

PAPER

The Economic Context of Higher Education in the Social Sciences

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ABSTRACT

This paper examines the economic dimensions of social science subjects in higher education, focusing particularly on their value for students and their relevance to the labour market. Disciplines such as sociology, political science, psychology, economics, and philosophy play a crucial role in fostering critical thinking, yet their applicability and funding are frequently questioned. The paper also reflects on the role of social sciences within engineering and technical education, particularly in relation to curriculum design, transferable skills development, and interdisciplinary competence required in contemporary engineering practice. The aim of this text is to explore the economic impact of these subjects on students and how they reflect broader societal and economic contexts. The analysis draws on available statistical data, scholarly literature, and empirical studies, highlighting the differences between the social and natural sciences and their implications for education policy.

KEYWORDS

economic context of education, social science subjects, higher education, graduate employability

1 INTRODUCTION

In recent years, there has been growing criticism of educational systems in developed countries, voiced both by experts and the public. The debate concerns not only formal schooling but also other forms of lifelong learning. Educational theorist [1] highlights a fundamental issue with systems based on one-sided memorisation. According to him, “if education is reduced merely to the accumulation of facts, its true purpose is undermined—the development of thinking, creativity, and the individual’s ability to actively engage in social life.” Dewey also emphasises that education must be closely linked to the student’s experience and social environment. He argues that schools should not only prepare students for future employment but also serve as democratic communities where students learn to collaborate, share, and think critically. Criticisms of the didactic component—such as information

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overload or mechanical learning—should not lead to a rejection of education. On the contrary, education represents a key societal process essential for social cohesion and for the development of cultural and economic life and thus remains a significant and fundamental factor in progress.

In the context of engineering pedagogy, the integration of social sciences plays a crucial role in curriculum design, particularly in fostering transferable competences such as critical thinking, ethical reasoning, communication, and interdisciplinary collaboration. Contemporary engineering education increasingly recognises that technical expertise alone is insufficient and that socially embedded problem-solving skills are essential for sustainable technological development.

A notable trend in Czech higher education is the integration of social science subjects into technical study programmes. One example is VŠB–Technical University of Ostrava, where the Department of Social Sciences developed the project reg. no. CZ.1.07/2.2.00/15.128, “Corporate Culture as an Integrating Element of the Social Science Curriculum at VŠB–TU Ostrava”. This initiative focuses on incorporating social science subjects into technical education and highlights their relevance for students in technical fields. Similarly, the Czech Technical University in Prague (CTU) integrates social science disciplines into its technical programmes to prepare students for the complex challenges of the contemporary world. For instance, the Faculty of Electrical Engineering (FEL) offers the programme Electrical Engineering and Management, which combines technical education with economics and management. In addition to studying electrical engineering and energy systems, students also take courses in economics, management, and law, providing them with a comprehensive understanding of both technical and societal aspects of their field. In addition to studying electrical engineering and energy systems, students also take courses in economics, management, and law, providing them with a comprehensive understanding of both technical and societal aspects of their field [2].

These initiatives demonstrate that combining technical and social science education can enhance students’ preparedness for the multifaceted challenges of today’s world. Moreover, empirical studies—such as Lindr—confirm that students perceive social science subjects as intellectually enriching and beneficial for personal development. In his scholarly article “The Quality of Teaching and the Contribution of Selected General Education Subjects at a Technical University”, Lindr presents findings from an empirical study on how students at technical universities perceive the quality of teaching in social science subjects and the value these subjects offer. Specifically, Lindr notes that “students most appreciate when the teaching is of high quality, when they understand the topics discussed, when it is engaging and inspiring, enjoyable, intellectually enriching, and valuable for their personal development” [3].

2 ECONOMIC CONTEXT

2.1 Economic aspects

The economic aspects of the social sciences have long been assessed as insufficiently supported. International studies [4] highlight the uneven distribution of research funding, with the natural sciences consistently receiving a significantly larger share of resources than the social sciences. This trend is observable across countries and time periods. Thelwall et al. [5] further demonstrate that not only funding but also the citation impact of social sciences tends to be lower compared to the natural sciences.

There is a broad consensus that research funding is distributed unevenly. Natural sciences receive a substantially greater proportion of funding than social sciences—a pattern that remains consistent across different countries and timeframes [4]. Social science disciplines such as sociology, political science, and anthropology are generally underfunded, both in absolute terms and relative to their publication output. Economics is a notable exception: although often regarded as a prestigious discipline, it has historically received below-average funding, even within the social sciences themselves.

This study [4] explores the correlations between funding volume, publication productivity (number of articles), and impact (citations). It finds that higher levels of funding do not necessarily lead to greater publication or citation performance—particularly in the case of the social sciences.

An analysis of publication coverage in the social sciences and humanities within the Web of Science database—focusing specifically on the Czech Republic, along with Slovakia and Poland—reveals persistent disparities between disciplines, even within the broader fields of social sciences and humanities. The unevenness of incentive systems, not only in the Czech Republic, indicates that financial and institutional stimuli are distributed unequally across disciplines [6].

Data for the Czech Republic in Table 1 [7] show that in 2022, 57% of state expenditures on research and development were allocated to the natural sciences, while the social sciences received only 9% and the humanities 10%. These disparities can be explained by the higher applicability of natural and technical disciplines in industry, the measurability of their outcomes, and alignment with European priorities such as energy, ICT, and climate. Social sciences tend to produce less direct and more difficult-to-quantify outputs, which complicates the evaluation of their societal contribution.

The specific figures are based on data from the Czech Statistical Office under the category State Budget Expenditures on R&D by Socio-Economic Objectives (SEO) and Type of Support in 2022, which follows the NABS 2007 classification (Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets). In total, approximately CZK 17 billion was allocated to general knowledge development through institutional support, representing around 79% of the total NABS 2007 support. Targeted support amounted to nearly CZK 6 billion, bringing the overall total to almost CZK 23 billion. Within this general knowledge development category, 57% was allocated to natural sciences, 12% to technical sciences, 9% to medical sciences, 3% to agricultural sciences, 9% to social sciences, and 10% to humanities [8].

Table 1. State budget expenditures on research and development by SEO and type of support in 2022 [7]

SEO	Main SEO (NABS 2007)	Institutional Support		Targeted Support				Total		
				Total		of Which Co-Financing of Projects Funded from EU Sources				
		mil. CZK	%	mil. CZK	%	mil. CZK	%	mil. CZK	%	Index 2022/2021
01–14	Total	21,770.3	100%	16,714.9	100%	559.8	100%	38,485.2	100%	100.5
01	Exploration and Use of Earth Resources	472.0	2.2%	433.3	2.6%	0.3	0.1%	905.3	2.4%	106.0
02	Environment	158.7	0.7%	771.8	4.6%	9.1	1.6%	930.5	2.4%	104.1
03	Space Exploration and Use	577.4	2.7%	147.3	0.9%	7.7	1.4%	724.7	1.9%	101.3

(Continued)

Table 1. State budget expenditures on research and development by SEO and type of support in 2022 [7] (Continued)

SEO	Main SEO (NABS 2007)	Institutional Support		Targeted Support				Total		
				Total		of Which Co-Financing of Projects Funded from EU Sources				Index 2022/2021
		mil. CZK	%	mil. CZK	%	mil. CZK	%	mil. CZK	%	
04	Transport, Telecommunications and Other Infrastructure	217.0	1.0%	1,267.4	7.6%	62.2	11.1%	1,484.4	3.9%	93.6
05	Energy	414.8	1.9%	952.1	5.7%	13.7	2.4%	1,366.9	3.6%	89.2
06	Industrial Production and Technology	606.0	2.8%	3,393.0	20.3%	17.5	3.1%	3,999.0	10.4%	87.9
07	Health	788.2	3.6%	1,820.1	10.9%	66.2	11.8%	2,608.3	6.8%	103.5
08	Agriculture	679.4	3.1%	883.0	5.3%	19.8	3.5%	1,562.3	4.1%	97.2
09	Education	19.8	0.1%	185.3	1.1%	76.6	13.7%	205.1	0.5%	91.8
10	Culture, Recreation, Religion and Media	239.0	1.1%	566.9	3.4%	–	–	805.9	2.1%	104.4
11	Political and Social Systems, Structures and Processes	351.4	1.6%	546.5	3.3%	25.4	4.5%	897.9	2.3%	97.8
12+13	General Advancement of Knowledge	17,235.0	79.2%	5,592.0	33.5%	261.3	46.7%	22,827.0	59.3%	103.8
	Research and Development in Natural Sciences	9,204.7	x	3,828.3	x	216.5	x	13,033.0	x	103.2
	Research and Development in Technical Sciences	2,369.5	x	438.7	x	26.7	x	2,808.2	x	104.4
	Research and Development in Medical Sciences	1,758.2	x	230.6	x	0.5	x	1,988.8	x	98.9
	Research and Development in Agricultural Sciences	550.9	x	19.9	x	1.2	x	570.9	x	96.8
	Research and Development in Social Sciences	1,837.6	x	307.2	x	0.5	x	2,144.9	x	111.4
	Research and Development in Humanities	1,514.0	x	767.2	x	16.0	x	2,281.3	x	106.5
14	Defence	11.6	0.1%	156.2	0.9%	–	–	167.8	0.4%	136.7

The disparities are considerable and stem from various factors, primarily the applicability of disciplines, European research priorities, and the measurability of outputs. Technical and natural science fields often have direct industrial applications, which facilitates collaboration with the private sector and the generation of revenue. The EU has long prioritised research in areas such as innovation, energy, IT, and climate. Research in the social sciences is more difficult to quantify, making it harder to evaluate using standard metrics. This discrepancy is reflected in the priorities of state policy and grant agencies, which are often shaped by national and international agendas; at the same time, research on the education–innovation nexus highlights the role of strategic investment and industry–university partnerships in driving regional economic development [9].

In recent years, however, funding for higher education in the Czech Republic has increased. The historically highest year-on-year budget increase in 2025—amounting to CZK 34.9 billion (+13%)—is intended to expand institutional capacity and support strategic disciplines [10]. Nevertheless, the gap in allocation between the natural and social sciences remains substantial.

2.2 Differences between disciplines

The challenge of comparing research outcomes also lies in the nature of the disciplines. Natural sciences often produce measurable, replicable results (e.g., new drugs, materials, and technologies), which align more closely with conventional notions of scientific progress and the necessity of education. In contrast, the social sciences generate more complex and less quantifiable outputs (e.g., theoretical frameworks, analyses, and interpretations of social phenomena), which are harder to assess in terms of return on investment. This also affects the perceived economic impact and innovation potential, which are more readily associated with natural sciences and thus with technological advancement and industrial application. While social sciences do have a societal impact, it is less direct and more difficult to quantify in terms of tangible effects. However, recent approaches based on learning analytics demonstrate that even complex educational outcomes can be partially operationalised and measured through behavioural engagement patterns and pre/post learning gains [11].

This discrepancy is reflected in the priorities of state policy and grant agencies, which are often shaped by national and international agendas. Grant agencies and international research programmes, such as Horizon Europe, apply more complex evaluation criteria to social science research, which can result in lower levels of funding allocation.

Infrastructure requirements also play a role. Social science research typically does not require expensive laboratories, instruments, or testing facilities. These lower technical demands may lead to the mistaken assumption that social sciences do not require substantial financial support. This is further reinforced by the emphasis on applied research in the natural sciences.

In the Horizon Europe programme, natural sciences account for most approved projects—over 9,000 out of 13,340, or approximately 67%. Social sciences and humanities represent only around 33% of projects, despite forming a significant part of the academic landscape in the EU [12].

3 SOCIAL SCIENCE SUBJECTS AND THE LABOUR MARKET

3.1 Social science education in Czech universities

In the Czech Republic, the field of social sciences—and specifically the education of qualified graduates in subjects such as sociology, political science, psychology, and philosophy—is addressed by several public universities. These include the Faculty of Social Sciences at Charles University (607 students), the Faculty of Arts at Charles University (359 students), the Faculty of Humanities at Charles University (112 students), the Faculty of Social Studies at Masaryk University (390 students), the Faculty of Education at Charles University (352 students), and the Faculty of Arts at Palacky University (307 students). Czech universities produce more than 2,000 graduates annually in master's programmes within the social sciences [7].

Although the employability of these graduates is sometimes questioned, statistics show that their unemployment rate is relatively low. Among applicants for higher education, the fields of business, administration, and law have long been prominent. In 2022, 20.3% of university students were enrolled in these areas. In 2000, technical disciplines led the ranking with a share of 25.3%, but by 2006, business, administration, and law had taken the top position. In 2007, technical disciplines fell to third place, behind the humanities and social sciences. In 2022, humanities and social science disciplines continued to hold second place in terms of student interest. The relevance of social sciences in higher education can also be examined through the structure of study programmes and the number of graduates produced by universities.

3.2 Labour market relevance and skill demand

Beyond the number of graduates produced by universities, an important question concerns the relevance of social science education for the labour market and the types of competencies developed through these programmes. Social science disciplines foster skills that are increasingly demanded in contemporary economies, particularly critical thinking, the ability to solve complex problems, and emotional intelligence. These competencies are widely recognised as essential for adapting to rapidly changing labour market conditions and for addressing complex societal challenges.

Social science disciplines such as ethics, sociology, and philosophy play a key role in higher education by shaping critical thinking, moral values, and understanding of complex social structures. Their integration into university curricula contributes to the development of students not only as professionals in their respective fields but also as engaged and informed citizens. Although it is sometimes mistakenly assumed that graduates of these disciplines face poorer employment prospects than those from technical or natural science fields, social science degrees offer broad applicability.

Social science disciplines foster skills that are increasingly in demand—critical thinking, the ability to solve complex problems, and emotional intelligence [13], [14]. The growing use of generative AI in education further increases the importance of explicitly developing students' self-regulated learning and critical thinking competencies [15]. These competencies are identified as essential for the future labour market, which is expected to undergo significant changes in the structure of required skills. The latest Future of Jobs Report 2025 by the World Economic Forum confirms the continued emphasis on these abilities. It is projected that by 2030, 39% of core worker skills will have changed, underscoring the need for continuous learning and adaptation to evolving labour market demands [14].

4 EMPLOYABILITY OF UNIVERSITY GRADUATES

4.1 Graduate employability in the Czech context

Graduate employability represents an important indicator for evaluating the relevance and effectiveness of higher education programmes. In the Czech Republic, the transition of graduates to the labour market has been monitored through several national studies and statistical databases that analyse employment outcomes among university graduates.

Graduate employability is a key criterion for assessing the relevance of acquired education and is also monitored by national higher education institutions. For example, the Czech Ministry of Education, Youth and Sports (MŠMT) addressed the issue of graduates' transition to employment and their labour market integration through the project "Study on the Employability of University Graduates", first implemented in 2006–2007 as a technical assistance project under the European Social Fund (ESF). The project consisted of two main components: (1) participation in the international REFLEX survey on graduate employment outcomes, and (2) the creation of a database on graduate employability/unemployment.

This database tracks, among other indicators, the unemployment rate of university graduates in correlation with the overall unemployment rate in the Czech Republic. The most recent data, from 2020, show that the unemployment rate among graduates of master's programmes in the humanities, social sciences, and theology was 3,3%, while the overall unemployment rate in the Czech Republic for the same year was 3,1%. Overall, the data indicate that the unemployment rate among monitored graduates corresponds closely with the national unemployment rate.

In the aforementioned "Study on the Employability of University Graduates", employability is defined as "the ability to obtain a first job, maintain employment, and navigate the labour market" [16], with authors such as Koucký and Zelenka drawing on the context of the Bologna Process [17]. Their approach aligns with the definition proposed by Lee Harvey [18]. Key indicators of employability include the unemployment rate of graduates within a defined period after graduation, the match between field and level of education and employment, the extent to which acquired knowledge and skills are utilised, i.e., the relevance of expertise; the ease of securing employment, and income levels.

The faculties monitored in the study report the following unemployment rates for their graduates in social science disciplines for the year 2022. For more details, see Table 2.

Table 2. Monitored university faculties [19]

University	Faculty	Unemployment Rate for their Graduates
Charles University	Faculty of Social Sciences	0.8%
Charles University	Faculty of Arts	0.4%
Charles University	Faculty of Humanities	0.6%
Charles University	Faculty of Education	0.2%
Masaryk University	Faculty of Social Studies	4.8%
Palacky University	Faculty of Arts	2.3%

According to data from the European Centre for the Development of Vocational Training, graduates of social science disciplines across the EU show an average employment rate of 87% within two years of completing their studies. This figure is comparable to that of graduates from other humanities and natural science disciplines [19].

The topic of graduate employability is also addressed in the Eurobarometer survey, which includes a breakdown by field of study.

Eurobarometer surveys are regular public opinion polls organised by the European Commission. Their aim is to monitor the attitudes of citizens in EU Member States on a wide range of topics. The Standard Eurobarometer—conducted twice a year—covers a broad spectrum of questions related to the EU. The Flash

Eurobarometer is a faster and shorter survey, often conducted online, focusing on specific current issues.

Specifically, Flash Eurobarometer 304: Employers' Perception of Graduate Employability, conducted in 2010 [20], provides valuable insights into how employers perceive the readiness of university graduates for the labour market and which skills they consider essential.

The survey revealed that the most represented fields among employees with higher education are business and economics (54% of companies employ graduates from this field), engineering (54%), information technology (48%), law (47%), natural sciences (46%), healthcare (44%), and humanities and social sciences (43%).

The survey also identified the skills most sought after in graduates: communication (93% of companies consider it very important), analytical thinking and problem-solving (91%), teamwork (89%), foreign languages (87%), and computer skills (85%).

Regarding cooperation with universities, 39% of companies reported being involved in designing study programmes and 35% in recruitment activities related to university graduates.

A more recent study was conducted by Eurostat [21]. According to Eurostat data, in 2023, 83.5% of recent graduates aged 20–34 were employed, representing an increase of 1.1 percentage points compared to 2022. This trend suggests a positive development in graduate employability in recent years. Among university graduates, the employment rate was 87.7%, while for individuals with lower secondary education it stood at 78.1%.

A similar survey is carried out by CEDEFOP [19], which monitors progress toward the European Union's target employment rate for young recent graduates, set at a minimum of 82% in 2020. The indicator is defined as the employment rate of young people (aged 20 to 34) who completed their education one, two, or three years prior to the reference year, obtained a qualification at ISCED levels 3–8, and are not currently enrolled in any further education or training. In the Czech Republic, this target was met at the beginning of the monitoring period in 2015, with a graduate employment rate of 82.2%, rising to 87.3% in 2020. In this regard, the Czech Republic ranks among the top five EU countries, alongside Germany, Malta, the Netherlands, and Austria.

4.2 Graduate employability in the European context

Graduate employability can also be examined from a broader European perspective using comparative labour market indicators and international statistical data. According to a study published in *Frontiers in Environmental Science*, the structure of bachelor's degree graduates (ISCED level 6) in the EU in 2020 was as follows: business, administration and law – 24.0%, engineering, manufacturing and construction – 13.8%, health and social care – 12.3%, education – 10.7%, and arts and humanities – 10.6% [22].

According to the *Employment and Social Developments in Europe 2023* report by the European Commission [23], labour shortages persist across various professions and qualification levels within the EU. The sectors experiencing the most significant shortages include construction, healthcare, science, information and communication technologies (ICT), engineering, and mathematics (STEM). These shortages are driven by structural factors such as demographic changes and shifts in skill demand related to ecological and digital transformations.

5 DISCUSSION

The analysis confirms a structural imbalance in the funding of social and natural sciences. Although social sciences face several challenges—such as lower financial support, less easily measurable outcomes, and pressure for interdisciplinary integration—their contribution remains indisputable. In particular, the development of soft skills, the ability to reflect on societal processes, and critical thinking represent competencies that are increasingly valued in the labour market [24].

These findings also carry important implications for curriculum development and engineering education. If social sciences are economically undervalued yet demonstrably contribute to the formation of transferable competences, curriculum design in higher education should reflect this added value more explicitly. Rather than treating social science subjects as peripheral supplements to technical programmes, universities may consider structurally embedding them into interdisciplinary modules that connect technical knowledge with ethical reasoning, socio-economic analysis, and communication skills.

This perspective is consistent with recent curriculum innovation research. For example, [25], in the *Journal for Future Society and Education*, demonstrates that interdisciplinary course designs integrating distinct domains can significantly enhance students' integrative thinking and transferable competencies. Although their case study connects literature and computer science, the pedagogical principle is directly applicable to engineering education: meaningful integration of disciplinary perspectives strengthens both domain-specific expertise and broader cognitive flexibility.

From a methodological standpoint, this implies greater emphasis on project-based learning, problem-orientated instruction, and reflective components that link technical problem-solving with social and economic contexts. Such approaches may help reconcile the economic pressure for measurable outcomes with the less easily quantifiable, yet strategically important, contributions of social sciences to innovation capacity and long-term societal development.

6 CONCLUSION

Despite their demonstrable relevance to societal development and engineering education, social science subjects continue to face structural and economic challenges: undervaluation relative to technical disciplines, pressure for immediate economic applicability of graduates, and the need for stronger interdisciplinary integration with other fields.

Social science subjects—such as ethics, sociology, and philosophy—represent a vital component of higher education and provide students with a wide array of practically applicable skills. While they are sometimes perceived as less useful than technical subjects, their graduates find employment across many professional sectors and contribute meaningfully to societal development.

In the context of engineering and technical education, their contribution is particularly evident in the design of interdisciplinary curricula that combine technical expertise with ethical reflection, socio-economic awareness, and communication skills. Strengthening the position of social sciences within engineering programmes thus represents not only a matter of academic balance, but also a strategic investment in the development of adaptable, responsible, and innovation-orientated engineers. Integrating technical education with humanistic perspectives can better prepare

students to address societal challenges with creativity, empathy, and responsibility. Humanities education also enables engineers to better understand the cultural, social, and ethical implications of technological development [26]. This paper thus contributes to the academic discourse on the future direction of education and its economic dimensions.

The analysis presented in this paper also highlights a broader structural issue within contemporary higher education systems, namely the persistent underestimation of the strategic role of social sciences in technically orientated education. While technical disciplines remain essential for industrial innovation, the effectiveness and societal sustainability of technological solutions increasingly depend on competencies that are traditionally cultivated within social science education, particularly ethical reasoning, socio-economic contextualisation, and the critical analysis of complex systems. Strengthening interdisciplinary links between technical and social sciences may therefore represent an important mechanism for enhancing both the innovation capacity of future engineers and the long-term societal relevance of higher education.

At the same time, addressing this imbalance requires not only curricular adjustments but also changes at the institutional and policy levels. Funding frameworks, evaluation metrics, and accreditation criteria should more adequately reflect the long-term and often indirect contributions of social sciences to economic and societal development.

The long-term and often indirect contributions of social sciences to economic and societal development include, in particular, improving the quality of decision-making and governance through a deeper understanding of institutions and human behaviour; strengthening social cohesion and societal stability; enhancing workforce adaptability by developing transferable skills such as critical thinking and communication; supporting the ethical and responsible development of technologies by considering their broader societal impacts; fostering innovation capacity and creativity through interdisciplinary thinking; improving the understanding of market behaviour and consumer decision-making; and, finally, contributing to the long-term sustainability of development by addressing complex global challenges.

These contributions often manifest indirectly—through higher-quality institutions, more effective collaboration, greater societal trust, and improved preparedness for future challenges—and for this very reason, they tend to be underestimated in traditional economic metrics.

Current assessment systems tend to prioritise short-term, quantifiable outputs, which may disadvantage disciplines whose impact is more diffuse yet equally critical. A shift towards more holistic evaluation models could help recognise the broader value generated by interdisciplinary education and support more balanced resource allocation across academic fields.

Furthermore, future research should focus on empirically examining the outcomes of interdisciplinary curriculum models that integrate social and technical sciences. While theoretical arguments for such integration are strong, there remains a need for longitudinal studies that assess their impact on graduate employability, innovation capacity, and societal engagement. Expanding the evidence base in this area would not only strengthen the case for systemic change in higher education but also provide practical guidance for universities seeking to design more effective and resilient educational programmes in an increasingly complex and interconnected world.

This paper thus contributes to the academic discourse on the economic and societal significance of social sciences in higher education by emphasising their role in

the development of key student competencies and the need for their more systematic integration into technically orientated study programmes.

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