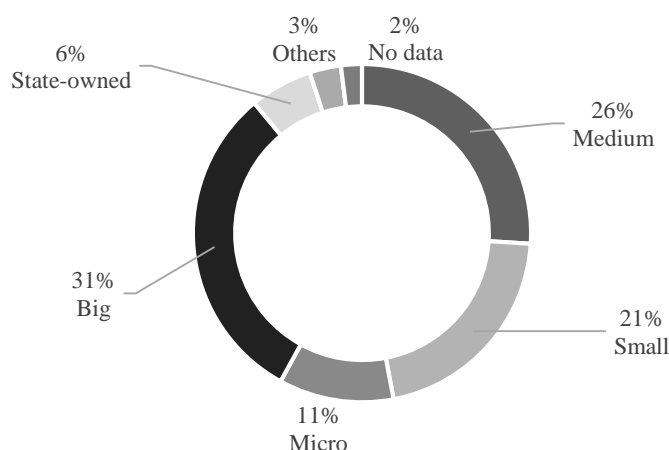
Source: Szigeti (2015b, 19), Geilsdörfer (2015, 20), own illustration.

There is a definitely similar split regarding the main groups of degrees with technical content and in business and economics. The differences between German and Hungarian economic policy is quite clearly depicted by the lack of agricultural degrees in Germany – and reversely the lack of degrees in social studies, pedagogics and health in Hungary. This distribution follows clearly the political goals of the recent government.

To incorporate more small and medium sized companies in the emerging system of dual studies the Hungarian Ministry of Human Capacities is working on a network of “dual studies centres” to give support to new partners (Szigeti 2015a, 13).

²⁰ According to the official statement of the DHBW, see <http://www.dhbw.de/english/dhbw/about-us.html> (accessed October 9, 2015)

Fig. 2: Cooperating companies according to company size



Source: Szigeti (2015b, 20), own illustration

It seems important to note, that 12 out of 22 institutions offering dual degrees are *colleges* or, similar to the English term used in Germany “universities of applied sciences”, which have traditionally a practical focus, but less of an academic reputation. 41 of the degree courses are offered by regular universities, 38 by colleges. To pick two examples: The broadest offer among the colleges is made by the Kecskemét College in the South of Hungary, with a clear technical orientation (3 engineering degrees, 1 degree in “technical management”, 1 in technical IT and 1 horticultural engineering). This is obviously driven by the new production plants of German foreign investors such as Mercedes (plant founded in 2012). The University of Miskolc, an institution with a technical tradition, offers the most dual degrees among universities, but shows a broader portfolio than Kecskemét with degrees not only in technical subjects, but also in tourism, management and economics.

Overall, a specialization of the educational institutions is visible, which in each case seems to correspond to the regional economic structure. According to this, the involvement of companies shows a unsurprising distribution. On average, one degree course is interconnected with four companies. Degrees relating to technical subjects, first of all degrees in engineering, show a much higher participation, on average approximately double as much, partially even more.

5. First conclusions and outlook

The “...Bologna-Process was designed to make transfer between systems or sectors more seamless for students. The emphasis to date has been on horizontal integration between universities; the creation of vertical ‘seamlessness’ is still only tentative.” (McLaughlin/Mills 2011, 234). The statement is obviously true for Hungary. From this point of view, the actual developments seem pleasing. At first sight, the reforms seem to be a straight answer to the core problems we recognize when evaluating general surveys of competitiveness. The initiated form of dual studies is not a copy of the German model, but an explicit attempt to transfer its advantages to the Hungarian system. It is neither a completely new form of higher education, nor is the part of internship only a supplement. The commitment of both sides – institutions of higher education and companies – enforced by the new institution of the *Council for Dual*

Education – and the explicit expectations regarding the respective content are more than a simple ad-on. Based on the holistic definition of competitiveness and the results of the respective surveys we assess the actual reform as a first step in the right direction: Primarily in Hungary, higher education has to get less academic and closer to the world of work. The foreign direct investments of the last years – first and foremost by renowned German companies – confirm the high level of knowledge the Hungarian workforce already has. To top the existing forms of higher education with an added 22 weeks of coordinated and balanced internship – instead of introducing a completely new form of education – is perhaps not necessarily a symptom of the political unwillingness to change a system completely, but rather to raise the bar. To adopt well-tried forms of closer cooperation between institutions of higher education and companies like the German model seems to be an appropriate instrument to prove the willingness to become more than an efficiency-driven economy and to be an active and organic part of dynamic growth.

Hungary of course still does not have a new model. Hungary has taken the first step. If the officially aimed extension of the dual degree format will be successful it will without any doubt be an evolutionary process with an increasing number of partners and a decreasing number of less traditionally designed degrees. But this has to be guided by a smart education policy and wisely developed university strategies. One aspect should be a more appropriate personnel composition of the *Council for Dual Education*, because the extension of dual studies, as a part of the *Council's* agenda, will be a highly sensitive task. With regard to the German ideal a much higher number of partner companies should be involved in the next years – but this will apparently depend on the first experiences. Regarding e.g. the high shares of foreign investors a closer cooperation with the chambers of foreign trade would be advisable. In the long term this may change the composition and functions of the council. If the content of particular degree courses is going to change – and we can safely assume that they are going to change to an extent of more than 10 % – a closer involvement of existing players of the higher education system – as e.g. the Hungarian Accreditation Committee – would be appropriate. But as the very first step, the attempt of “raising the bar” seems to be a feasible way to keep up with the increasing complexity of economic development. Of course, the created, or better, *extended form of higher education* provides no magic bullet to conjure up a knowledge economy. But regarding the existing structures Hungary seems to turn the right screw to make its economy more capable of developing it. Definitely, the further process of the reform will have a heavy impact on the task sharing, reputation, scientific and educational profiles as well as on the financing of colleges and universities. From this point of view, first and foremost universities will face the necessity of a greater change.

To enhance the *respective comparative advantages* education policy will have to follow up closely the employability of the graduates and should measure the satisfaction of both sides carefully and nationwide. In the long term, improvements regarding Hungary's capacity for innovation, the availability of scientists and engineers, the quality of scientific research institutions (now arguably increasingly benefiting from cooperation and new possibilities for shared R&D-projects) and skill-mismatch should be recognizable. But this will take several years. Regarding the until now perceived degree of “isolation of the sectors” (McLaughlin/Mills 2011) in Hungary the briefly described means to interconnect them are promising to ensure “the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people” (Garelli 2006, 608).

In the background is the fact, that Hungary did not take part in revealing studies such as AHELO (see Tremblay et al. 2012) or PIAAC (see OECD 2013), it is, additionally, a scientific desideratum to follow up the measurable results of the reforms closely – regarding the

development of skills and competences (see e.g. Shavelson 2010, Winther/Achtenhagen 2009), or the satisfaction of employers and employees (e.g. Gensch 2014). There are several unnoticed, but especially for a transformation economy highly relevant, aspects such as vocational identity (see e.g. Klotz et al. 2014) or the dynamics of curriculum reforms (see Acedo 2013). Finally, integrated support of scientific and multidisciplinary monitoring would be a desirable ad-on of the process itself.

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