5 Structural Changes in Tertiary Education and Impacts on the Labour Market[*]

Zdenko Babić[**]
Teo Matković[***]
Vedran Šošić[****]

Abstract

This article aims to analyse the dynamics of the labour market and the Croatian tertiary education system in order to point out key organizational problems within the latter, as well as to offer some possible recommendations for improvements. Competitiveness of the national economy depends mainly on the quality and the development of human capital. The quality of human capital is determined by the quality of the educational system, investments in education and enrolment rates. In a knowledge based economy, the quality of tertiary education system plays an important role. Like graduates in many other countries, Croatian university and college graduates have better jobs with higher wages, higher activity rates, longer careers, lower unemployment rates and better employment prospects. Even though the total student population in Croatia rose by 82 percent between 1990 and 2005, this expansion was dominantly concentrated in the field of social sciences and humanities, in non-university courses and among students who (partly) pay tuition fees. At the same time, the number of students whose education fees are fully covered by public sources has decreased. Educational infrastructure has not kept pace with this increasing trend, while the proportion of private fees in the total tertiary education cost has exceeded 20 percent in the 2000s. By using aggregate

data on employability of university graduates we have observed to which extent publicly financed university entry quotas have followed the changes in labour market demand. By comparing data on recent university graduates from programmes with low and high employability, we have found that publicly financed entry quotas for different faculties were for the most part not in congruence with trends and demands in the labour market, but they were largely the result of a revenue maximization and capacity utilisation strategy, followed mostly by college boards (mainly in the social sciences and humanities), thus creating some disproportion in the highly-educated segment of the Croatian labour market.

1   Introduction

Like transition from planned to market economy, transition of Croatia's tertiary education system has its goals, stakeholders, winners and losers. Transition has its legislation that provides incentives and guidance, its institutions that enforce legislation, but also its interest groups that attempt to maximise their partial interests under the given circumstances. Despite all the positive aspects of expansion experienced by Croatia's tertiary education system "in transition", this process has been ridden with problems. A part of the problem has to do with unregulated institutional structure and insufficiently clear and strong role of University (Juroš, 2006). The other part of the problem is the questionable financial transparency. With the enactment of the Higher Education Act in 1996, colleges found themselves involved in a fierce "market" competition for students of the so-called courses "for personal needs" and part-time students. These are, of course, students who co-finance a large portion of their costs of education. As a result, public colleges[1] have been faced with the challenge to act according to market principles while trying to maximise their "extraordinary income" in quasi-market conditions. A study conducted by Bajo (2003) has shown that this problem is most pronounced at some social science colleges whose "extraordinary income" is often equal to that derived from the state budget. Consequently, such colleges have experienced an expansion in the number of enrolled students, while a part of graduates with specific qualifications are continuously facing difficulties in finding employment. The signals from the labour market indicate the need for re-examining this model of operation. Another part of the problem lies in the practical "economic" inequality among colleges and employees of the same university. At colleges generating a large "extraordinary income", managements are finding ways of distributing such income in form of author's fees to their employees. As a result, this income is not reinvested into tertiary education and employees of other colleges (belonging to the same university), where an increase in the number of enrolled students is economically not justified (technical and medical schools) or is not implemented for other reasons, are placed in an unequal position compared to employees of colleges that have "market potential".

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[1] *That should primarily be concerned with promoting public interest.*

This paper is aimed at objectively presenting the ineffectiveness and inefficiency of both the dynamics of system structure and the labour market outcomes resulting from such practices in tertiary education, as well as to point to inadequacy of the tertiary education system enrolment policy.

The paper is divided into five sections. The introductory section presents motivation, goal and structure of the paper. The second section deals with the correlation between education and the labour market with special emphasis on correlation to tertiary education. The third section deals with the structure of tertiary education system in the period 1990-2005 with special emphasis on the analysis of quantitative system indicators, while the fourth section deals with (in)adequate enrolment policies in tertiary education system and issues of employability of highly educated graduate profiles in the period 2000-2005. The last section brings conclusions and recommendations.

2   Education and Labour Market

The correlation between education and labour market has recently become a focal point of political discussions. A number of factors have lead to education being placed into such position. Firstly, education is one of the main factors that are vital for creation of modern, knowledge-based economies. Education and investments in education therefore feature prominently in strategic documents such as the Lisbon Strategy (European Union, 2000). De la Fuente (2003) estimates that an increase in the average level of education in the EU for one year would in the long rung result in a 9.3 percent increase in productivity. Taking into account the impact of a higher level of education on the participation rate on the labour market and the unemployment rate, the possible effect on total GDP would be even greater. Furthermore, apart from positive effects on growth and development, education is viewed as a priority because of its potential for "social inclusion" – for providing additional opportunities to the excluded, the unemployed and the poor. In other words, it is believed that faster restructuring and expansion of formal and informal education could alleviate the problem of high unemployment and the growing social polarisation in developed countries. These effects rank particularly

prominently in discussions over the *European Employment Strategy* and OECD's *Jobs Strategy* (European Union, 2003; OECD, 1996). Apart from the above, social benefits of education also include additional benefits such as lower crime rates, better health condition of the population, strengthening of social cohesion, increase in the quality of political processes due to citizens being better informed. Finally, these investments involve significant financial resources, on average about 6 percent of GDP in OECD member states, with tertiary education accounting for a considerable part of investments. It is therefore important to know whether such investments are justified by social return, i.e. whether benefits of these investments are at least equal to return on alternative investments.

Benefits of education are easier to ascertain from an individual's aspect than from the aspect of the society. Better educated persons have higher wages than persons of similar characteristics but poorer education and are likely to participate in the labour market more frequently and for longer periods. Higher participation in the labour market and higher employment partly also result from higher opportunity costs of non-participation in the labour market, i.e. higher wages that are available in the market to better educated persons. Nevertheless, irrespective of higher participation, better educated persons find a job more easily and have a lower risk of falling into unemployment[2]. Accordingly, better educated individuals are also exposed to a significantly lower risk of poverty. While persons who have only received primary education, at the level of EU 2000 average, were exposed to a 19-percent risk of poverty, highly educated persons had only a 7-percent chance of falling into poverty (Education Across Europe, 2003). Of course, the above differences in employment and employability, unemployment and wages between different population groups, classified according to educational attainment, represent differences between averages for such groups, and changes in the educational structure of the working-age population would at the margin have lower impact on wages and employment than indicated by averages.

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[2] *Standing out as a somewhat specific case is probably only Italy which is mentioned in this paper on a number of occassions. After graduation students in Italy spend on average 19 months looking for a job, which is only slightly below the average for persons with secondary school attainment (20 months). What is more, the risk of unemployment of university-educated individuals until 35 years of age remains equal to that of persons with secondary-school or primary-school attainment (Di Pietro and Urwin, 2003).*

Patterns observed in developed countries have also set root in Croatia in the transition period. Over the last ten years or so the wage premiums for education have gradually risen, which became particularly evident towards the end of 1990s. While during the mid-1990s, persons with two-year college or university degree, leaving out all other differences among them which may influence wages, earned on average 45 percent more than persons with secondary-school attainment. By 2002 this premium stabilized at around 60 percent of wages of persons with secondary-school attainment. Simultaneously, the widening gap has also become obvious at the lower end of the education ladder, i.e. among persons with secondary-school attainment and those with only primary-school attainment or less. Growing wage premiums for educated workers is not something that is specific to Croatia or transition countries. Over the last two decades a growth in wage premiums has been observed in developed countries as well, mostly as a result of technological progress.

Figure 1 **Wage Premiums According to Educational Attainment Compared to Workers with Secondary School Qualifications**
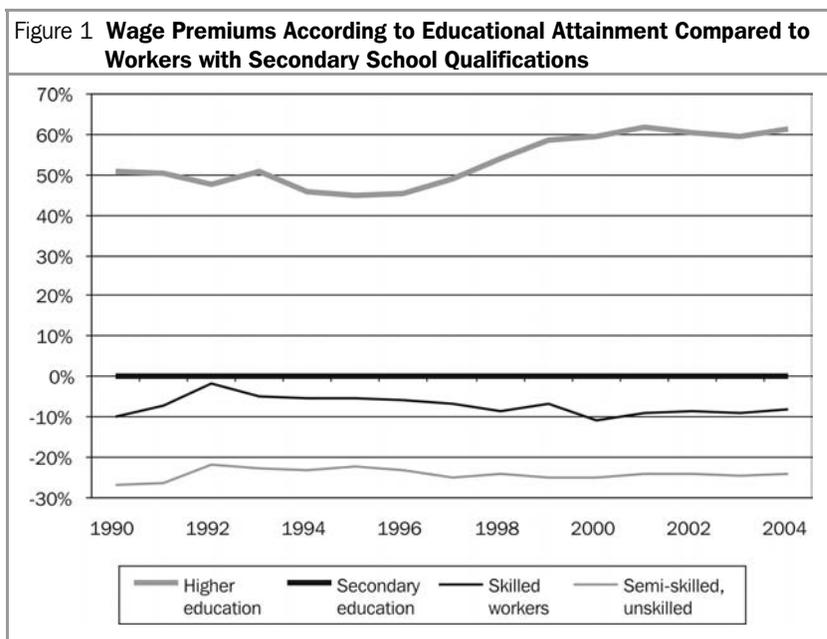
Source: Calculated by authors based on CBS Statistical Yearbook (issues 1989-2004).

As is the case in other countries, people in Croatia with non-university college degree and university degree generally have a greater probability of participating in the labour market and their working life is frequently longer that that of persons with lower educational attainment. Thus, persons in Croatia with non-university college degree or university degree have a significantly higher participation rate than persons with secondary-school attainment, and the difference in participation is even more pronounced in relation to persons with primary-school attainment or those with no primary-school attainment. At the same time, unemployment rates for persons with primary and secondary school qualifications are approximately twice as high as unemployment rates for persons with non-university college or university education. Persons with primary-school attainment and less have a slightly lower unemployment rate than persons with secondary-school attainment. However, such persons have low participation in the labour market. Thus, higher level of wages and high unemployment rates among young people, especially those with lower education, are a strong additional motive for attending college in Croatia. The dilemma after completion of secondary education is often not: participate in the labour market or attend college, because the alternative to college is not employment but mostly a long period of unemployment.

Table 1 **Specific Unemployment Rates and Participation Rates in the Labour Market, by Educational Attainment Level (Based on Labour Force Survey, Persons Older than 15 years)**										
	Unemployment Rates		**Participation Rates**		**Category Structure (in %)**					
					Employed		**Unemployed**		**Non-active**	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Primary education and less	13.6	11.4	28.1	26.4	22.2	21.1	21.8	18.7	57.6	57.0
Secondary education	15.6	15.0	63.2	62.6	59.2	60.0	68.4	72.6	35.9	36.2
Tertiary education	7.7	6.3	73.1	71.5	18.7	18.9	9.8	8.7	6.6	6.9
Average	**13.8**	**12.7**	**50.5**	**49.6**						

Source: Calculated by authors based on Labour Force Survey data.

In the following, the labour market indicators will mostly be based on Croatian Employment Service (CES) data on registered unemployment for which an abundance of detailed information is available. Registered unemployment differs

from Labour Force Survey (LFS) unemployment and in recent years was significantly higher – for about a third – than LFS unemployment. These differences were, however, not evenly distributed across different educational groups. While the number of persons with university degree, as recorded in 2005 by the Croatian Employment Service, was approximately equal to the number of these persons who were unemployed according to survey, which means that registered unemployment is probably a good indicator of unemployment among better educated individuals, the number of persons with secondary and especially those with primary attainment and less as recorded by CES was significantly higher than their unemployment level according to LFS. This may mean that the phenomenon of unregistered labour is more prevalent among registered persons with lower educational attainment level as well as that such persons are more prone to become discouraged workers, i.e. to give up active search for employment, which is linked to lower prospects of finding work, and they fail to deregister from CES records. Since detailed analysis will be focused on unemployed persons with non-university college degree or university degree, we may assume that CES data are relatively reliable in this segment.

Table 2	**LFS and Registered Unemployment by Educational Attainment Level 2005**			
	Primary education and less	**Secondary education**	**Tertiary education**	**Total**
Registered (in thousands)	90.1	196.8	21.0	308.7
LFS (in thousands)	42.8	166.2	20.0	229.0
Ratio registered/LFS	2.12	1.18	1.05	1.35

Source: Calculated by authors based on Labour Force Survey and Croatian Employment Service data.

The structure of recorded persons with no working experience was mostly very similar to total registered unemployment, which means that young persons too, although appearing in a relatively larger number in CES records, are facing similar difficulties in finding employment as older persons from the same educational group. Following the reform of the employment mediation system in 2002,[3] which

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[3] *The new Act on Employment Mediation and Unemployment Rights (Official Gazette 32/02) came into effect in April 2002, whereas CES implemented its new business procedures in September of the same year.*

introduced schemes for activating unemployed persons, the obligation to report job vacancies to CES was annulled and a record of job seekers was set up who do not belong to the unemployed. This resulted in a slight decrease in the number of recorded persons with primary school attainment or less in total unemployment. However, the structure of unemployed persons who are first-time job seekers has not changed significantly. The reform of the employment mediation system has had no vital influence on the continuous downward trend in the number of recorded persons with no working experience in total registered unemployment, which in 2005 made up slightly less than a quarter of total unemployment in that year.

A relatively low percentage of unemployed persons with tertiary educational attainment both in total unemployment and among first-time job seekers does not have to mean that such persons easily find employment. To be able to make such a conclusion, we would have to consider certain indicators of the dynamics of their employment, that is labour market trends. Job accession rates, which are calculated as a percentage of newly employed persons over a particular period of time in relation to the total number of job seekers in that period, i.e. as a ratio of newly employed to job seekers in the reference period, are a relatively simple indicator of employability of individual categories. Persons with university degree or non-university college degree have continuously had significantly higher job accession rates than persons with secondary or lower educational attainment, even when indicator denominator was adjusted to the LFS unemployment level which doubled the job accession rates for persons with primary-school attainment. In 2004, average job accession rate was slightly lowered, probably as the result of annulment of the obligation to report job vacancies with CES. Nevertheless, considering the intensity of the drop in employment, we may assume that more than 4/5 of new employment is still taking place through mediation and knowledge of CES compared to the period prior to cancellation of the job vacancy reporting requirement.

Figure 2 **Structure of Unemployed Persons without Experience in CES Records by Educational Attainment (end of year)**

Source: Croatian Employment Service.

Job accession rates indicate that individuals with tertiary educational attainment are also likely to encounter obstacles in finding employment – less than a half of those who are recorded as seeking employment find a job within a year. Nonetheless, as will be shown later, large differences in employability exist among categories of persons with non-university college degree and university degree, depending on the course of study. Total job-seeking period for individuals with tertiary educational attainment is largely influenced by inadequate educational structure that "produces" inadequate occupation profiles. However, a longer job-seeking period is not the only cost of inadequate educational structure. Persons unable to find a job for a prolonged time are often forced to take employment outside their field. García-Espejo and Ibáñez (2006) have shown that university-educated persons who take employment in Spain outside their field of study have lower wages, lower accessibility of on-job training, lower advancement prospects and lower job stability than their counterparts who take employment in their specialised field, and are generally less satisfied with their job. Therefore, following the analysis of the evolution of tertiary education indicators, our attention will be

concentrated on a detailed structure of supply of university-educated persons by specialist field and the extent to which this structure was adjusted to demand as well as the extent to which supply of university-educated persons responded to the demand for individual professions.

Figure 3 **Job Accession Rates for Persons without Working Experience – by Educational Attainment**
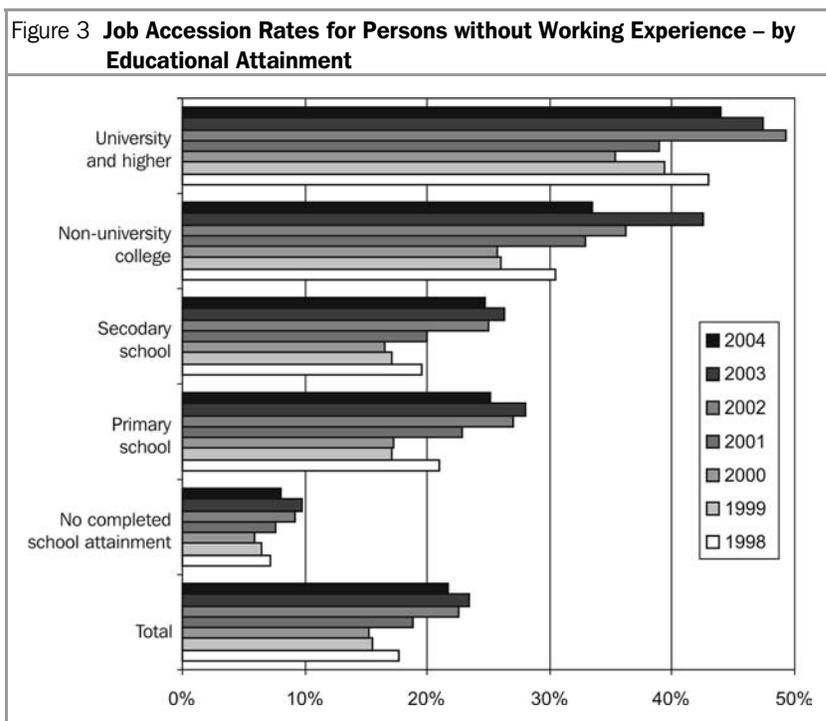
Source: Croatian Employment Service.

3   Structure of Tertiary Education System 1990-2005

3.1   Entrances

Tertiary education represents the third and highest stage in the educational cycle. Figure 1 provides information on the percentage of eighteen-year-olds who entered this form of education between 1990 and 2004.

The first constraint is presented by the size of population. As a general rule, tertiary education is entered by persons aged 18 and 19, so the size of this cohort

represents the maximum potential number of enrolled students. In 1991, 39.8 percent of generation enrolled in a university course of study and by 2004 this share almost doubled to 64.7 percent. This dramatic rise is not solely the result of an increase in entry quotas. Namely, in the late 1990s the most numerous generations passed the enrolment age and since then there has been a continuous decline in the size of the 18 year olds cohort which shrunk by 8.6 percent between 1998 and 2004. One should bear in mind that, according to birth statistics of the Central Bureau of Statistics (CBS), over the next ten years or so the size of generation of college age will drop by an additional ten percent, and by 2024/5 the number of potential students will go down to 40.299 – a figure very close to current enrolment rates.

Figure 4 **Number of Enrolled in Higher Education Institutions 1991-2004**
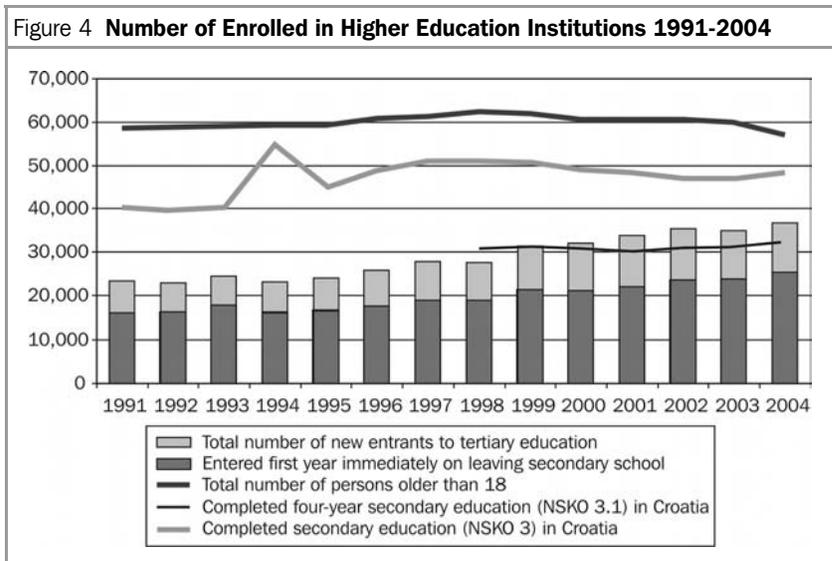
Source: Census 2001 (for population size), CBS reports "Secondary Schools and Boarding Homes". CBS Statistical Yearbook and reports "Students in an Academic Year" (issues 1990-2005).

Non-university colleges and universities are entered by persons with completed secondary education. The next appropriate indicator is therefore the number of students completing secondary education in a current year. Since 2000, the proportion of student generation in Croatia completing regular secondary education till September of the current year varies between 78 and 85 percent (Figure 4). However, if the youth residing outside the country is not included in

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the total population, and if number of graduates includes the youth completing their final high school exams belatedly or completing adult secondary education programs before the age of 25, the secondary school completion rate for 2004 would rise as high as 94 percent (for calculation details see Appendix Ia).

Normally, only young persons who have completed four-year secondary education are eligible to enrol in tertiary education. Nevertheless, over the last six years the number of students enrolled in institutions of higher education has exceeded the number of persons completing regular four-year secondary education (Figure 4), i.e. the number of enrollments in higher education institutions is growing faster than the number of students completing four-year secondary schools.

Although a part of this difference may be attributed to methodological disparity[4] and migrations of secondary school students,[5] the main reason for the existence of this disparity lies in the fact that about a third of students do not enter institutions of higher education immediately after leaving secondary school (Figure 4). This means that non-university college and university courses are entered not only by nineteen year olds, but by older persons from generations that did not go on to college in such large number. Such persons enrol at a later stage in life, mostly as part-time students. This is especially the case with schools of higher vocational education, polytechnics and non-university colleges (ISCED 5b), where, according to CBS, a tenth of first-year students are older than 29, and an additional eighth is older than 23. In the medium term such compensation would no longer be possible, because the "reserves" of candidates eligible to enrol in tertiary education would be exhausted. This trend may be postponed by expansion of higher education system towards even older cohorts of adults who may be seeking to improve their labour market prospects in keeping with lifelong education trends. Despite the fact that in Croatia eligibility to enrol in higher education is formally not limited by age, the practice of entering college in one's

[4] *A certain percentage of young people complete an appropriate adult education at some later stage in life or complete the school-leaving examination or difference exams for a four-year profile, thus becoming eligible for enrolment in institutions of higher education. Also, polytechnics exceptionally admit students with completed three-year vocational secondary education. Though, neither of these occurences is statistically covered.*

[5] *Registered in Croatia is about 500 students with foreign citizenship and about 2500 students with Croatian citizenship having residence abroad (mostly in Bosnia and Herzegovina). This trend of young people from Bosnia and Herzegovina choosing to enter their post-secondary studies in Croatia has been relatively stable over the past fifteen years (Central Bureau of Statistics, 1990-2005).*

thirties or forties is not likely to develop into a large-scale trend, not only because of the lack of such a tradition and the fact that the later in life an investment in education is made the lower the return it yields, but also because of considerable financial constraints at later stages of life cycle (no financial support from parents, obligations to one's family, loans...).

The lack of candidates who qualify for enrolment in tertiary education in combination with negative demographic trends could be a major obstacle to further increase in the number of students in the future. A larger number of secondary educational programmes that allow vertical educational mobility, i.e. enrolment in institutions of higher education, is the main precondition for further growth of the number of tertiary education enrolments. This phenomenon is already present in secondary education, where due to reduction in the size of generation a downward trend is observable only in the number of students enrolled in three-year industrial and vocational secondary schools (a 22-percent drop between 1998 and 2004), while the number of enrolments in other types of secondary education is stagnating (for more details about transition from vocational secondary to tertiary education see ASO, 2006.). In this context, an increase in the number of applicants for enrolment into institutions of higher education would require either even more dramatic reduction in three-year vocational secondary programmes or opening of channels of vertical educational mobility that would provide all secondary school leavers with realistic prospects for continuing their education.

In the current context, the "supply" of enrolment slots is beginning to surpass "demand" (at least if an applicant is willing to co-fund his/her education), which is clearly reflected in the complaints of college and university representatives about the deficit of applicants (i.e. a sufficient surplus of applicants that would facilitate quality enrolment selection), as well as in increasingly aggressive and pro-active promotional campaigns (in form of open days, university festivals and promotion and information materials in quantities that some ten years ago would have been unthinkable).[6]

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[6] *These strategies are very useful for future students as they raise their level of information – and ability of selecting an adequate course.*

3.2 Completion and Dropout

Studying at a college or university entails large costs – for institutions whose employees are obligated to provide adequate services to students during their studies and, to an even larger extent, for students themselves who bear the largest burden of direct and indirect costs of education. The longer the period of education lasts, the larger the costs, and in case of non-completion losses (both public and personal) are huge.

In the Republic of Croatia, a significant number of enrolled students never complete their degree studies, and those who complete their degree take relatively long to do so. According to statistical reports of the CBS, students who graduated in 2004 took on average 5.8 years to complete their studies. This figure varies between 6.9 years for university programmes and 4.5 years for polytechnic and non-university college courses. There is little improvement over time. Compared to students who graduated in 1996, average duration of university education has been increased for a month, while the average duration of studies at post-secondary vocational programmes and non-university colleges has been shortened for 2 months.[7] As well, over the last seven academic years between 20 and 27 percent of students had to re-take their freshman year.[8] This figure seems to be increasing, indicating unfavourable dynamics of studying.

Over the last fifteen years only about as few as 15 percent of undergraduate students managed to complete their degree within the stipulated time without

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[7] *An additional methodological remark is needed here. Calculations of the average duration of studies for graduated students were based on publicly available data that round the duration of studies to the calendar year in which a person obtained his/her degree. Since academic year starts in October, this slightly overestimates the duration of degree studies. For example, the duration of studies of all persons who take between 4 years and 3 months and 5 years and 2 months to graduate is recorded a 5 years. Also, all students who graduated after 10 years or longer are aggregated into one group, which somewhat underestimates the duration of studies if in this group the duration of studies is recorded as 10 years, which is what we did. Though consistent, this estimate is not completely reliable over time.*

[8] *The direct completion rate is lower: to be added to this figure are also those students who drop out after they fail to complete a year.*

having to re-take any courses.[9] Nevertheless, the total completion rate is significantly higher.[10] The average and medial term for completion of studies over the last decade being 6 years, a valid approximation of the completion rate can be calculated by comparing the number of persons who graduated from institutions of higher education with the number of students enrolled six years earlier. Thus calculated, the total completion rate in the mid-1990s was about 50 percent, in the late 1990s it rose to 55 percent, and over the last five years has remained on approximately the same level. Compared to the OECD countries, Croatia is not a good performer in respect of completion rates. This indicator ranks Croatia on an equal level as France in 1998 and above Italy (where in 1998 only 35 percent of students completed their degree studies), but significantly below most other countries (OECD, 2000.)

Despite the slow growth in completion rates over the last fifteen years, the number of students who complete their studies is continuously increasing due to a tremendous increase in the number of enrolled students (Figure 5).

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[9] *From 1990, when 16.2 percent students graduated within normal time, to 1996 the figure dropped to 14.9 percent and remained at this level until 2001 - the last year for which this information was published. By 1996, about 16 percent of university students graduated within the stipulated time, however, by 2001 this proportion dropped to 11.7 percent – an above-average proportion of students completed their studies within the stipulated time from medical, technical and religious university courses, while the rate of completion within the stipulated term was very low and continued to drop in the area of natural, biotechnical and social sciences. On the other hand, graduation rate within stipulated time from non-university courses has significantly increased.*

[10] *Unfortunately, no standard methodology has been established for tracking and recording the number of students who drop out or fail to complete their studies in Croatia. The entitlement of dropouts to return to their studies without renewed enrolment, although rarely used, makes it also formally difficult to unequivocally classify a student who drops out from his/her studies.*

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Figure 5 **Number of Persons Graduated from Institutions of Higher Education 1991-2005**
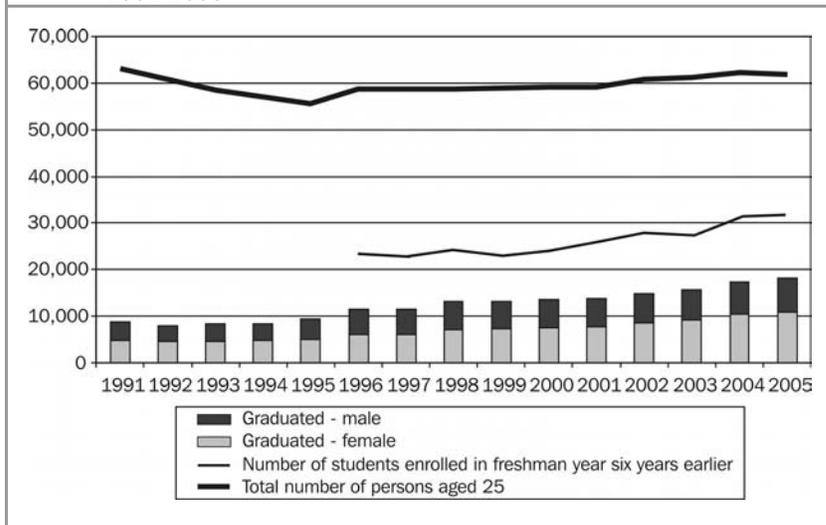
Source: Census 2001 (population size). CBS reports "Students in an Academic Year" and "Higher Education" (issues 1990-2005).

It is possible to approximate the proportion of generation that completes higher education by comparing their number with the size of the twenty-five-year-old cohort.[11] Even though it is still only a minority that completes higher education, this proportion has been increasing throughout the transition period and has more than doubled from 13.7 percent in 1991 to 29.4 percent of the generation 2005.[12] This percentage is likely to continue to grow, because over the last six years the number of enrolled students has increased by additional 20 percent, and due to unfavourable demographic the size of cohort will decrease in this period by 8.6 percent. Accordingly, with the current completion rate and duration of studies, it can be estimated that about 40 percent of generation of today's 19-year-olds will graduate from some higher education institutions about 2010.

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[11] *In the year of their first enrolment in freshman year, the majority of students are turning 19, so that at the time of graduation their average age is 25, which is in compliance with the median graduate age in the reports of the CBS.*

[12] *This figure represents the lowest estimate, since the cohort also includes persons resident abroad (see Appendix I.a), but does not record persons who completed their secondary education in another country.*

On the other hand, the fact that the completion rate is relatively constant and low (50-55 percent) points to large losses, both personal[13] and public, incurred in the system.[14] In addition, it sets another objective obstacle to the growth in tertiary-educated population – if all secondary school leavers after completion of four-year secondary education were to go on to some institution of higher education (which is not far from the current situation), just over a half of them will complete higher education. This means that, in absence of large-scale education system reforms, the proportion of highly educated persons in the generation after 2010 will probably stop at the above-mentioned level of about 40 percent.

3.3   Size of System

Although in the global comparison Croatia does not have a particularly high share of students in tertiary education among the total population,[15] over the last 15 years the higher education system has seen a steady expansion (Figure 3) from 70.8 thousand to 128.7 thousand students – not including undergraduates eligible for their degree finals[16] (for growth rates and other indicators see Table 3).

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[13] *Nevertheless, there is a number of student rights (e.g. food subventions, student employment service) that make retention of student status a more cost-effective alternative to open unemployment, even if a person has no intention or possibility to complete his/her degree studies. In addition to this, student status is helpful when seeking employment – potential employers are more likely to employ a "student" than a "person with completed secondary school" (for the case of Italy see Dornbusch, Gentilini, and Giavazzi, 2000).*

[14] *Expenses (in respect of both time and money) vary significantly depending on the stage in which dropping out took place. For example, if all 45 percent were to drop out after one year of studies, the additional burden on the system and the costs for all involved in education would be significantly lower than if majority were to drop out after three, four or more years spent in higher education.*

[15] *According to the Countries in Transition report by the Vienna Institute of Economic Studies WIIW (2004), in Croatia the number of students per 10,000 inhabitants in 2002 (262) is similar to that of the bottom group of EU transition countries (Slovakia 258, the Czech Republic 211, Bulgaria 266, Romania 274), and lower than for Hungary (376), Slovenia (363) and especially Poland (469). Also, the growth index of the number of students is among the lowest in the region – primarily owing to a rather good starting position. Such general indicators have specific weaknesses, because they depend on the demographic structure of the country (share of tertiary education-age population in total population – where "younger" nations with higher fertility rates like Poland have a head start) and favour systems in which higher education lasts longer.*

[16] *Students eligible for their degree finals are not included in CBS surveys, and are therefore not accounted for in this paper either. The total number of students indicated in the records of the Ministry of Science, Education and Sports is about 30 percent higher, which is probably the result of inclusion of students eligible for their degree finals.*

Total Number of Students According to the Source of Education Funding, 1990-2005
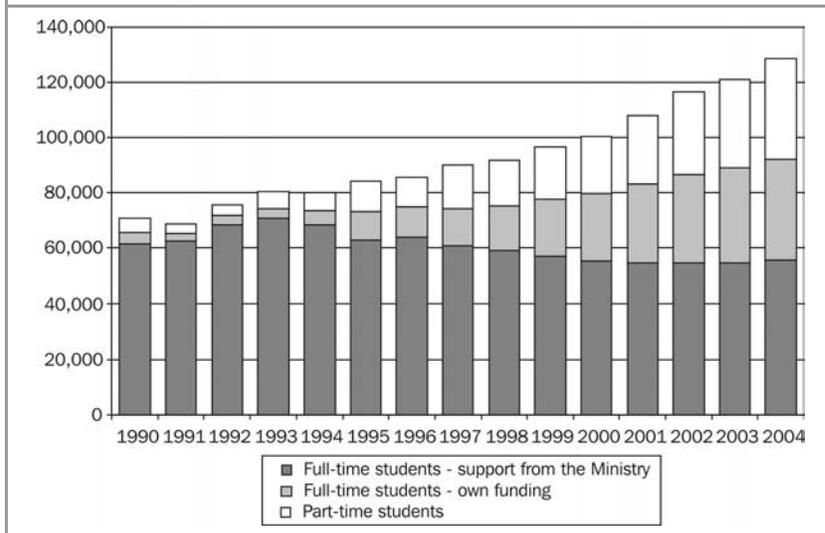

Source: CBS reports "Students in an Academic Year" (issues 1990-2005).
Note: The figure does not include undergraduates eligible for their degree finals.

However, this increase in the total number of students is not evenly distributed among all types of study and fields of higher education.

Firstly, following the period of growth in the number of students who received the Ministry support, which lasted till 1993/94, great changes occurred in the share of different modes of student funding. While the number of students who do not pay their tuition fees is actually decreasing, the system is experiencing a growth exclusively owing to a steady increase in the number and proportion of students who (co)finance their education. While in 1993/94 the percent of students who had their tuition fee costs fully financed by the Ministry was 88.2, by 2004/05 this share has dropped to 43.3 percent. At the same time, the proportion of full-time students and part-time students who pay their own tuition fees[17] has risen to 28.3 percent and 28.5 percent respectively. Thus happened a tacit transition from a publicly financed to a mixed model of tuition funding, during which the absolute

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[17] *Students pay the entire cost of education only in a minority of cases. In all institutions financed by the Ministry of Science, Education and Sports tuition fees are several times lower than in private institutions (such as business schools). For more details, see the text below.*

number of students whose tuition fee is fully financed by the state has decreased by 10 percent, while the number of those who partly or fully pay their own costs of education has increased sixfold (for full-time students) or eightfold (for part-time students) (Table 3).
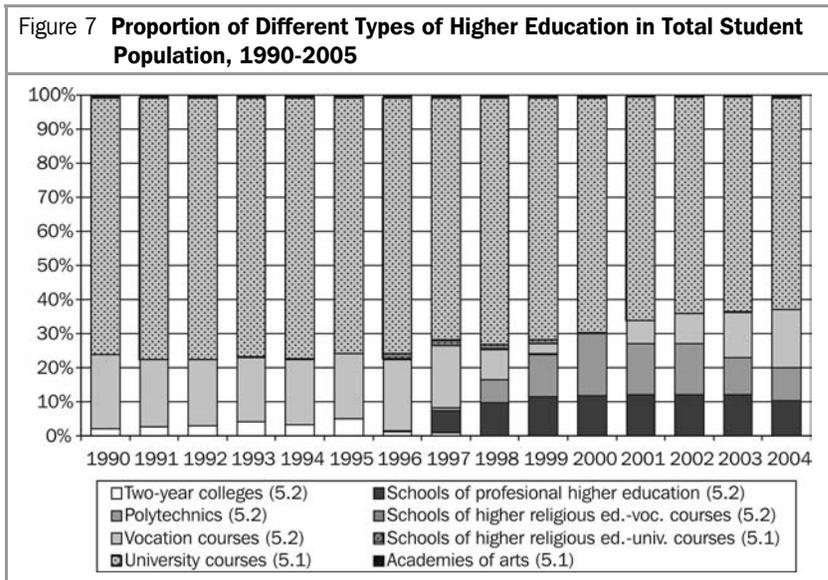
Figure 7 **Proportion of Different Types of Higher Education in Total Student Population, 1990-2005**

Secondly, both in absolute (Table 3) and especially relative figures (Figure 7) a larger expansion has been observed in non-university (ISCED 5.2) than university programmes (ISCED 5.1). The former normally last two years and include non-university colleges and schools of professional higher education, polytechnics and vocational university courses, while the latter include university courses and academies of arts. Until 1995 the proportion of the two types of higher education has been relatively stable, with some variations in the proportion of various non-university courses. Then followed a tumultuous period of restructuring when schools of higher religious education were included in the records,[18] and instead of non-university colleges and vocational university courses a significant number of

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[18] *Since 2000, schools of higher religious education have been identified in statistical reports as university and vocational courses respectively.*

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students are attending polytechnics and schools of professional higher education. Developments in the segment of vocational (ISCED 5.2) courses are in most cases the reflection of a change in the status of higher education institutions rather than of opening of new programmes (or closing of old ones). However, since the late 1990s there has been an important trend towards opening new branches of existing higher education institutions and establishment of completely new institutions (such as business schools) – for which the whole education expenses are normally covered by students themselves. Towards the end of the period two new universities have opened – in Zadar and Dubrovnik.

Figure 8 **Number of Students by the Field of Study,[19] 1990-2005[20]**
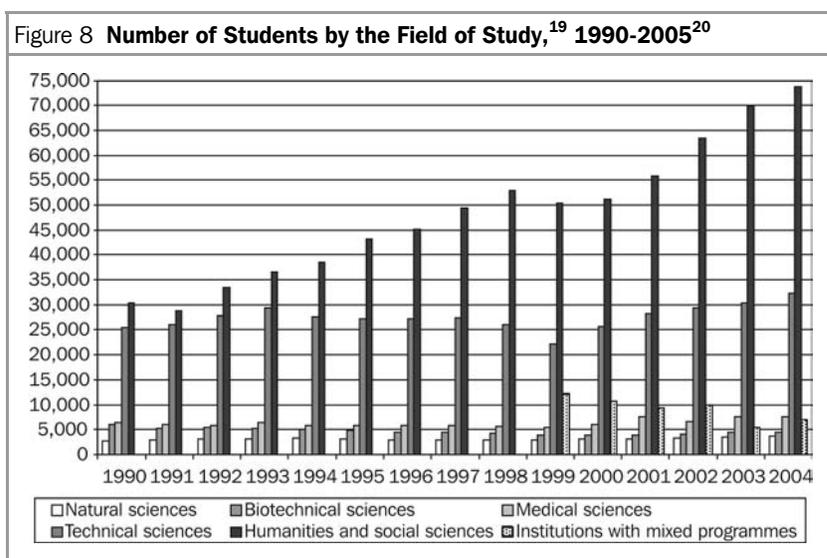
Source: CBS report "Students in an Academic Year" (issues 1990-2005).

Thirdly, the growth in the number of students has not been even in all study fields (Figure 8). Most of the new capacities (and institutions) have opened in the area of social sciences and humanities, while in other fields the growth in the number of

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[19] *For consistency of data, in the classification of scientific fields we used the classification that was in force till 2004. Food technology courses were thus grouped within technical sciences, and veterinary medicine within biotechnical, and not medical sciences.*

[20] *Since 1999, information about polytechnic students is not presented by scientific field. These are mostly institutions with programmes in humanities, social or technical sciences - hence the apparent "drop" in the number of students in these fields between 1998-99 and 1999-2000.*

enrolments has been much smaller (Table 3). In biotechnical sciences, there has even been a drop in the number of students. This further aggravates the disparity of profiles between secondary vocational education and higher education. Namely, a rather large part of secondary education capacities is in technical vocational fields. While no significant developments in the structure of secondary education programmes have happened in recent years (ASO, 2006), the majority of expansion in higher education was concentrated in the field of humanities and social sciences (compare Figure 8).

Table 3 **Higher Education System Indicators, 1990-2005**			
	1990/91	**2004/05**	**Change 1990/91–2004/05 (%)**
Total number of students in the system	70,781	128,670	+82
Number of students by type of course			
ISCED 5.2: Vocational courses, non-university colleges (1990) and schools of professional higher education and polytechnics (2004)	16,832	47,735	+184
ISCED 5.1: University courses and academies of arts	53,949	80,935	+50
Number of students by scientific field[21]			
Natural sciences	2,578	3,562	+38
Technical sciences	25,575	32,271	+26
Medical sciences	6,299	7,548	+20
Biotechnical sciences	5,981	4,531	-24
Humanities and social sciences	30,348	73,825	+143
Mixed programme institutions[22]		6,933	
Number of students by mode of studying (and funding)			
Supported by the Ministry	61,562	55,671	-10
Students (co)fund their own studies	3,979	36,381	+814
Part-time students (pay their own studies)	5,240	36,618	+599
Enrolled and graduated students			
Number of students first time enrolled in freshman year	23,290	36,856	+58
Number of graduated students	8,680*	17,391	+100

* 1991/02
Sources: CBS reports "Students in an Academic Year" and "Higher Education" (issues 1990-2005).

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[21] *Since educational and not the scientific segment of higher education is analysed here, it would be more appropriate to use the ISCED classification of educational fields. Nevertheless, since statistical reports provide information at the level of institutions of higher education many of which provide programmes in several ISCED areas, the presentation has been retained at the level of scientific fields.*

[22] *Regarding the fact that these institutions (mostly polytechnics) primarily offer programmes in humanities, social and technical sciences, the growth in these areas is larger than shown by the change indicator.*

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The reason for such development is to be sought in infrastructural and financial demands of launching individual programmes. Namely, courses in the fields other than humanities and social sciences, as a rule, require much larger resources per student (e.g. laboratory and clinical exercises, costly specialist equipment), which means that an increase in capacity represents a cost the institution is simply not able to cover from tuition fees alone.[23]

3.4 Infrastructure

Was the increase in the number of students coupled with an increase in system capacities? If capacity is measured simply by staffing (Table 4), a certain pattern of lagging behind is to be observed over the last ten years: even as there are years when a large batch of new staff is recruited into the higher education system (1999/00, 2002/03, 2004/05), that is not sufficient to follow the increase in the number of students. Considering the probable stabilisation of the number of enrolments (see under 3.1), a further recruitment of teaching staff could improve this situation, but also counteract the crisis the system may face between 2010 and 2020 if the teaching staff has aged through the 1990s to the same extent as the research staff, out of whom in 2001, 44 percent were older than 50 (Flego, 2002 according to Berryman and Drabek, 2002). When implementing educational policies, one should bear in mind that (quality) training of higher education teaching staff is an extremely lengthy process. The trend of hiring lecturers from one institution as outside lecturers at other institutions, which has intensified since the end of the nineties (Bajo, 2003), does not provide an adequate solution to the problem of inappropriate students/teaching staff ratio, nor does it help create new capacities.

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[23] *Nonetheless, a growth in the number of students who pay their tuition fee has been observed in programmes in all scientific fields.*

Table 4 **Developments in the Students/Staff Ratio (1994/95=100)**											
Year	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05
Staff	6,169	6,325	6,030	6,253	6,748	7,563	7,701	7,622	8,132	7,917	8,764
Staff growth index	100	102	98	101	109	123	125	124	131	128	142
Student growth index	100	105	117	112	115	121	125	135	145	151	160
Number of teachers per 1000 students	77	75	70	69	73	78	74	68	67	63	68

Source: CBS, Statistical Yearbook.

On the other hand, no reliable indicators are available on the increase in spatial capacity and technical and supporting infrastructure. As an illustration, between 2000/01 and 2004/05 the number of beds in student halls of residence increased by only 5.1 percent from 8,751 to 9,195, which is much slower than the growth in the number of students, which in this period amounted to 28.3 percent.

3.5   Funding

The level of infrastructure largely depends on the level of higher education funding, which in this analysis will be addressed only at a rudimentary level – by getting an insight into budgetary expenses and estimating total private expenses on tuition fees. Following a growth in the second half of the 1990s (Bajo, 2003), between 2000 and 2004 budgetary expenses for higher education were relatively stable compared to GDP. The growth in public expenditure in HRK is approximately equal to the increase in the number of students. In 2000 annual public expenditure per student amounted to an average of HRK 14,016, while in 2004 it grew to HRK 15,424. With today's average duration of studies of 5.8 years, by the time they obtain they degree an average student will have cost the government budget slightly less than HRK 90,000. However, to be added to this figure are the resources invested in the 45 percent of students who fail to obtain their degree, so that the cost per person who completed his/her studies is probably within the range of HRK 120,000-150,000.

Table 5 **Expenses for Higher Education**					
	2000	**2001**	**2002**	**2003**	**2004**
GDP (mil. HRK)	152,516	165,639	179,386	193,067	201,176
Budgetary expenses for higher education (mil. HRK)	1,356.7	1,416.8	1,416.6	1,688.4	1,863.6
Estimate of private expenses for higher education (only tuition fees) (mil. HRK)[24]	256.9	330.6	388.1	425.3	461.1
Budgetary expenses for higher education (% GDP)	0.89	0.86	0.79	0.87	0.93
Private expenses for higher education (only tuition fees) (% GDP)	0.17	0.20	0.22	0.22	0.23
Total expenses for higher education (% GDP)	1.06	1.05	1.01	1.09	1.16
Share of private expenses (only tuition fees) in higher education expenses (%)	15.92	18.92	21.51	20.12	19.84

Source: Ministry of Science, Education and Sports and CBS.

However, the expansion of the number of students primarily occurred in the segment of students who (co)funded their education (Figure 6). At present, slightly above a quarter of students are paying tuition fees between EUR 750 and EUR 1200, while a similar number of part-time students is paying 30-40 percent smaller tuition fees, however without full-time student benefits.[25] Also, in 2001 a fully market-financed segment of business schools appeared and started to develop rapidly, so that in 2004/05 it encompassed 2,733 students, who paid tuition fees ranging between EUR 2000 and EUR 4700. Through these instruments the private expenses of tuition fees have in recent years reached a level of 20 percent of total higher education expenditure.[26]

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[24] *See Appendix for methodology of estimation of private expenses for higher education.*

[25] *The increase in the number of students who pay their own tuition fees is an additional strain not only on the teaching staff capacity, but indirectly also on public expenses for higher education. Since this group makes up 40 percent of full-time students, we may estimate that that they spend about 40 percent of full-time student subsidies, notably for food and transport. However, considering that criteria for acquiring the full-time student status, which is financed through the Ministry of Science, Education and Sports (primarily academic excellence), are similar to those for obtaining subsidised accommodation in a students' hall of residence or government scholarships – we may assume that students who pay their own costs of studying are normally not users of public funds for student scholarships and accommodation - which additionally raises their costs of studies.*

[26] *Large differences exist among different colleges and institutions in the level of this income and in most cases these differences are commensurate to the proportion of own income as presented by Bajo (2003) – with polytechnics and schools of law, economy, transport and political sciences being in the forefront.*

4 Employability by Field and Higher Education Entry Quotas

In his master's degree thesis in 2004 Hell tried to design a dynamic model of the higher education system and in doing so identified well the problems behind the low level of research of the "relationships" between labour market operation and educational system in Croatia. He states that "[b]y analyzing the main strategic documents on the development of science (Science Development Strategy in the Republic of Croatia) and education (White Book on Croatian Education – Concept of Changes in the Educational Process in the Republic of Croatia) one notices a shortage of research studies on the higher education system and the educational system in general. Namely, it frequently happens that due to a lack of research works on this specific subject the said documents rely on estimates, which puts into question the quality of science and education development "strategies".[27] Even the "Higher Education Act" in its previous version, article 59,[28] provides for higher education institutions to enrol students according to their capacities, which serves to prove that entry quotas have not received much attention so far."

Even though the University Senate, under the 2003 Science and Higher Education Act (Article 58),[29] is competent to make final approval of entry quotas, the Senate has so far used this competence such that in most cases it honoured the requests of managements of higher education institutions regarding enrolment policies. The Senate is an elective university body that is elected in accordance with university statute in a manner that guarantees balanced representation of different scientific and artistic fields and specific scientific and teaching component units of the university. In accordance with the statute, the Senate decides on all academic, professional, scientific and artistic issues, including decision making on

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[27] *The White Book on Croatian Education states:"In Croatia no systematic research is conducted into efficiency of higher education..." (p. 71); "The causes of low efficiency of studying in Croatia are not sufficiently researched" (p. 71); "We will therefore briefly present the most important aspects of the condition of individual system elements where we are limited by a lack of systematic research of higher education in Croatia" (p. 72) etc.; In the document Science Development Strategy in the Republic of Croatia the following is stated: "Unfortunately, we only have limited data at our disposal. Certain indicators are questionable, especially in global comparisons, also due to problematic inputs of the CBS and frequent incommensurability of local and foreign indicators." (p. 11).*

[28] *Official Gazette No. 59/96.*

[29] *Official Gazette No. 123/03.*

organization of scientific, professional and teaching activities and selection of teaching staff, as well as other matter provided for by this Act, and especially defines (Item 8) the enrollment policy and the rules of studying and examination taking.

In recent years, entry quotas in higher education in Croatia to a large extent reflected the wish list of higher education institutions, rather than the labour market demand for specific profiles of highly educated professionals. Quotas are the result of the decisions of academic councils of university constituent institutions and their boards, which so far have in most cases been formally accepted only by the University Senate.

Still, as regards entry quotas, it is important to note that in Croatia the term "publicly financed entry quotas" means that the University Senate only defines the number of students who will be admitted to a specific institution of higher education without participation in tuition fee costs, but the government does not finance the cost of tuition fees. What the government does finance is a part of costs of individual higher education institutions (payroll costs, equipment, material, energy etc.), but there is no clear correlation with the price/cost of education for each student at an individual institution. Also, upon proposal of university constituent institutions and their boards, the University approves entry quotas (number of undergraduate admissions) for students who study for their own needs and part-time students who fund a part of their degree costs. And it is these two groups of students that have become the subject of fierce market competition among institutions of higher education, notably those that offer courses in humanities. The logic is clear – these two groups of students make the largest contribution to the increase of an institution's so-called "special income", and one of the goals of college boards being to maximize their total income, the colleges (i.e. their boards) are acting economically under the circumstances.

This can be easily inferred from the data shown in the preceding chapter with pronounced differences visible among different types of courses – at the forefront of expansion are institutions offering "cheap" courses in humanities and social sciences where such enrolment policy is the basis of a business policy that allows these institutions to generate relatively larger independent income than most

technical and natural sciences colleges (for more details see Bajo, 2003) available in the "educational market". As a consequence of such (un)coordination of enrolment policy, some institutions enrol more students than meet the market demand or the institution's capacity, while on the other hand institutions whose graduates are in high demand enrol a relatively smaller number of students than the labour market demand.

Due to a growing pressure on the limited capacities of individual colleges and the additional pressure imposed by the new regulations on enrolment of the children of Croatian war veterans, such uncoordinated enrolment policy threatens to 1) jeopardize the quality of studies at these institutions and 2) produce more highly educated specialist of specific profiles than can be absorbed by the Croatian labour market.

We may say that no adequate enrolment policy that takes into consideration labour market demands is in place in the sense of a thorough approach to defining entry quotas. This partly results from non-existence of a systematic mechanism of tracing job accession rates for specific highly-educated profiles and the lack of feedback from the higher education system and the general public. What does exist are publications of the Croatian Employment Service that periodically report on skills that are in short or abundant supply, however no systematic reporting is available. Nonetheless, the said correlation cannot be fully excluded, because when choosing a desired course of study students probably include employment prospects after graduation as a selection criterion. Therefore, we may say that this correlation is indirectly present.

Despite some constraints regarding availability of enrolment data for the past period, it is still possible to illustrate the weak or almost non-existent correlation between higher education entry quota developments and employability by specific profiles produced by the system of higher education. For this purpose we may use the CBS data on the number of enrolments in freshman year as the best available approximation of entry quotas, and data on employment trends for highly-

educated individuals without previous working experiences published by the Croatian Employment Service over the five-year period 2000-2004.[30]

Although the proportion of persons with completed higher education in the total number of unemployed is significantly lower than the proportion of unemployed with lower levels of education, and although highly-skilled persons are relatively better positioned in the Croatian labour market in terms of employment prospects, considerable differences are present among different profiles of highly-educated professionals. As indicated by data on job accession rates in the period 2000-2004 (Appendix II),[31] difficulties in employment, i.e. low job accession rates are evident for specific profiles. Looking at Appendix II, we can see that political sciences and journalism graduates have been among the ten "weakest" profiles with regard to employability in all years (except 2003), and in most years this group included philosophy, social services, physical education and criminology graduates.[32] On the other hand, the ten "strongest" profiles show a certain stability (but still with larger variations than in the former group) with regard to employability. As indicated by data given in Appendix II, in all reporting years these profiles included masters of pharmacy and architectural engineers, and in most years civil engineering and information technology graduates.

Table 6 shows job accession rates for highly educated professionals without working experience[33] who, in the reporting period, were in the bottom group with regard to employability after completion of their degree studies.

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[30] *The 2002 Act on Employment Mediation and Unemployment Rights (Official Gazette No. 86/02) made it possible for commercial agencies (primarily involved in mediation in the competitive segment of the labour market) to be involved in mediation and has relieved employers from the obligation to report their recruitment needs to the Croatian Employment Service, while simultaneously reducing the social benefits of registering with the CES. Consequently, an increasing volume of employment is taking place outside CES records, and the indicated employability information for 2003 and 2004 is less representative than for 2000-2003, but is nevertheless useful for approximation of employability trends by profession.*

[31] *Appendix II shows the 10 "weakest" and the 10 "strongest" highly educated profiles according to their job accession rates (calculated as: number of employed t/(number of registered t + status of the registered t *100). Only profiles with more than 40 graduates registered with CES in the reported year are shown.*

[32] *Or police inspector, depending on how this profession was designated in CES records in a current year.*

[33] *This paper is primarily concerned with job accession rates for freshly graduated students from higher education.*

Table 6	**Job Accession Rate Trends – University Profiles with no Working Experience and Low Job Accession Rates**		
Year	Job accession rates	Job accession rates	Job accession rates
	Journalism Graduate	**Political Sciences Graduate**	**Physical Education Graduate**
2000	10	9	28
2001	18	14	33
2002	21	32	42
2003	44	34	36
2004	21	31	28
Average 2000-04	**23**	**24**	**33**

Source: Croatian Employment Service.

Table 6 clearly shows that journalism, politology and physical education graduates, with an average job accession rate of 25 percent, were profiles with very low employability, with some oscillations in the reporting period.

Table 7	**Job Accession Rate Trends – University Profiles with no Working Experience and High Job Accession Rates**		
Year	Job accession rates	Job accession rates	Job accession rates
	Architectural Engineer	**Masters of Pharmacy**	**Graduate in Civil Engineering**
2000	45	53	41
2001	56	71	69
2002	81	84	80
2003	66	97	62
2004	76	66	62
Average 2000-04	**65**	**74**	**63**

Source: Croatian Employment Service.

Table 7, on the other hand, shows highly educated profiles with very high job accession rates in the reporting period: masters of pharmacy, architectural engineers and civil engineers.

An efficient enrolment policy would respond on the basis of employability data and would increase higher education entry quotas for professions in Table 7, while entry quotas for professions in Table 6 would be kept at the same level if not

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reduced. This is not happening in Croatia as illustrated by figures shown in Tables 8 and 9.

Table 8 Enrolled First Year Students – Example of Professions that are in Relatively Low Demand on the Labour Market			
Year	Growth index	Growth index	Growth index
	Transport and Traffic Sciences 1999/00=100	Physical Education 1999/00=100	Total number of enrolled 1st year students 1999/00=100
00/01	111	115	105
01/02	125	109	112
02/03	139	114	119
02/04	156	110	120
04/05	158	108	126

Source: CBS.

Table 8 shows growth indexes in the total number of students in degree courses with relatively weaker demand in the labour market as well as information on the average increase in the number of all enrolled first-year students in the Republic of Croatia in the period for which employability data have been presented.[34] This table indicates a strong, above-average increase in the number of enrolments in freshman year at the Faculty of Political Sciences and Journalism, while the previously quoted data show that it was graduates from this college that in the given period were facing on average the weakest demand in the Croatian highly educated labour market.

On the other hand, the degree course in physical education shows a below average growth in the number of enrolments in freshman year - for the observed five-year period it amounted to only 8 percent compared to the average increase in higher education enrolments of 26 percent. This can be interpreted either as a reaction to market demands or as a reflection of the fact that in case of the physical education course studying is to a large degree limited by capacities such as the number of

[34] *CBS provides insight into the statistics on the number of first-year student enrolments by college, but not by all programmes provided at the college. This is the reason why Table 3 shows data on student enrolment trends for the Faculty of Transport and Traffic Sciences and the Faculty of Physical Education, but not the Faculty of Philosophy or the Faculty of Law some of whose graduate profiles are also constantly facing difficulties in employment.*

gyms etc., so that admission of a larger number of students who pay their own tuition is either not lucrative or the actual number of students cannot be increased above a defined level until new facilities are built.

Table 9 shows data on the increase in the number of student enrolments in the fields that are in relatively high demand in the Croatian labour market. In the observed five-year period, only in the case of pharmacy does the increase in the number of enrolled students exceed the average increase of student enrolments in the first year in the Republic of Croatia. In other words, the proportion of students enrolled in institutions whose graduates are in relatively high demand in the Croatian labour market is not increasing in the total number of students.[35]

Table 9	**Enrolled First Year Students – Example of Professions that are in Relatively High Demand in the Labour Market**			
Year	**Growth index**	**Growth index**	**Growth index**	**Growth index**
	Pharmacy 1999/00=100	**Architecture 1999/00=100**	**Civil Engineering 1999/00=100**	**Total number of enrolled 1st-year students 1999/00=100**
00/01	106	87	104	105
01/02	111	101	107	112
02/03	121	97	95	119
03/04	149	129	119	120
04/05	149	115	122	126

Source: CBS.

Why do entry quotas fail to respond more adequately to the needs of the labour market? A part of the answer can be discerned from the entry quota setting procedure and the higher education public funding policy. Institutions (colleges) that propose quotas are acting economically and are trying to maximise the number of enrolments in keeping with their capacities so as to operate more successfully (regardless of uncertain future employability of graduates). As a rule, this can be more easily achieved in some fields of study than in others, because

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[35] *Nonetheless, this increase within a period of just five years almost reaches (and in the case of pharmacy even exceeds) the fifteen-year increase in the number of students within own scientific fields (Table 3), meaning that within the context of the slow growth of these fields, their number of enrolments is increasing faster than average.*

when making decisions on quotas some other constraints are present such as the inability to organize part-time courses, limited space and technological capacities, shortage of staff and finally the current weak demand for a particular field.

Therefore, individual colleges cannot be realistically expected to spontaneously and adequately design their quota policy, and the role of the university is here minimal. The legal provisions for strengthening and integration of the university, once they take effect, should contribute to promotion of the dialogue among institutional stakeholders with the aim to create a more systematic and harmonised development policy. In this sense, this new development policy of university integration is expected to increasingly take into account the economic requirements and consequently also the needs of Croatia's labour market. In this regard, it is important to stress that the actual integration of the university will contribute to interpretation of the principles of university autonomy receiving a new quality. Up until now the principle of university autonomy was frequently interpreted too extensively in the sense of autonomy of constituent institutions (colleges) in the Republic of Croatia, with colleges trying to maximise their position, but sometimes without enough awareness of responsibility for the wider social environment.

5   Conclusion

Following a decade of expansion, we have entered a period in which the number of higher education enrolments has reached its upper limit; each further increase in the number of student enrolments will depend on the conditions in secondary education. In this sense it is necessary to make simultaneous efforts in reforming the system of secondary education and ensuring free vertical flow towards higher levels of education, because an increase in the highly educated population is the basis for building a knowledge-based society.

The mechanism of publicly financed quotas was not a direct driving force behind these changes (indeed, they slightly declined), nor has any significant progress been made in this sector – publicly financed quotas are maintaining the status quo, and

as a result some institutions are stretching quotas for students who finance their own education to (and even beyond) the limits of their capacities (a model that is feasible only for studies in humanities and social sciences). Consequently, with the expansion of the higher education system the practice of free education has dramatically declined, with 56.7 percent students paying some sort of tuition fee in 2005, thereby covering about 20 percent of their costs of higher education. This results in an increase in direct costs of studying, but also in narrowing of educational options of less well-to-do young people. Such model of funding could result in people with real potential being barred from higher education, which would represent an irreparable loss both for the young and the national economy.

The right to education and freedom in selecting one's future occupation are democratic values and are part of the democratic tradition of modern societies. Nonetheless, the government is obligated to manage the higher education system in accordance with the principles of good management, while ensuring availability of higher education to a wider circle of persons both in spatial and financial terms. The government is responsible to ensure that the segment of higher education that is organised, funded and carried out by the state is as efficient as possible with reduced social costs that are imposed by long duration of studies, inadequate inflows of highly educated individuals into the labour market and very low employability of some professions partly as a result of uncoordinated admission policy.

Improvements in the duration of studies and completion rates are negligible compared to system expansion, with the current quota system playing no role in this, and the current model of funding provides insufficient incentives. For the system of higher education to provide enhanced fairness, quality and efficiency, it is vital to consider the possibilities for adjusting the process of studying itself and the model of higher education funding (for example Dolenec, 2005).

The growth in the number of students over the last decade has been taking place entirely on the basis of quasi-market principles without a clear, articulated (integrated) enrolment/development policy of higher education and largely in areas where the costs of extending quotas are the lowest – humanities and social sciences. Such enrolment policy partly results in continuously lower job accession

rates for specific highly educated profiles for which enrollment policy was not at all sensitive to the demands of the labour market. It is therefore essential to introduce a mechanism for following the demands of the labour market both on annual and medium-term levels and to embed such mechanism into the higher education system as an integral part of the enrolment policy.

Appendix

I.a Correction of Calculation of Secondary Education Completion Rate

A number of constraints must be taken into account when calculating job accession rates for secondary education on the basis of administrative data on secondary education and census data about the size of population:

- Firstly, census data also comprise persons resident outside the country. In 2001, for example, 15,466 persons aged between 11 and 14 (or about 3100 per generation) were resident abroad, of which 907 explicitly for educational purposes, while a vast majority were probably involved in regular education in their country of residence. This non-resident population should not be included when calculating secondary education completion rates for the Republic of Croatia.

- Also, CBS's annual reports about secondary schools fail to record the results of January school leaving examination (third examination term), which means that several hundred students (primarily in industrial and craft schools and to a lesser degree in technical schools) who have completed their final class are not indicated as persons who have completed secondary education (and, by all indications, are not included in the number of secondary school graduates for the following year).

- Finally, about 2000 persons complete adult secondary education each year (primarily in the field of economy and trade, road traffic, and to a somewhat lesser degree interior affairs and security, catering and tourism and mechanical engineering). Two thirds of them are younger than 25, so they cannot be considered as having dropped out from the system of education – in other words they have successfully returned. Nevertheless, this is not included in the figure.

If all three of the above circumstances were to be taken into consideration, the secondary education completion rate in the Republic of Croatian for 2004 would rise from 85 to 94 percent.

I.b Methodology of Assessment of Private Costs of Higher Education – Tuition Fee Costs

An informed assessment of private costs of higher education has been obtained using the data on the number of students who study part-time or have paid their own tuition fees over the last five years, and the current annual tuition fees published by institutions of higher education. For reasons of simplicity, in making the assessment we have used the amounts stipulated for university and vocational studies for 2005/2006, which amounts are very close to those of other public institutions of higher education – and have not significantly changed over the last few years. The annual tuition fee used for the assessment amounted to HRK 5,500 for courses in humanities, social sciences and mathematics, HRK 7,370 for courses in technical and biotechnical sciences, physical education and physics, and HRK 9,240 for medical and other natural sciences. Students studying for their own needs were paying 60 percent of the set amount.

In the case of private business schools, which have experienced a large expansion over the last few years and have significantly higher tuition fees (ranging from HRK 15,000 at the Baltazar Adam Krčelić School to HRK 33,250 at VERN, EUR 3,660 at the Zagreb School of Economics and Management, and USD 5,900 at the American College of Management and Technology), special corrections were made and for this group of courses an average estimated tuition fee of HRK 30,000 was used.

Such approach to assessment of the private costs of tuition has several shortcomings. While the size of the population that is paying tuition is accurately known, the calculation assumes the same level of tuition fees for all students within a specific type of course over the last five years. A detailed analysis of tuition fees at all institutions of higher education and tuition fee trends over the last few years would enhance the accuracy of assessment. According to our knowledge, no such systematic endeavour has yet been undertaken. Furthermore, this assessment does not take into account foreign students who pay significantly higher tuition fees (however, their number is currently negligible), nor does it include administrative and other education-related charges (issuing of diplomas, enrolment in the new year, registration of exams...) that are likely to increase the share of private costs in higher education. This assessment, of course, does not consider costs of living (or subsidies for such costs) during studying.

Table D1 **Trends in Job Accession Rates in Professions Requiring University Level Education (University Degree, NSK05.1). List of Ten Least Employable and Ten Best Employable Profiles in the Period 2000-2004. Job Accession Rates are Given in Parentheses. Only Professions with at Least 30 Persons Registered with CES Have Been Taken into Account**

2000	2001	2002	2003	2004
Professions with the lowest employability potential				
B.A. IN POLITICAL SCIENCES (9)	B.A. IN POLITICAL SCIENCES (14)	B.A. IN JOURNALISM (21)	B.SC. IN CHEMISTRY (24)	B.A. IN JOURNALISM (21)
B.A. IN JOURNALISM (10)	POLICE INSPECTOR (17)	B.A. IN PHILOSOPHY (23)	B.A. IN PHILOSOPHY (25)	B.A. IN PHYSICAL AND HEALTH EDUCATION (28)
B.A. IN PHILOSOPHY (16)	B.A. IN JOURNALISM (18)	POLICE INSPECTOR (27)	POLICE INSPECTOR (26)	B.SC. IN MARINE TRANSPORTATION (28)
B.SC. IN ANIMAL PRODUCTION (17)	B.A. IN ARTS (22)	B.A. IN POLITICAL SCIENCES (32)	B.SC. IN WATER TRANSPORTATION (30)	B.A. IN POLITICAL SCIENCES (31)
B.A. IN SOCIOLOGY A(20)	B.SC. IN POSTAL AND TELECOMMUNICATION SYSTEMS (22)	B.SC. IN CHEMICAL TECHNOLOGY (32)	B.A. IN POLITICAL SCIENCES (34)	B.SC. IN POSTAL TRAFFIC (32)
B.SC. IN GRAPHIC ENGINEERING (22)	B.A. IN PHILOSOPHY (25)	B.A. IN SOCIAL WORK (34)	B.SC. IN ROAD TRANSPORTATION (35)	B.A. IN PHILOSOPHY (34)
B.SC. IN CIVIL ENGINEERING (22)	B.SC. IN ROAD TRANSPORTATION (26)	B.SC. IN WATER TRANSPORTATION (36)	B.A. IN PHYSICAL EDUCATION (36)	B.A. IN SOCIAL WORK (35)
B.SC. IN AGRICULTURE (24)	B.A. IN SOCIAL WORK (26)	B.A. IN PSYCHOLOGY (36)	B.A. IN HISTORY (37)	B.SC. IN AIR TRANSPORTATION (36)
B.A. IN SOCIAL WORK (27)	DENTIST (28)	B.A. IN EDUCATION (36)	B.A. IN ECONOMICS (38)	B.A. IN SOCIOLOGY (37)
B.A. IN PHYSICAL EDUCATION (28)	B.SC. IN WATER TRANSPORTATION (32)	B.SC. IN AIR TRANSPORTATION (37)	B.SC. IN COMPUTER SCIENCES (39)	B.A. IN CRIMINOLOGY (38)

Table D1 Continued				
2000	**2001**	**2002**	**2003**	**2004**
Professions with the highest employability potential				
B.A. IN ENGLISH (49)	B.A. IN CROATIAN (45)	B.A. IN ENGLISH (62)	B.A. IN ECONOMICS-FOREIGN TRADE (59)	B.SC. IN GRAPHIC TECHNOLOGY (60)
B.SC. IN ELECTRICAL ENGINEERING (49)	B.A. IN ECONOMICS -DOMESTIC TRADE (45)	B.SC. IN ELECTRICAL ENGINEERING – ENERGY (63)	B.SC. IN MECHANICAL ENGINEERING (59)	B.SC. IN CIVIL ENGINEERING (62)
B.SC. IN MECHANICAL ENGINEERING (49)	B.SC. IN ELECTRICAL ENGINEERING - TELECOMMUNICATION AND INFORMATION SCIENCES (49)	B.SC. IN ELECTRICAL ENGINEERING (65)	B.A. IN CROATIAN (62)	B.SC. IN VETERINARY MEDICINE (62)
B.SC. IN MATHEMATICAL SCIENCES (51)	B.A. IN ENGLISH (53)	B.SC. IN COMPUTER SCIENCES (67)	B.SC. IN CIVIL ENGINEERING (62)	B.A. IN ENGLISH (62)
B.SC. IN ELECTRICAL ENGINEERING - TELECOMMUNICATION AND INFORMATION SCIENCES (53)	B.SC. IN MECHANICAL ENGINEERING (54)	B.SC. IN ELECTRICAL ENGINEERING - TELECOMMUNICATION AND INFORMATION SCIENCES (68)	B.A. IN PSYCHOLOGY (65)	M.SC. IN PHARMACY (65)
B.SC. IN PHARMACY (53)	B.SC. IN ARCHITECTURE (56)	B.SC. IN ELECTRICAL ENGINEERING – COMPUTER TECHNOLOGY (69)	B.SC. IN ARCHITECTURE (66)	DOCTOR OF DENTISTRY (65)
B.SC. IN FORESTRY (56)	B.SC. IN CHEMICAL TECHNOLOGY (57)	B.SC. IN CIVIL ENGINEERING (80)	PHYSICIAN (78)	DOCTOR OF MEDICINE (67)
B.SC. IN COMPUTER SCIENCES (57)	B.SC. IN GEODESY (60)	B.SC. IN ARCHITECTURE (81)	B.A. IN ECONOMICS –FINANCES AND ACCOUNTING (90)	B.SC. IN ELECTRICAL ENGINEERING (72)
B.SC. IN ELECTRICAL ENGINEERING –ELECTRONICS (60)	B.SC. IN CIVIL ENGINEERING (69)	B.SC. IN PHARMACY (84)	B.SC. IN PHARMACY (97)	B.SC. IN ARCHITECTURE (76)
B.SC. IN ELECTRICAL ENGINEERING - RADIO COMMUNICATIONS (62)	B.SC. IN PHARMACY (71)	B.SC. IN ELECTRICAL ENGINEERING – RADIO COMMUNICATIONS (86)	B.A. IN ECONOMICS – MARKETING (124)	B.SC. IN COMPUTER SCIENCES (81)

Source: Croatian Employment Service.

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