

# Case study Czechia

## The future of vocational education and training in Europe Volume 2

Delivering IVET: institutional diversification and/or expansion?

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## Chapter 1. Introduction

Vocational education has a long history in the Czechia and has always represented a substantial part of the upper secondary education. Students usually enter IVET at the age of 15, i.e., after completing compulsory schooling in the lower-secondary level. Thus, in addition to general upper-secondary education (ISCED 3A), pupils have the opportunity to study at a 4-year vocational programmes leading to “maturita” examination (ISCED 3A) and hence to the possibility of the further education at the university level, or at a 3-year vocational programme completed by a vocational certificate (ISCED 3C) that prepares students to enter the labour market.

During the last 30 years, the Czech educational system went through a series of reforms that were initiated by the fundamental political changes in the Czechia in 1990.<sup>1</sup> These changes also had a significant impact on the development of the IVET system.

The first half of the 1990s was a period of relatively free development of curricula. The liberalized curricular policy made it possible to adapt quickly to the new emerging needs in the labour market and led to a huge expansion of IVET programmes and qualifications. During this period, the number of vocational fields rose from 543 to around 838. This development was, however, largely suppressed in the second half of the 1990s with the approval of the Standard of Secondary Vocational Education in 1998 and its aim to optimize the school network. The significant change in educational policy occurred again after the year 2000 with the new concept of the curricular policy. This change was motivated, among other reasons, by adaptation to the labour market needs and to the European educational standards and by the intention to entry to the European Union. The new School Act approved in 2004 introduced a so-called two-level curricular policy together with other conceptual changes in IVET. This new curricular approach is at state level based on framework educational programmes (FEPs) created by the Ministry of Education, Youth and Sports and at school level on school educational programmes (SEPs) developed by each school. The gradual development of the new reduced system of fields of IVET was initiated. This led to the decline of the number of fields from 777 in 2004 to 279 in 2018. Moreover, in order to increase the employability of IVET absolvents, the general basis of education was broadened, and the key competences were formally introduced into curricula.<sup>2</sup>

These structural changes in the educational system over the last 30 years were accompanied with a clear academic drift in IVET. Especially in vocational programmes with “maturita”, the general educational component was increased from less than 40% in the first half of the 1990s to more than 50% after the curricular reform in 2004. In the upper-secondary education with a vocational certificate, the proportion of general subjects is set by curricular reform at 35%. On the other hand, for all programmes, there was an increase in the number of lessons of foreign language, ICT and economy. By the curricular reform, the latter two

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<sup>1</sup> In 1989, after 40 years of communist regime, the Czech Republic - in that time, forming part of the Czech and Slovak Federative Republic split peacefully in 1993 - returned to a liberal democracy. The early 1990s are thus characterized by the transformation from the centrally planned to market economy, the development of the private sector, changes in employment structures and in the requirements for the workforce and human resources etc. that led to changes in vocational training requirements as well as an increased emphasis on general education and key competences (Kofroňová and Vojtěch, 2005).

<sup>2</sup> For more detail about curricular reform, see Tupý (2019).

actually passed to form a general educational component. In ISCED 3A programmes, the number of Czech and Math lessons were further reinforced due to the new requirements of the “maturita” examination in 2017.

The academic drift in IVET can be also observed in the development of the structure of secondary education in the Czechia during this period. After 1989, it is possible to observe an increasing interest in general upper-secondary education as well as a huge expansion in the proportion of IVET graduates who applied to universities as a consequence of massification of higher education in that period. This was reflected in the proportion of students studying in the fields with and without “maturita”. The initial proportion of 40:60 in 1990 was reversed to 60:40 already in 1998 and further developed to about 70:30 in 2019 in favour of fields leading to “maturita”. The overall ratio of students in general and vocational upper-secondary education also evolved during the last 30 years, although not so dramatically, from around 85:15 in 1989 to around 75:25 in 2019 in favour of IVET.

The last 30 years were more over a period of creation of new forms of vocational education. In 1995, the higher vocational schools at non-university level were established with the aim to develop vocational education at tertiary level until then non-existing. Using the experience of higher vocational schools, the next step was to create vocational education at the level of a bachelor or short vocational programmes. However, the position and role of higher education institutions is still not conceptually solved. At the same time, the new School Act in 2004 also strengthens the role of postgraduate studies and introduces new so-called shortened forms of study (“zkrácené studium”) leading to a vocational certificate (ISCED 353) or shortened forms of study leading to the “maturita” examination (ISCED 354). These types of study enable adult learners who already have a vocational certificate or Maturita to expand their competencies and expertise and acquire further qualifications in a relatively short time.

In the following, the evolution of the Czech IVET system is examined with a particular emphasis on the changes within curricula and programmes as well as on the changing relation between general and vocational subjects in IVET in Chapter 2. Chapters 3 and 4 focus on the relationship of IVET with the vocational education at higher levels and with CVET, respectively. Chapter 5 further describes the evolution of IVET at the institutional level and Chapter 6 concludes and offers the perspective about the future of IVET in the Czech Republic.

## Chapter 2. Blurring of boundaries between general education and IVET at upper secondary level

During the last 30 years, the Czech educational system went through a series of reforms that had as aim, among others, to adapt education in general, as well as IVET in particular, to the market changes and to the European educational standards. The most significant change in educational policy occurred after the year 2000 with the new concept of the curricular policy. The process of the so-called curricular reform was initiated already in 1999 when the Concept of education and development of the educational system in the Czechia was presented to the public discussion. The result of this discussion was the National Programme for the Development of Education in the Czech Republic, so-called White Paper (Kotásek et al., 2001),

launched in 2001. One of the main strategic goals was to improve the quality of education. In order to reach this goal, it was seen as a necessary to create new educational and study programmes that will „meet the requirements of an information and knowledge society, sustainable development, employment, and the need for active participation in the life of a democratic society in an integrated Europe“(Kotásek et al., 2001, p. 19). This goal is also linked to another strategic point of the White Paper, which aims to ensure that more young people reach advanced levels of education. Thus, the specific goal was that by 2005, 75% of the population would have achieved at least secondary education with “maturita”.

According to the White Paper, a new concept of curricular policy was approved in 2004 in the new School Act (Czechia, 2004a) that entered into force on the 1st of January 2005. This so-called two-level curricular policy is based on “*rámcové vzdělávací program*” (framework educational programmes, FEPs) created by the Ministry of Education, Youth and Sports and “*školní vzdělávací programy*” (school educational programmes, SEPs) developed by each school. The FEP is thus a curricular document that is created at the central (state) level. It specifies generally binding requirements for individual levels and fields of education, define the framework for the design of curricula and formulate rules for the creation of SEPs. These state-imposed minimum requirements for education, binding for all schools educating pupils in a certain field, are then creatively developed by schools into their own school educational programs (SEPs). Therefore, the curricular reform is also characterized as two-level policy, i.e., conceived at the state and school level (NÚOV, 2007). The framework educational programmes for IVET system were prepared by the National Institute of Technical and Vocational Education in six waves from 2007 to 2012 (Tupý, 2019).

In order to increase the employability of young people, the White Paper also pointed to the need to broaden the general basis of education and to include the key competences into the curricula. In this regard, the curricular reform introduced information technologies, and economic education into the general component of IVET and support the education of foreign languages. The development of key competences is one of the most important aspects of curricular reform supporting the employability of school graduates. The FEPs introduce several key competencies such as communication skills, teamwork, social competence, problem solving and ability to learn etc., that were further incorporated to the SEPs.

In the following, we present how these changes in IVET system during the last 30 years affect the blurring of boundaries between general education and IVET at upper secondary level. In particular, we focus on the evolution of the content of curricula, the relation between general and vocational subjects in IVET and the evolution of the number of IVET programmes and qualifications over this period. The observed period is divided on the basis of two main reforms into 3 parts: 1990-1998 (the relatively free development of curricula), 1998-2004 (the period after the approval of the Standard of Secondary Vocational Education) and 2004 until today (i.e., the period after the curricular reform).

### **The ratio between general and vocational components of VET**

The structure of IVET evolved significantly during the observed period as the vast majority of innovations in educational documents were focused on the changes in the content of education (Kofroňová and Vojtěch, 2005). The main motivation of these changes was to broaden

education offered in IVET in order to help young people to find or change work throughout their life. At the same time, key competences are conceived as transferable competencies that every person needs in their personal life and in their job (Kotásek et al., 2001). Table 1 describes the changes in the ratio between general (“všeobecná vzdělávací složka”) and vocational (“odborná vzdělávací složka”) educational component between 1990 and 2020. It focuses on the two main streams of IVET: the three-year programmes leading to a vocational certificate (ISCED 3C) and the four-year vocational programmes with “maturita” examination (ISCED 3A).

During the first half of the 1990s, the number of teaching hours of the general educational component in the three-year vocational programmes (ISCED 3C) dropped substantially from 36.6% to 29%. However, this decline most likely does not describe the real development. Before 1989, the majority of secondary schools taught according to an alternative curriculum in which the share of general education was set at 16.5%. But the real shares were never officially recorded (Kofroňová and Vojtěch, 2005). On the other hand, the share of general component in the four-year programmes with “maturita” (ISCED 3A) remained at the same level of 40% during the 1990s. After the period of relatively free development of curricula, the Standard of Secondary Vocational Education in 1998 determined the smallest possible share of general educational component at 30% in ISCED 3C and 45% in ISCED 3A. At the same time, the Standards introduced key competences to the IVET, e.g., communication, ability to learn, teamwork, problem solving, ICT skills, etc. The curricular reform from 2004 continued with this initiated academic drift of IVET. Whereas in the three-year programmes with vocational certificate (ISCED 3C) the overall proportions of general and vocational education have remained the same, the four-year programmes with “maturita” (ISCED 3A) underwent a transformation that led to a broader and more general education.<sup>3</sup> In the field of Electrical engineering, the general component of ISCED 3C programmes was set for both periods, i.e., before and after the curricular reform, at 35%. For the ISCED 3A programmes, the general component slightly increased from 50% to 54% (Table 2).

**Table 1: The share of general and vocational component of curricula for two groups of IVET (ISCED 3A and ISCED 3C) across time**

FORM OF STUDY	Period	Length of study	GENERAL COMPONENT		VOCATIONAL COMPONENT		TOTAL	
			Hours per week	%	Hours per week	%	Hours per week	Ratio (week hours per year)
ISCED 3C	Before 1989	3	37,9	36,6%	65,6	63,4%	103,4	34,5
	1990-97	3	28,0	28%	71,9	72%	99,9	33,2
	1998-2004	3	28,5	29%	69,8	71%	98,3	32,8
	After 2004*	3	27,6	27,9%	71,3	72,1%	98,9	33,0

<sup>3</sup> According to curricular reform, the minimum share of general educational component is 45% for 4-year programmes with “maturita” and 35% for fields in 3-year programmes with vocational certificate.

<b>ISCED 3A</b>	<i>Before 1989</i>	4	50,6	38,8%	80	61,2%	130,6	32,7
	<i>1990-97</i>	4	53,7	40,8%	77,9	59,2%	131,7	32,9
	<i>1998-2004</i>	4	52,9	39,4%	81,5	60,6%	134,4	33,6
	<i>After 2004*</i>	4	68,5	51,7%	63,9	48,3%	132,4	33,1

\*After the curricular reform

Source: Kofroňová and Vojtěch (2005, 2008)

Note: The documented shares are processed on the basis of data from a pilot project of curricular reform. To be able to make a comparison of the general and vocational components across the observed period, lessons of ICT and economics are included in the vocational component, even though after 2004 they were already part of the general component.

**Table 2: Overview of the number of lessons (weekly number of lessons per study) of selected subjects and components of teaching in the field (Electrical engineering and Health care) and the two forms of IVET**

	Subjects					Component			ALL
	Czech	Foreign	Math	ICT	Economy	General	Optional	Vocational	
<b>ISCED 3C</b>									
<b>Electricians</b>									
2004	6,0	3,4	5,5	3,0	2,0	34,0	1,8	62,8	96,8
SEPs	6,3	6,7	5,7	3,3	2,0	35,3	2,8	64,2	99,5
<b>Health care worker*</b>									
FEPs: 2020	3	6	4	3	2	29	13*	54	96
<b>ISCED 3A</b>									
<b>Electrical engineering</b>									
2004	10,1	12,0	13,3	7,3	3,7	65,2		64,1	129,3
SEPs	10,5	14,0	13,8	6,8	3,0	71,2		60,8	132,0
<b>Laboratory assistant – health*</b>									
FEPs: 2020	5	10	7	4	2	50	20*	58	128

Source: Kofroňová and Vojtěch (2008) and FEPs for

\*In the field Health care worker and Laboratory assistant-health we have used the information from FEPs set by MŠMT. This data refers to the minimum number of teaching lessons for the entire period of education and the optional component refers to the disposable lessons, which are intended for profiling of the SEP.

Examining in greater detail the general educational subjects during the observed period, one can observe that for all programmes there was an increase in the number of lessons of foreign language, ICT and economy. This is also evidence that the latter two subjects became a part of general educational component as the consequence of curricular reform. In ISCED 3A programmes, the number of Czech and Math lessons<sup>4</sup> increased as well due to the new requirements of the “maturita” examination, and at the same time as a response to the generalization of ISCED 3A vocational programmes. Into the general educational component were further included cross-curricular subjects such as social-science education, to which FEPs defined a weekly subsidy of 5 hours in 4-year vocational programmes (ISCED 3A) and 3 hours in 3-year vocational programmes (ISCED 3C).

For the first time since their establishment, FEPs for IVET were reformed to a greater extent in 2017, based on measures (MŠMT, 2017a and 2017b) released by the Minister of Education, Youth and Sports. In particular, the new measures changed the curricular framework for mathematical education and increased the weekly number of teaching hours of mathematics to at least 10 for four-year vocational programmes with “maturita” (ISCED 3A) and at least 4 weekly teaching hours for three-year programmes with vocational certificate (ISCED 3C). The adjustment of relevant FEPs follows up on the amendment to the Education Act (Czechia, 2016a) and Government Regulation (Czechia, 2016b), which specifies the fields of education in which mathematics would be set as a one of the mandatory subjects of the “maturita” examination with the effect from 1 November 2020. However, before this amendment came into force, it was cancelled by the Amendment to the School Act (Czechia,

<sup>4</sup> In the second half of the 1990s, there was a more significant decrease in the number of mathematics lessons taught. This decline is explained by the fact that before 1990 there was an imbalance in the scope of mathematics teaching with other subjects and now its share in school proposals is limited (Kofroňová and Vojtěch, 2005). But, after 2000, there was a significant trend to again increase their number especially IVET programmes leading to “maturita” examination (ISCED 3A).



2020) due to the disagreement of some experts and the public and concerns that it would pose a risk to students' success in "maturita".<sup>5</sup>

In 2020, a measure of the Minister of Education, Youth and Sports (MŠMT, 2020a) released further changes in FEPs for IVET. Revised parts of vocational component of FEPs were established in accordance with the latest knowledge of scientific disciplines, robotization and modernization of technological procedures. These changes occurred in the relevant subjects of individual fields.<sup>6</sup> At the same time, Economic Education in FEPs is being adjusted to reflect the updated Financial Literacy Standard approved by the Ministry of Finance in 2017. These changes are to be reflected in the SEPs by 1 September 2022 at the latest.

### **Change in the ratio/share of practical learning and classroom teaching**

In the three-year vocational programme with apprenticeship certificate (ISCED 3C), the vocational component of education consists of two parts: theoretical preparation and vocational training ("odborný výcvik"). "Vocational training is most often carried out in weekly blocks, in some vocational fields it might be interrupted for a period of time (construction fields, agriculture), and it may vary in scope. Depending on the nature of the field, vocational training can take place in school laboratories, school workshops or specialized classrooms." (ReferNet). Practical training can be carried out also in actual workplaces at employers' premises or in various institutions (state authorities, hospitals, non-profit organizations, social care facilities, banks, etc.). The decision on where the practical training will take place is up to school headmasters and is based on specific situation and possibilities given by the schools' cooperation with social partners or possibilities in the region (e.g., commuting distance).

As for the proportions of particular components of curricula, these have not fundamentally changed by the curricular reform in 2004 and remain at a ratio of 30:25:45 for general educational component, theoretical part of vocational component and vocational training (Kofroňová and Vojtěch, 2005). For the fields of Electrical engineering and healthcare in the 4-year programmes, FEPs state at least four weeks of practical internship in a workplace. The 3-year programmes for electricians and health workers included the practical training in the minimum of 35 weekly teaching hours for the entire period of education.

### **Change in the number of programmes**

After 1989, the number of fields of education increased sharply. Schools started to create their own educational programs as a response to the labour market needs. During the first half of the 1990s, the number of vocational fields rose from 543 to around 838. This trend was, however, limited by the Standard of Secondary Vocational Education in 1998. The creation of new educational programs in particular was largely suppressed in connection with the optimization of the school network and with the search for a new form of curricular policy (Chamoutová, Vojtěch, and Chomová, 2017). During the process of the implementation of the

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<sup>5</sup> In some European countries, the final exam from mathematics is mandatory only for students in general upper-secondary education. This is the case of Germany, Austria, Croatia or Italia. For everyone, it is mandatory to pass the math exam in Hungary and Slovenia. Mathematics is an optional subject on "maturita" only in the Czech Republic, Slovakia and Bulgaria.

<sup>6</sup> For example, in the field of health care, and in particular the field of laboratory assistant, curriculum for the subject "Public Health Protection and Health Education" have been modified. In the field of Electrical engineering, curriculum for the subjects "Electrical installation" or "Optoelectronics" became broader and a new subject "Principles of information transfer" was created.

curricular reform, there was a gradual reduction in the number of fields of education taught. In the school year 2008/09, the number of fields reached 520 and in 2010/11 it was in total 276 fields of education.<sup>7</sup> Today, there are a total of 284 framework educational programs (FEPs) in the system of fields (“systém oborů”), including the fields of general education, and deducting general streams, there is a total of 279 implemented FEPs.<sup>8</sup>

However, the mere existence of a field of education does not mean that the field is actually taught at least at one secondary school. Table 3 documents the number of actively taught fields of IVET by the category of upper-secondary education and also the changes in the number of fields in the groups leading to the occupation of electricians and health workers. Regarding the particular group of fields, one of the most significant increase in the number of educational programmes during the 1990s occurred in the field of electrical engineering<sup>9</sup>, i.e. an increase from 19 in 1990 to 61 programmes in 2001. This occurred mainly due to the changes in technology and the changes in the content of work in the sector for which a student is being prepared. On the contrary, the health sector has seen a slight decrease in the number of programmes (from 24 to 21). (Kofroňová and Vojtěch, 2005). With the curricular reform, there was not only a significant reduction in the number of fields, but also the emergence of a new group of fields for ICT. Between 2008 and 2016, the number of fields in electrical engineering slightly decreased as a result of the transfer of part of its earlier fields to the newly formed ICT group (Chamoutová, Vojtěch and Chomová, 2017).

**Table 3: The number of actively taught fields by the category of upper-secondary vocational education (i.e., without the fields in general education)**

<b>Category of education</b>	<b>1998</b>	<b>2003</b>	<b>2008</b>	<b>2016</b>	<b>2019</b>
<i>ISCED 3C* (C+D+J)</i>	14	11	7	7	7
<i>ISCED 3C (E+H)</i>	289	249	186	111	109
<i>ISCED 3A (L0+M)</i>	376	324	281	108	110
<i>ISCED 4A (L5)</i>	109	72	42	25	24
<i>ISCED 5B (Nk)</i>	6	5	4	9	5
<b>ALL</b>	<b>794</b>	<b>661</b>	<b>520</b>	<b>266</b>	<b>255</b>
<b>From that in the group of fields:</b>					
<i>18 Informatics</i>	0	0	0	1	1
<i>26 Electrical engineering</i>	66	56	32	11	11
<i>53 Healthcare</i>	9	9	9	8	10

\*two-year upper secondary education without the vocational certificate

Source: Paterová (2021)

Note: Officially, the group of field no. 18 stands for Informatics fields, no. 26 for Electrical Engineering, Telecommunications and Computer Technology and no. 53 for healthcare. The School Act distinguishes between three levels of upper-secondary education (ISCED 3). These are then further subdivided into other categories denoted by a letter (for its detailed description see Footnote 14).

<sup>7</sup> The reduction of the number of programmes was achieved mainly by merging fields. For more details, see Chamoutová, Vojtěch and Chomová (2017).

<sup>8</sup> Table A1 in Appendix graphically describes the legal changes in the number of fields of education.

<sup>9</sup> The full name of the group of fields is „Electrical Engineering, Telecommunications and Computer Technology“.

## Chapter 3. Relationship of IVET at upper secondary levels with that at higher levels

Over the last 30 years, the only form of IVET at post-secondary level has been postgraduate studies (ISCED 4). A minor change in post-secondary non-tertiary education occurs thanks to the School Act (Czechia, 2004a) in force since 1 January 2005. In addition to the already mentioned changes based on the curricular reform, it also strengthens the role of postgraduate studies and at the same time introduces new so-called shortened forms of study (“zkrácené studium”) leading to vocational certificate (ISCED 353) or a shortened form of study leading to “maturita” examination (ISCED 354). These two new types of study enable adult learners who already have vocational certificate or Maturita to expand their competencies and expertise and acquire further qualifications in a relatively short time (ReferNet).

Graduates of the three-year programmes with vocational certificate (ISCED 3C) who are interested in supplementing their education with “maturita” examination can continue their studies in the traditional post-secondary programme (ISCED 4A). This programme lasts two years and opens up the possibility for a successful graduate to continue at university or to enter the labour market. Post-secondary study can be obtained at secondary schools providing “maturita” and at the same time teaching a related field. The curriculum in this programme includes general and theoretical vocational subjects in a ratio of approximately 45:55.

The newly created forms of study consist of two types, both lasting one to two years in full-time education. The first type leads to vocational certificate (ISCED 353) and is primarily intended for graduates of upper-secondary education with “maturita” (ISCED 3A) or for graduates of upper-secondary education with vocational certificate (ISCED 3C) who wish to obtain a new qualification. The curriculum is therefore focused mainly on vocational subjects and vocational training in the field. The second type of the shortened forms of study leading to “maturita” (ISCED 354) is primarily intended for graduates of ISCED 3A and again serves for possible retraining. Fields of shortened forms of study are carried out by schools with a relevant upper-secondary level registered in the school register (Institute for Information on Education, 2009).

In post-secondary non-tertiary education, the most widespread is the postgraduate stage, although with a decreasing number of students since 2000. The share of students in postgraduate studies in the total number of students in upper-secondary education decreased from 8% in 2003/04 to 3% in 2019/20. There is especially a declining interest in other than full-time forms of study. One of the reasons for this trend is probably the increasing interest in shortened forms of study, especially in the last 10 years, when the share of students in shortened forms of study to the total number of students in non-full-time upper-secondary education augmented from 3% in 2011/12 to almost a quarter in 2019/20 caused especially by shortened forms of study leading to “maturita”. On the contrary, in the full-time form, interest in a shortened form of study with vocational certificate prevails. In the last 10 years, the total number of students in shortened form of study with vocational certificate has increased from 429 in 2010/11 to 1990 in 2019/20 and in shortened form of study with “maturita” from 810 to 2946 (MŠMT, National Statistics).

At the level of ISCED 5, there were no VET qualifications before 1989. To cover the gap between secondary and tertiary education and in an effort to gradually create a sector of higher vocational education, the new programme of higher vocational schools (“vyšší odborné školy”) was introduced experimentally in the 1992/93 school year. They then joined the education system permanently in 1995 in the number of approximately 170 schools (Karpíšek et al., 2009). Higher vocational education develops and deepens student knowledge and skills acquired in upper-secondary education and provides general and vocational education and practical training in order to prepare its absolvents to demanding professions (Czechia, 2004a). Higher vocational schools provide education at ISCED level 5B and are mostly established at upper-secondary vocational schools. Only one quarter of all higher vocational schools operate independently (Cedefop, 2005). This study programme usually lasts 3 years and consists of theoretical and vocational training. An important characteristic of this programme is the long-term vocational practice of students as part of the study, which can last more than three months. The ratio between general educational subjects, basic vocational subjects and specific vocational subjects is approximately 20:40:40 (Cedefop, 2005). A strong emphasis of this programme is thus on the application side of the study (Karpíšek et al., 2009). Education at higher vocational schools ends with “absolutorium”.<sup>10</sup>

The higher vocational schools started with around 4,000 students in 1995. In the school year 2003/04, there were 169 higher vocational schools with a total of 30,681 students. By 2009/10, the number of higher education institutions had increased to 184 schools, and subsequently began to decline during the next period to 160 schools in the school year 2019/20 with a total of 17,954 students. Even though a total number of students and schools is decreasing over time, there is at the same time increasing interest for non-full-time form of study. Whereas in 2003/04, 83% of all students of higher vocational schools studied in full-time, this ratio dropped to 62% in 2019/20. In the last twenty years, the profile of a student in a higher vocational school has also changed. In the school year 2003/04, the three quarters of admitted students entered the higher vocational school right after their study in programme with “maturita”. In 2019/18, this ratio decreased to 58%. This is also connected with the changing age structure of students in higher vocational schools. In the school year 2005/06, 85% of students were less than 24 years old, in 2019/20 there is one third of students older than 25 (MŠMT, National Statistics).

The most popular fields at higher vocational schools are the fields of health care. In the school year 2019/2020, 35 out of 142 schools offered them in the full-time form of study and more than 3,000 students, i.e., more than quarter of all students at higher vocational schools, studied there. Other very popular field is pedagogy, with 25 schools and around 2,000 students in the school year 2019/2020.

Together with the higher vocational programmes at the non-university level, we can also observe in the last 20 years the efforts to develop tertiary vocational education at the level of bachelor or short vocational programmes. In this sense, some higher vocational schools used

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<sup>10</sup> Absolutorium is a vocational examination, which consists of an exam in vocational subjects (at most in three), an exam in a foreign language and the defense of a graduate thesis (Institute for Information on Education, 2009). Higher vocational schools prepare its graduates mainly for entry into the labour market, but some graduates also continue their studies at the university in the bachelor's program, in which some of their completed subjects from previous study at higher vocational school can be recognized (Cedefop, 2014).

their experience and, in cooperation with a university, began to provide bachelor's degree programs. The White Paper on Tertiary Education (Ježek et al., 2008) also went in this direction and proposed the inclusion of part of the capacities of higher vocational schools in the tertiary education sector. In 2009, bachelor's programs were accredited in the case of 20 higher vocational schools (Karpíšek et al., 2009). However, the position and role of higher education institutions is still not conceptually solved, and therefore the professional bachelor's program is run in the Czechia only exceptionally.

## Chapter 4. The changing relationship between IVET and CVET

In the Czech Republic, there exists several possibilities to acquire further vocational education for adults. Even though the responsibility for CVET is mainly attributed to employers, also IVET programmes such as apprenticeships can provide continuing training for adults. Adults have thus the possibility to supplement their vocational education and/or to obtain vocational certificate at upper-secondary schools. These schools provide IVET not only for young learners but also for adults who wish to acquire certain qualifications or level of education (ReferNet). In the school year 2019/2020, there were registered around 2,800 adult learners, i.e. 25 years and older, in the full-time study form and 11,021 in the non-full-time form of study. During the last 15 years, there is an increasing number of adult learners participating in IVET. The share of adult learners in full-time IVET (3-year programme with vocational certificate) has grown from 0.1% in 2005/06, to 0.9% in 2011/12 and 1.5% in 2019/20. The same trend holds for the non-full-time form of study in which the share of adult learners in IVET rose from 53% in 2005/06 to 72% in 2019/20 (MŠMT, National Statistics).

CVET also includes training in firms with the aim to update workers' skills. In the last two decades, the employees' training activities have developed rapidly in the Czech Republic. Information from the international survey CVTS (Continuing Vocational Training Survey) reveals that percentage of firms providing employees' training activities increases from 83% in 1999 to 91% in 2015. The most common is employee training in the form of courses and training that is usually external, i.e., provided from the outside of the firm by an educational agency. As part of optional courses and training, firms usually focus on specific skills needed to pursue a profession (31% of firms) and foreign languages (15%) (CSO, 2017).

Whether and how much employers invest in CVET depends to some extent on how the firm is doing financially. Some firms, while recognizing the importance of these investments, when they are failing financially, provide less or no investment on education at all. Investments in CVET is not considered as necessary costs. The share of education costs in the total labour costs of firms reached in 1999 1.1%, in 2010 it decreased to 0.6%<sup>11</sup> and in 2015 it was on average 0.71% (CSO, 2012; CSO, 2017).

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<sup>11</sup> This declining trend in the costs of employees' training activities in period between 2000 and 2010 was largely influenced by the effects of economic depression (CSO, 2012).

Cooperation between firms and schools is mainly in the form of providing internships or training in the firm for students or apprentices. In 2015, approximately 23% of companies cooperated with upper-secondary schools and higher vocational schools in this way.

Further vocational education also takes place in the form of retraining courses within the active labour market policy. Courses tend to focus on computer user literacy, management, marketing, accounting, banking, the system of working with people and preparation for private business in combination with intensive language training.

The relationship between IVET and CVET was also affected by the Act on the Verification and Recognition of Further Education Results (Czechia, 2006), which entered into force in August 2007. This Act allows a person with achieved basic education to obtain a recognized certificate of relevant vocational qualification by successful completion of final examination, “maturita” examination or graduation from a conservatory in the relevant field of education. Thus, according to this Act, a person with knowledge and skills in the given field can also apply for the final examinations, even without previous study in upper-secondary school. These exams take place in schools with the appropriate field of education, i.e., usually the ones that provide IVET. Thus, the law also addresses the recognition of non-formal and informal learning and helps persons already in the labour market, but without a professional certificate, to obtain this certificate without having to complete secondary school.<sup>12</sup>

## Chapter 5. Changing institutional arrangements

In the Czech Republic, vocational education has a long tradition and at the upper-secondary level represents a substantial part of the education system. In addition to general secondary education (ISCED 3A), pupils have the opportunity to study at a 4-year vocational programmes leading to “maturita” examination (ISCED 3A) and thus to the possibility of the further education at university level, or at a 3-year vocational programmes completed by vocational certificate (ISCED 3C) and thus preparing students to enter the labour market.<sup>13</sup> Although we are talking about upper-secondary vocational education, both streams are rather a hybrid programmes with a representation of general and vocational education. In the Czech Republic, there is no purely vocational secondary education that we can observe, for example, in England. At the same time, however, hybrid programs in the Czechia also differ from hybrid programs typical, for example, of the German education system, especially by the involvement of social partners, i.e., employers, in the educational process. The IVET schools in the Czechia provide the mix of vocational and general subjects.<sup>14</sup> This enables students to enter labour market or continue

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<sup>12</sup> For more detail, see Czechia (2006), Bartošková et al. (2008), Cedefop (2014).

<sup>13</sup> The School Act distinguishes between three levels of upper-secondary education. These are then further subdivided into other categories denoted by a letter. The first stream, secondary education, groups categories C (education in practical schools) and J (secondary or secondary vocational). This level of education does not provide a vocational certificate neither “maturita” and lasts one or two years. The next level is secondary education leading to a vocational certificate, which can be achieved in two categories, namely H (secondary vocational education with a vocational certificate) and E (lower secondary vocational education). The third level represents secondary education with “maturita” examination, which can be achieved in several categories: M (complete secondary vocational education with “maturita”), L (complete secondary vocational education with vocational training and a “maturita”), K (complete secondary general education) and P (higher vocational education in a conservatory). For a more detailed description of secondary education levels, see National Institute for Education.

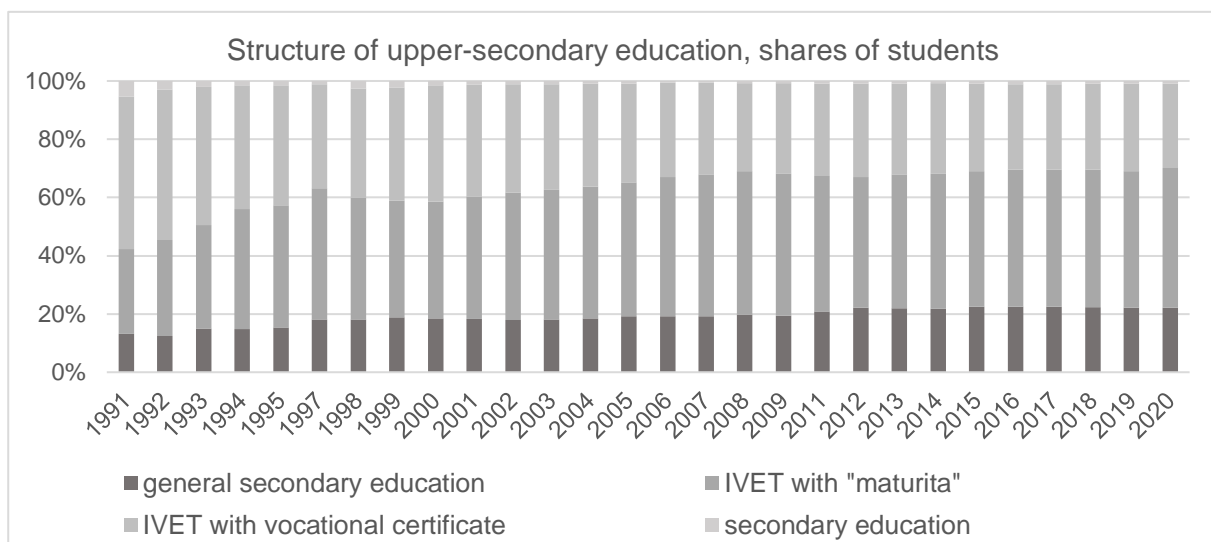
<sup>14</sup> See Chapter 2 for the composition of curricula in IVET schools and its evolution in last 30 years.

their studies in university. However, the curricula for student is set directly with his/her application to the field. Students thus don't have an opportunity to choose across different general and vocational subjects.

Since 1990, secondary education, and with it IVET, has undergone a number of structural changes. After 1989, private and church schools<sup>15</sup> began to enter secondary education, and together with this development, the legal subjectivity of secondary schools was introduced (Chamoutová, Vojtěch and Chomová, 2017). After the year 2000, there was a reform of the state administration in the Czech Republic, which was subsequently connected with the decentralization of the administration of secondary education. In 2001, competences over IVET were transferred from the hands of the Ministry of Education, Youth and Sports to regions and at the same time the school autonomy was strengthened. The aim of these changes was to adapt the IVET to the needs of the labour market in individual regions, as well as the subsequent expected increase in the employability of IVET graduates (Bartošková et al., 2008).

In addition to structural changes, there have also been significant demographic changes in the last 30 years in the Czech Republic<sup>16</sup>, which has influenced the development of secondary education rather quantitatively. The number of secondary schools was reduced by about a quarter between 1996-2016, with the largest optimization of the secondary school network in the period up to 2008. Most smaller schools were merged, some schools were abolished (Chamoutová, Vojtěch and Chomová, 2017).

**Figure 1: The share of first year students (i.e., new entrants) in general and vocational upper-secondary education**



<sup>15</sup> Already in 1998, the share of private vocational schools with "maturita" was 24.6% and the share of private vocational schools with vocational certificate was approximately 15%. These shares did not change significantly after 2000 and in 2016 they remains approximately at 25.7% and 17.6% for secondary vocational schools with "maturita" and vocational certificate, respectively (Chamoutová, Vojtěch and Chomová, 2017). According to the number of students, the share of students in private, i.e. in private and church, upper-secondary schools with vocational certificate was 10% in 2003 and 11% in 2019; and in private vocational schools with "maturita", it was 15% in 2003 and 19% in 2019. The lower shares of students in private education in comparison to shares of private schools is due to the usually lower number of students per private school than per public school.

<sup>16</sup> In 1990, the population of 15-year-olds was approximately 180,000, in 2000 only 133,000, in 2010 96,000 and in 2019 it slightly increased to 99,000 (Czech Statistical Office). For detailed picture of demographic changes in the Czech Republic in last 30 years, see Figure A1 in Appendix.

Source: MŠMT, National Statistics

Note: The shares are computed without counting for postgraduate studies. The category of secondary education stands for the upper-secondary education without “maturita” and vocational certificate. The number of students in 1996 was affected by the transition from 8-year to 9-year attendance of primary and lower-secondary education. For that reason, year 1996 was dropped.

All this was reflected in the development of the structure of secondary education in the Czech Republic, which has thus undergone significant changes over the last 30 years. After 1989, it is possible to observe the change in the educational strategies of IVET students and their increasing interest in general upper-secondary education, which was artificially suppressed during the communist regime. At the same time, due to the massification of tertiary education, more and more students are applying to universities<sup>17</sup>, which has also had an impact on the structure of upper-secondary education. Graduates of IVET are increasingly being accepted for university studies. Today, over 70% of graduates of upper-secondary vocational school with “maturita” apply to universities and 50% of graduates are accepted. This also affected the function of some upper-secondary vocational schools, in which preparation for tertiary education predominates before vocational training (Bartošková et al., 2008). At the same time, the shares of students studying in the upper-secondary education with and without “maturita” has been also changing. In 1989, this ratio was approximately 40:60, but over the course of 90s it reversed and in 1998 it represented a ratio of 60:40 in favor of education with “maturita”. This trend has slowed down after 2000 and in 2019/20 it was about 70:30 in favor of upper-secondary education leading to “maturita” (MŠMT, National Statistics).<sup>18</sup>

A similar, though not so dramatic, development can also be observed in the overall ratio of students in general and vocational upper-secondary education. Here, in the 1990s, this ratio was around 85:15, in 2003/04 approximately 80:20, and in 2019/20 it was around 75:25 in favor of vocational programmes (MŠMT, National Statistics). Thus, the representation of vocational education at the upper-secondary level in the Czech education system remains extremely high. On the other hand, IVET offering “maturita” examination is thus in the last 30 years increasingly preferred to the IVET that directly leads to the labour market as it enables further studies at tertiary education.

Table 4 further examine the changes in the shares of students in particular groups of fields with focus on the fields leading to occupations of electricians and health workers. For IVET with “maturita”, the shares of students, as well as the number of schools, in the group of fields of electrical engineering were declining over the last 15 years from 13% in 2005/06 to 7% in 2019/20. This drop is caused by the creation of a group of fields of informatics, which previously belonged to the group of electrical engineering. In the case of the group of fields of healthcare, the share of students remains the same over the last 15 years at around 7%. For IVET with vocational certificate, over the last 15 years, the share of students in the fields of electrical engineering was around 10%<sup>19</sup> and in the fields of healthcare it increased from almost 0% in 2005/06 to around 2% in 2019/20.

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<sup>17</sup> The percentage of the population with tertiary education aged 25-34 increased from 11.8% in 2000 to 32.6% in 2020 (Czech Statistical Office).

<sup>18</sup> The shares of students in the upper-secondary education with and without “maturita” refers to the shares of students who entered the first year of upper-secondary education.

<sup>19</sup> For the IVET with vocational certificate, the field of informatics was not created. That’s why we observe no changes in the shares of students in the fields of electrical engineering.



**Table 4: Proportions of students in IVET with “maturita” and IVET with vocational certificate by the groups of fields**

<i>IVET with "maturita"</i>	<i>2005/06</i>	<i>2007/08</i>	<i>2009/10</i>	<i>2011/12</i>	<i>2013/14</i>	<i>2015/16</i>	<i>2017/18</i>	<i>2019/20</i>
<i>18 Informatics</i>	0%	0%	1%	5%	8%	8%	8%	8%
<i>26 Electrical Engineering</i>	13%	13%	12%	9%	7%	7%	7%	7%
<i>53 Healthcare</i>	7%	6%	5%	6%	6%	6%	6%	7%
<b><i>IVET with vocational certificate</i></b>								
<i>26 Electrical Engineering</i>	9%	8%	7%	7%	8%	8%	9%	10%
<i>53 Healthcare</i>	0%	0%	0%	1%	1%	1%	2%	2%

Source: MŠMT, National Statistics

From the 2000s, new kinds of provisions have also emerged, such as shortened forms of study that enable the adult learners to acquire further qualifications, i.e., vocational certificate or maturita examination, in one or two years.<sup>20</sup> Further in 2012, the Ministry of Education, Youth and Sports launched an experimental verification of the organization and course of the education model of IVET. This introduced the verification of a tiered model of education and completion of education that allows to achieve both, an apprenticeship certificate and Maturita examination, within one field of study (MŠMT, 2012).<sup>21</sup> In 2012, 5 schools were included in the experimental verification. In 2020, it was already 64 IVET schools in 29 fields that will provide this combined educational model (MŠMT, 2020b).

## Chapter 6. Conclusion: Harmonisation, diversification, pluralisation, academic/vocational drift

The last 30 years have been a period of many structural changes for Czech education, and with it for IVET. The aim of this study was to describe, analyse and explain the context of these changes and trends in IVET. Overall, we can say that in the case of the Czechia it is possible to observe an academic drift in IVET with gradual harmonization with respect to the balance between general and vocational education. The main changes and trends in IVET can be resumed in the following points:

1. Regarding the changes in curriculum, the general educational component reinforced, especially in vocational programmes leading to “maturita”. In particular, there has been an increase in teaching hours of mathematics, the integration of new general subjects into the curricula such as ICT and economy, and the growing emphasis on key competences and transversal skills.
2. With the curricular reform in 2004, the system of fields for IVET has been revised and the number of fields considerably reduced. Around 800 fields of IVET at the end of

<sup>20</sup> See chapter 3 for a detailed description of so-called shortened forms of study.

<sup>21</sup> Thus, students have a possibility to pass final exams in vocational subjects after the end of the 3rd year and obtain a vocational certificate, and after the end of the 4th year to acquire qualifications with maturita examination.

1990s were lowered to 279 in 2019. This decline in the number of fields was to some extent also influenced by the demographic changes, the transfer of competencies over IVET from the Ministry of Education, Youth and Sports to the regions, random optimization, etc.

3. The structure and, with it, the function of upper-secondary education has changed fundamentally. One of the significant impacts on the educational strategies of IVET students was the massification of higher education. Today, over 70% of graduates of upper-secondary vocational school with "maturita" apply to universities and 50% of graduates are accepted. This had also an impact on the educational strategies of IVET students, who to a greater extent chose vocational education leading to a "maturita". As a consequence, the shares of students studying in the upper-secondary education with and without "maturita" was reversed from approximately 40:60 in 1991 to 70:30 in 2019.
4. Strengthening of post-graduate vocational studies. The new School Act in 2004 introduced a new shortened form of study leading to a vocational certificate or to "maturita" with the aim to expand the competencies and expertise of upper-secondary graduates. At the same time, in 1995, there were created higher vocational schools offering vocational education at the tertiary but non-university level with the aim to form in the future vocational education at the bachelor level. However, this goal has not yet been fully met.

Despite extensive reforms and significant changes in the Czech school system, and with it also in IVET, education is still set to meet the needs of the past rather than the future and thus faces difficulties to respond quickly to changes in society (Fryč et al., 2020). This is an important point also for vocational training, which prepares its students to enter the labour market. Programmes of IVET leading directly to the labour market also have the lowest social status, both, in the Czechia in comparison with other programmes of upper-secondary education, as well as among other streams of IVET in Europe (Korbel and München, 2021). This indicates that the attractiveness of IVET is consistently very low for Czech students.

In 2020, the Ministry of Education, Youth and Sports issued the Strategy 2030+ (Fryč et al., 2020), i.e., a strategic plan for the Czech education system for the next 10 years, on which an external expert group worked for more than a year. The Strategy 2030+ seeks to address the above-mentioned challenges of education as such, as well as the challenges of IVET. Thus, the implementation of these strategies may in the future affect the direction of IVET in the Czech Republic, specifically in the following points:

1. In upcoming years, commenced academic drift should continue together with the strengthening of the common general basis of education, the development of digital literacy and further development of key competences and transversal skills in curricula. These changes might help, not only to increase the employability of IVET graduates, but moreover, to proceed more easily to higher vocational schools or to university. At the same time, competences for lifelong learning are also becoming increasingly essential in the constantly changing society (Fryč et al., 2020).

2. Together with the changes in curricula (i.e., in FEPs and consequently in SEPs), there should continue the revision of the system of fields, in particular the incorporation of new emerging fields due to the digitalization and robotization into the system. At the same time, fields that are no longer applicable in the labour market or that lead to too narrow profiling of its graduates should be reconsidered or removed (Fryč et al., 2020). Reducing the number of fields could allow students to postpone their too early specification and to go through a more gradual career choice (Kofroňová, 2019).
3. One of the goals of the already started revision of the FEP (MŠMT, 2020a) is to allow the vertical and horizontal permeability of the fields of education in upper-secondary system. This should enable students to change the field of studies or to continue in the previously interrupted study, and hence increase their further employability (Kofroňová, 2019; Fryč et al., 2020).
4. Cooperation between schools and employers is also important for the further adaptation of IVET to labour market requirements. Currently, there is no systematic connection between schools and companies, which is one of the weaknesses of IVET in the Czech Republic. If the objectives of the strategy can be met, a dual IVET system based on various possibilities for voluntary cooperation between schools and companies should be introduced in the coming years. At the same time, the strategy plans to create "quality standards for corporate and school workplaces where practical teaching takes place" (Fryč et al., 2030, p.37), which should contribute to an overall increase in the quality of vocational education. Within the framework of this cooperation, there should also be improved the quality of the level of the teaching staff, specifically by "the involvement of a larger number of people from companies in teaching and the implementation of internships for teachers in companies" (Fryč et al., 2030, p. 37). To achieve these changes, a more flexible organization of school teaching seems to be necessary (Kofroňová, 2019). Vocational education should also take on the role of provider of lifelong CVET as it is the case for example in Netherlands, Denmark, etc. However, this requires specific measures and tools (legislation, finance, staffing, infrastructure, etc.).
5. Regarding the VET at higher levels, there is a need to conceptually address the position and role of higher education institutions and their relation to the professional bachelor programmes. This issue was one of the points of the previous strategy for education policy for years 2010-2020, but it has not been met (Kaščák et al., 2018). However, even today it does not seem that anything will change in this regard in the near future.

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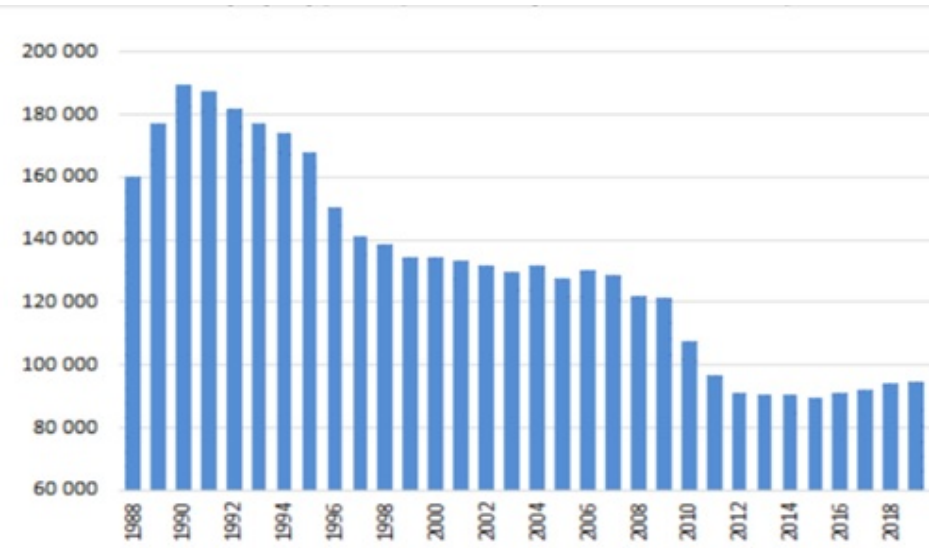
## Appendix

Table A1:

Period		Number of fields	Reason
1984-1990	Decree of the Ministry of Education of the Czech Socialist Republic No. 124/1984 Coll. of 15 November 1984	543 fields	
1991-2003	Decree No. 354/1991 Coll	838	An excessive increase in number of vocational fields as a response to the emerging labour market needs
2004	the Act No. 561/2004 Coll. and Government Regulation No. 689/2004 Coll	777	Changes in the system of fields of education, in order to introduce international classification ISCED 97 in the Czech Republic
2010	Government Regulation No. 211/2010 Coll., 367/2012 Coll., 144/2018 Coll.	276	Due to the curricular reform, there was introduced a new system of fields of education. This led to a gradual decline in the number of fields. The aim was to make the system of fields be simpler and clearer and to remove duplications of fields differing only in designation
2018		279	The process of changes was completed in 2010. In the following period, there were only minor changes by adding three fields and renaming one.
In future	Strategy 2030+ Measure no. MSMT 31622/2020-1		Adjustment of the system of fields of education to the development of digitization and robotics. At the same time, to increase the permeability of the system.



Figure A1: The number of 15-year-olds in the Czechia over 1988 to 2018



Source: Vojtěch and Štěpánek (2020)