Background to Failures in Education: Social Problems and Funding

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The Czech Republic is marked by extremely high education inequalities and the strong influence of the students' family background on their access to quality education. The Czech Republic reports worse results than most EU countries with a similar recent history, such as Poland and Estonia. The Program for International Student Assessment (PISA) surveys indicate that the children in these countries who come from worse social backgrounds tend to achieve better results. At the same time, the overall results of these countries have been improving over time. In this study, we investigate a surprisingly neglected topic – to what extent does local funding for elementary and pre-school education reflect the scope of social and educational problems in the given locality. We found this not to have been the case.

Introduction

State funding of teachers' salaries (more or less standardized across the country) rarely reflects the socio-economic differences among municipalities. The extreme decentralization of the Czech education system also provides municipalities with a high degree of autonomy in deciding on the amount of funding allocated to investments and the operations of the schools they run. The amount of municipal co-funding of school investment and operational costs does not significantly reflect the students' social and educational problems. Additionally, the Czech Republic has many small municipalities, which translates into a higher share of small schools with highly varying educational conditions.

Main Findings:

- Our unique empirical analysis conducted at the level of "municipalities with extended competence" (*obce s rozšířenou působností*, ORP) has confirmed that social and educational problems are closely interlinked in the Czech Republic. The distribution of educational problems is closely associated with the degree of destabilizing poverty in particular regions, which manifests as the number of families subject to debt collection procedures and unstable housing arrangements outside of standard residential premises (i.e., not in rented or owned houses and apartments). Social disadvantages such as low level of education on the part of parents, unemployment, and a high divorce rate are less strongly linked to educational problems. The funding of schools and supporting staff from municipal budgets is not primarily set up to combat social and educational problems in municipalities. This is a comprehensive ecosystem of funding coming from various sources which cannot be described in simple relational terms; funding can sometimes contribute to mitigating the problems, while in other cases, it cannot.
  1. We have not identified any strong link between the amount of school funding provided by municipalities and the educational problems in those municipalities. This confirms the hypothesis that the methodology of school funding does not reflect the social disadvantages and needs of the students.
  2. The amount of funding allocated for the salaries of pedagogical workers in municipalities with higher unemployment and lower educational achievement is only marginally higher. This is, however, likely caused by the fact that such municipalities have smaller schools, have higher fixed costs and also more teachers per student.
  3. The amount of the state contribution towards the salaries of pedagogical workers in schools is not linked to the local rates of destabilizing poverty (the number of people subject to debt collection, housing distress, etc.). This is the case despite the fact that destabilizing poverty significantly impacts children and is regionally strongly linked to educational failure.
  4. School investment spending is somewhat lower in areas with higher social disadvantages. Poorer and smaller municipalities report lower investments in school repairs, construction, equipment, etc.

- We also analyzed how the prevalence of destabilizing poverty (debt collection, housing distress) and educational problems relate to school funding. The relationship is fairly weak. Non-investment municipal spending for schools is only linked with lower educational failure rates in richer ORPs. In poorer ORPs, in contrast, the funding is mostly used for operational expenses (heating, etc.). The degree of educational failure

is slightly lower in poorer ORPs with a greater state contribution towards the salaries of pedagogical and non-pedagogical staff. The effect, however, is extremely limited. The central government does not help much in these areas, and where it does, the money is not always allocated efficiently.

- A qualitative case study of two ORPs – Krnov and Ostrava – has demonstrated that an efficient allocation of funds within an ORP can, if combined with other more subtle steps (coordination and communication among local bodies), improve the access of all students to quality education and reduce educational inequalities. This analysis also indicated that municipalities can seek out various resources to fund these steps. This reinforces our conviction that any analysis of the relationship between funding and educational inequalities must include all kinds of financial flows into the area under scrutiny.
- The Covid-19 pandemic also tends to accentuate inequalities in access to quality education. Students from socially disadvantaged families receive lower support from their parents and have worse access to information and communication technologies (ICT). The economic downturn caused by the pandemic has also negatively impacted municipal budgets. Uncertainty about budgets and the forced need to prioritize may result in a decrease in municipal operational and investment spending in the area of education. Due to the frequent concurrence of educational and social problems, municipalities with more acute social problems may choose to focus on dealing with those first, thus further aggravating educational inequalities.
- A key to dealing with educational inequalities consists not merely in the amount of funding but also in using the available funds efficiently. A more thorough analysis is thus needed to better understand the relationship between funding and inequalities. If educational spending becomes more predictable, it will be possible to allocate it more efficiently, e.g. on the basis of school rankings and indexation. Additional successful measures to reduce educational inequalities, that have been tried and tested abroad, include investments in preschool education, dealing with educational and social problems concurrently on the basis of interdepartmental cooperation (in the Czech Republic, this would primarily involve the Ministry of Education, Youth and Sports, the Ministry of Labor and Social Affairs and the Ministry of Health), supporting local bodies and promoting innovative solutions (such as Local Action Plans). On the school level, it is important to promote inclusive education, which will enable further training of pedagogical workers to improve, for example, their skills in dealing with diverse student groups, as well as ensuring the availability of assistant staff. This includes funding for social pedagogues, teaching assistants, and school psychologists who

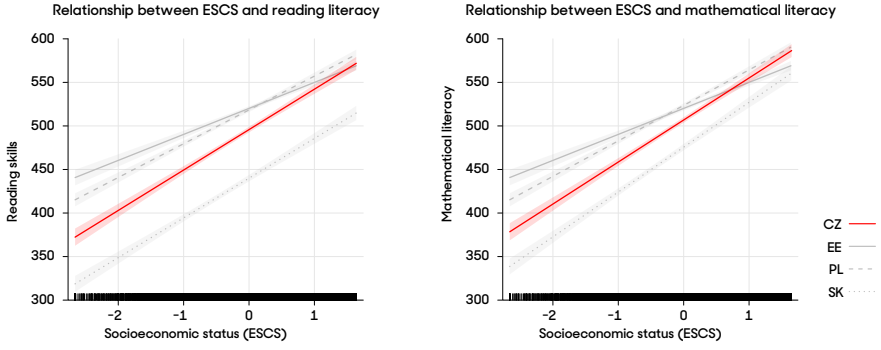
can better work with the students, their families and whole communities. Financial predictability is essential for this to be possible.

Inequalities in Education in the Czech Republic Compared to Other Post-Communist Countries

Growing inequalities are one of the most conspicuous characteristics of the Czech education system in the post-Communist era and are apparent across various regions and social groups. There is a significant mismatch, for example, between the impact of certain social phenomena such as debt collection procedures, poverty and crime on various social groups. The widening gap in access to quality education and educational attainment has been documented for at least two decades.[1] International comparisons demonstrate that this problem is more serious in the Czech Republic compared to similar countries. Over the last ten years, the Czech Republic has always scored in the upper third of countries where educational outcomes most strongly correlate with socioeconomic status.[2]

Chart 1: Relationship between the economic, social and cultural status (ESCS) of parents and reading and mathematical literacy

Source: PISA 2018, 9th grade students. Linear regression model without control variables. The chart indicates the average marginal effects (AME) – that is, how the estimated PISA score in reading/mathematical literacy of an average student changes in relation to the economic, social and cultural status of their parents.



As Chart 1 shows, the relationship between the socioeconomic status (ESCS) of parents and the students' outcomes is stronger in the Czech Republic compared to similar countries.

1) BASL, Josef, MATĚJŮ, Petr and Jana STRAKOVÁ, ed. *(Ne)rovné šance na vzdělání: vzdělanostní nerovnosti v České republice ((Un)equal opportunities in education: educational inequalities in the Czech Republic).* Prague: Academia, 2006.

2) PEÑA-LÓPEZ, I. *PISA 2015 Results (Volume I). Excellence and Equity in Education.* Paris: OECD Publishing, 2016. SCHLEICHER, A. *PISA 2018: Insights and Interpretations.* Paris: OECD Publishing, 2019.

The incline is steeper for the Czech Republic than for Estonia and Poland and is comparable to Slovakia, where the gradient is one of the highest in the EU. Estonia is among the countries with the lowest inequality and is also one of the countries with high average student results. Between 2000 and 2018, Poland managed to significantly improve its results while maintaining the same or even decreasing educational inequality.[3]

Our study also addresses the question of whether public policies, especially as regards allocation of funding to elementary schools, contribute to increasing educational inequalities in the Czech Republic. Demonstrating that changes in educational inequalities are caused by (un)suitable educational policies, or rather the funding system, is methodologically difficult even in an international context. There are studies[4] suggesting that in Poland, for instance, the 1999 reform of secondary schools, that reduced the number of education paths from three to one (thus practically boosting equal access to quality education for students from various backgrounds), had an extremely strong effect. Additionally, international research indicates that the degree of financial support for schools can influence the students' results[5] and may decrease educational inequalities among communities.[6] In the Czech Republic, there is a lack of systematic records of this nature, as data collection serves mostly for the purposes of financial accounting. This topic has been neglected not only by the Ministry of Education, but surprisingly also by the academic research community.

A Map of and the Relationship between Social and Educational Problems

Certain administrative regions (Karlovy Vary and Ústí regions in PISA surveys) often score far worse in international functional literacy tests than the socioeconomic status of local families would suggest. Conversely, other regions (e.g. Liberec, Zlín) score better. This indicates that the parents' socioeconomic background is not necessarily the only factor behind educational failure.

On regional and municipal levels (in our study, municipal level means the administrative districts of municipalities with extended competence – ORPs) in the Czech Republic, we still know relatively little about the relationships between social and educational

3) SCHLEICHER, A. *PISA 2018: Insights and Interpretations.* Paris: OECD Publishing, 2019.

4) MAHFOOZ, Sara Bin and Kate HOVDE. *Successful education reform: lessons from Poland (English).* Europe and Central Asia knowledge brief; volume no. 34 [online] Washington, D.C.: World Bank Group, 1.11.2010, 2. 6. 2011 [retrieved on: 2020-09-11]. Available at: http://documents.worldbank.org/curated/en/711041468093564484/Successful-education-reform-lessons-from-Poland.

5) JACKSON, C. K. Does school spending matter? The new literature on an old question. In: L., Tach, Miller D. L. and R. Dunifon. *APA Bronfenbrenner series on the ecology of human development. Confronting inequality: How policies and practices shape children's opportunities.* American Psychological Association, 2020, pp. 165–186. HÆGELAND, Torbjørn, Oddbjørn RAAUM and Kjell G. SALVANES. Pennies from heaven? Using exogenous tax variation to identify effects of school resources on pupil achievement. *Economics of Education Review.* 2012, 31(5), pp. 601-614.

6) LAFORTUNE, Julien and David SCHÖNHOLZER. *Measuring the Efficacy and Efficiency of School Facility Expenditures* [online]. 3. 12. 2019 [retrieved on: 2020-09-09]. Available at: http://www.cirje.e.u-tokyo.ac.jp/research/workshops/emf/paper2019/emp1223.pdf.

problems. We do not know the role played by regional and municipal funding. These questions are therefore analyzed in the following parts of this study.

The following can be considered indicators of educational problems:

- Percentage of unsuccessful students – a three-year average of students who fail to successfully complete the school year (receiving "F" on their school report) as a fraction of all elementary school students in an ORP.
- Number of classes missed – three-year average per student in an ORP.
- Percentage of students failing to complete the 9th grade – a percentage share of students in the school year 2018/19.

The following can be viewed as social problems:

- Percentage of children in housing distress – the share of children without a home, living in public housing facilities (hostels and other lodgings for the poor; *ubytovna* in Czech), institutional care facilities, unsuitable apartments or in uncertain temporary accommodations (with their relatives/friends) in an ORP in 2018.
- Percentage of parents subject to a debt collection procedure – an estimated percentage of people with children in households affected by court-ordered debt collection procedures in an ORP based on the *Debt Collection Map* by the Czech Statistical Office (CSO).
- Divorce rate – the average number of divorced marriages in an ORP per 1,000 inhabitants in the 2014–2018 period.
- Unemployment rate – percentage of the unemployed in the total population of an ORP aged 15 to 65 in the year 2014 (this better corresponds to regional long-term unemployment than the data from 2018).
- Low educational attainment – percentage of people with only compulsory school education in the population of an ORP.

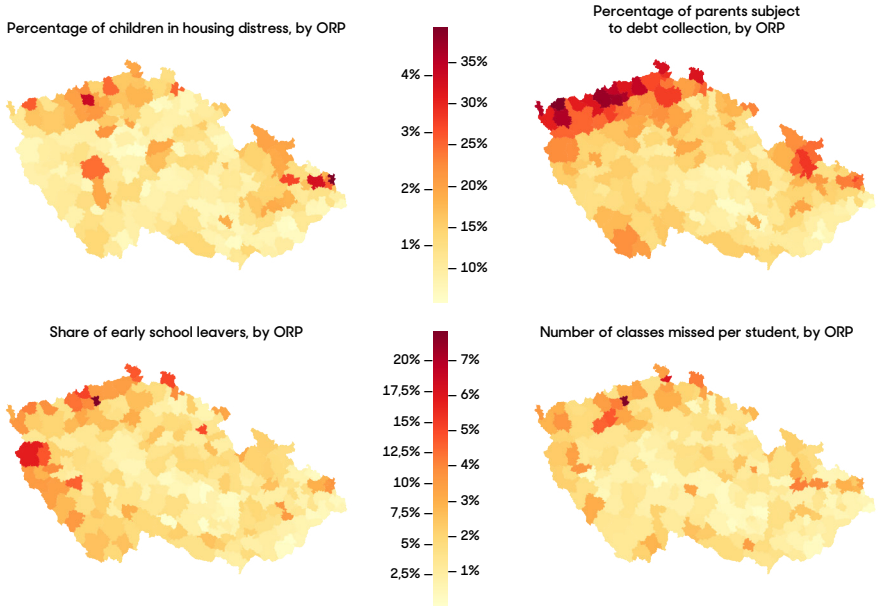
The Relationship between Social and Educational Problems on the ORP Level

Our analysis indicates that various types of educational problems are most closely linked to the percentage of parents subject to a debt collection procedure and the percentage of children in housing distress. The correlation with the unemployment rate is weaker, while the link to the divorce rate is the weakest. The maps in Chart 2 indicate that social problems (debt collection and housing distress), as well as educational problems (failure to complete the 9th grade of school, missed classes), are stronger in structurally depressed regions,

especially in the Ústí and Karlovy Vary regions. The situation would be the same with regard to other types of educational problems.[7]

Chart 2: Maps of educational and social problems in ORPs

Source: Czech School Inspectorate, Czech Statistical Office, Agency for Social Inclusion, Social Housing Platform, authors' calculations



This indicates that certain types of social problems are associated with educational problems more than others. Using a factor analysis, we identified two main types of disadvantages, which we call "destabilizing poverty" and "socioeconomic disadvantage". Destabilizing poverty is chiefly linked to a higher rate of debt collection procedures in the parent population and unsuitable housing arrangements for the children. A socioeconomic disadvantage is linked to the population's educational attainment, and long-term increased unemployment in an ORP. All the individual types of educational problems form together a single factor – the educational failure rate in the given locality.

Destabilizing poverty is linked to educational problems in ORPs three times more than socioeconomic disadvantages. Therefore, within regions and adjusted for the

7) For more details, see KORBEL, Václav, Michal KUNC, Daniel PROKOP and Tomáš DVOŘÁK. *Souvislost sociálního znevýhodnění a vzdělávacích problémů (Relationship between social disadvantages and educational problems).* PAQ Research, 2020.

unemployment rate and educational attainment in the locality (the socioeconomic disadvantage factor in an ORP), municipalities with higher parent debt collection rates and children in housing distress have much higher rates of educational problems. This is not necessarily a causal relationship, but it demonstrates that – on a regional level – educational problems are closely linked to the destabilizing effects of social exclusion of families with children – not just the educational attainment and employment rate of parents within the given locality.

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The Relationship between Municipal Spending and Social Problems

To analyze the correlation between the amount of funding, school staffing and social problems in ORPs, we also supplemented the previous findings with an analysis of operational and investment funding of schools.[8] Data on funding of elementary schools and kindergartens[9] show three dominant groups:

- Pedagogue salaries (non-investment transfers): The amounts of these transfers are not determined by municipalities or ORPs – these are resources from the state's budget distributed and forwarded by regional administrations.[10] The salaries of individual members of pedagogical staff are chiefly determined by valid pay scales and regulations; school management can influence them only marginally. Municipalities or regions may send contributions towards the salaries/remunerations of pedagogical staff, but in reality, these items are negligible.
- Investment spending: Expenses related to construction and one-off renovations of school facilities. This item in municipal budgets is often acquired through municipalities' own initiative in the form of ad hoc subsidies for a particular project.
- Operational spending (non-investment spending): Funds in municipal budgets allocated for ordinary school operations. This includes standard maintenance of buildings, utilities and salaries of non-pedagogical staff such as repairmen, accountants and cooks; these funds can also be used to pay part of teaching assistants' salaries.

8) Municipalities with extended competence are administrative units comprising several smaller municipalities. There are 205 ORPs in the Czech Republic, which are further divided into a total of 6,253 municipalities. ORPs are not, in themselves, required to fund schools in subordinated municipalities. As this analysis maps regional differences (and some variables are only available on the ORP level), spending calculated as an "average" for the entire ORP also remains an issue.

9) Data on municipal finances (sheet Fin 2-12) with all records concerning preschool and elementary education. These are paragraphs starting with 311*, see https://monitor.statnipokladna.cz/datovy-katalog/ciselniky/prohlizec/22.

10) The system of funding of regional schools has changed since 2019 (see https://www.msmt.cz/vzdelavani/skolstvi-v-cr/ekonomika-skolstvi/reforma-financovani-regionalniho-skolstvi).

Data on non-investment spending and transfers from 2014–2017 were used. Investment spending was aggregated for the entire period since, due to its nonrecurring nature, it fluctuates wildly in municipalities from year to year.

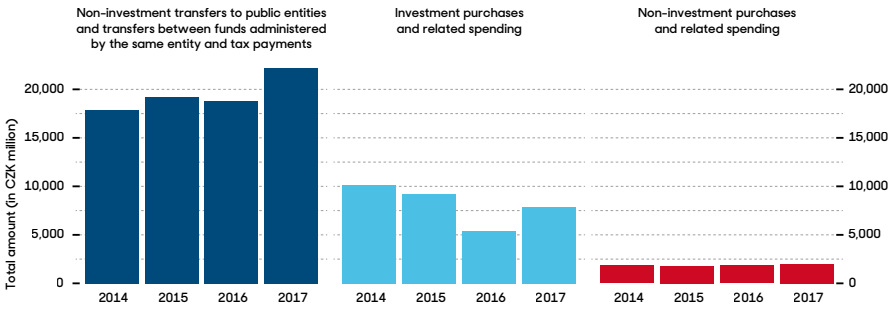
Chart 3 indicates that non-investment transfers (i.e., the salaries of pedagogical staff) are by far the largest item. This item has also seen the most dynamic growth. As noted earlier, however, municipalities cannot really influence its amount.

Investment spending is the second largest item. It varies greatly over time but does not reveal any significant trends.

Of the three main items, non-investment spending is the lowest. The increase in non-investment transfers (state money for the salaries of pedagogical staff) can be an important factor behind the stagnation in non-investment spending, as the municipalities do not have to co-fund the pedagogical staff from their own budgets so often.

Chart 3: National spending according to item type

Source: Ministry of Education, Youth and Sports, authors' calculations



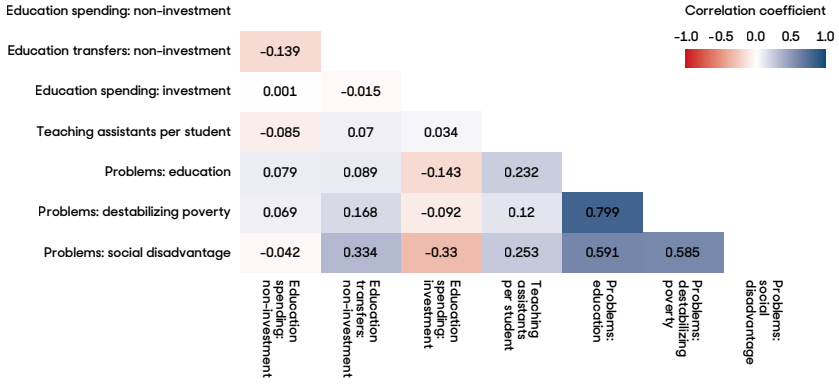
Apart from financial data, we use data on the jobs of supporting pedagogical staff – teaching assistants in elementary schools, and kindergartens, other educators and school psychologists. Since teaching assistants completely dominate the records (96%), we refer to the whole group as "teaching assistants" for the sake of brevity. We re-calculated the data to a full-time jobs equivalent.[11]

11) The data were taken from the *Principal's Report R 13-01* form filled in by a school's principal. Data from Principals' reports submitted by all schools run by a municipality were used. Simultaneously, the data on funding and the numbers of supporting staff were recalculated on a per child (under 15 years) per year basis for each ORP to facilitate a comparison between variously sized ORPs. This is the number of children who currently and potentially require pre-school and elementary education services. In order to permit the application of linear models, all variables were adjusted through nonparanormal transformation, which maintains the order of the variables but adjusts them to normal distribution. In the following analysis, the logarithms of the population were used as weights in order to account for ORP size but simultaneously reduce the influence of extremely large ORPs such as large cities. The analysis also excludes Prague as a special kind of ORP, and Bučovice, due to the presence of certain extreme funding values.

We will firstly analyze the correlation between funding and staffing of schools and composite factors of social and educational problems. These are described in the previous parts and include three factors: educational problems, destabilizing poverty and social disadvantages. Chart 4 shows the relations among all variables (correlation). Correlation ranges from -1 to 1. The value of 1 indicates perfect positive dependence, -1 shows perfect negative dependence, and 0 indicates no correlation between the variables. To simplify, values higher than 0.3 or lower than 0.3 can be considered a significant correlation.

Chart 4: Correlation matrix of funding, staffing and social and educational problems re-calculated on per student basis

Source: Czech School Inspectorate, Czech Statistical Office, Ministry of Education, Youth and Sports, Agency for Social Inclusion, Social Housing Platform, authors' calculations



The relationships in Chart 4 indicate a strong linkage among all the types of social and educational problems, as was already demonstrated within the initial analysis in the previous chapter. It is also apparent that more significant social and educational problems in an ORP also lead to a higher number of teaching assistants per student. This makes sense as these schools provide supporting measures more often.[12]

Non-investment transfers from the state are higher in those ORPs which struggle with a general social disadvantage (municipalities with lower educational attainment and long-term increased unemployment). This can be a result, however, of the fact that municipalities with a general social disadvantage (higher unemployment, lower educational

12) ČADA, Karel and Daniel HŮLE. *Analýza segregace v základních školách z pohledu sociálního vyloučení (An analysis of segregation in elementary schools in terms of social exclusion)* [online]. Prague, 2019 [retrieved on: 2020-10-01]. Available at: https://socialnipolitika.eu/wp-content/uploads/2019/11/Analyza_segregace_2019.pdf.

attainment) are frequently small. Consequently, the schools there are also smaller and the ratio of pedagogues to students is higher.

A more important finding is that the non-investment transfers by which the state could reduce educational inequalities are not linked to the rate of destabilizing poverty. This is despite the fact that this type of poverty (manifested as high debt collection rates and children's housing distress) is most tightly linked to educational problems. The funds for pedagogical and supporting staff are thus not being used where they are most needed. The picture is the same with regard to municipal non-investment spending, which is not related to social disadvantages or destabilizing poverty. These are the funds that municipalities can use to combat inequality (tutoring, supportive funding of pedagogical staff, etc.).

Municipalities facing a general social disadvantage (lower educational attainment, long-term increased unemployment) show lower investment spending – they are investing less in repairs, equipment, etc. This can again be caused by the municipalities' smaller size, poverty and lesser readiness to invest, and the fact that in areas such as these, it may be difficult to save up enough money for investments in education.

The relationships between the individual types of spending and the types of problems are nevertheless complex and cannot be easily described by correlations among the variables. The other part of the relationships is, therefore, modeled using a network analysis.

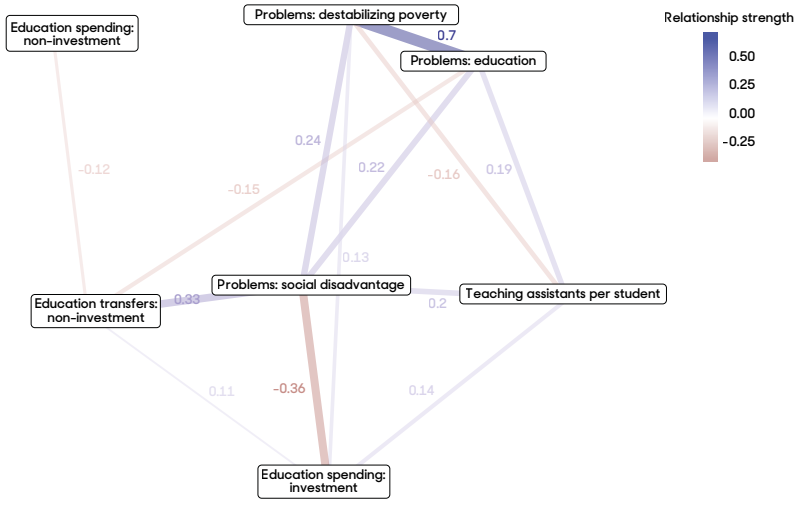
Chart 5 shows partial correlations which, in simple terms, mean relationships adjusted to remove the influence of the other variables in the chart.[13] Socially disadvantaged ORPs demonstrate lower investment spending and higher non-investment transfers. In other words, if an ORP struggles with a greater social disadvantage (high long-term unemployment, a large share of people without secondary education), it spends less on investments in education. Conversely, these ORPs spend more money on the salaries of pedagogical and non-pedagogical staff (i.e., on non-investment transfers). The problem is that the amount of these non-investment transfers is not linked to the prevalence of destabilizing poverty (debt collection procedures, housing distress in the ORP), although it strongly determines the rates of educational failure in the locality. Educational problems, in contrast, are only weakly related to non-investment transfers. ORPs with higher numbers of missed classes or higher rates of failure to complete a school year do not receive more money on average for pedagogical and non-pedagogical staff.

13) The correlation between poverty and educational problems means that an ORP with greater poverty also has more pronounced social problems and vice versa. Correlation does not, however, necessarily imply causation. If a higher prevalence of debt collection procedures in an ORP causes both poverty and educational problems, a correlation will be observed between the two variables, although in reality the relationship is caused by a third variable (the prevalence of debt collection). If all three variables are known, we are able to "subtract" the influence of debt collection from the relationship between poverty and educational problems. This will reveal the relationship between the two variables independently of the influence of the third variable.

Indices of social and educational problems, consisting of multiple variables, may potentially conceal relationships among the individual variables. If a network analysis for the individual variables is conducted, then the prevalence of debt collection is manifested as the central variable in relation to educational problems. In contrast, funding mostly lies on the periphery of the relationships. It is more frequently linked to the variables forming the social disadvantage factor, i.e. unemployment and the share of the ORP population with low educational attainment. The conclusion is thus the same as in the previous chapter, i.e. that school funding does not help mitigate educational inequalities, nor is it associated with the factors of destabilizing poverty, which plays a key role in the emergence of educational problems.

Chart 5: The network of relationships among funding, social and educational indices

Source: Czech School Inspectorate, Czech Statistical Office, Ministry of Education, Youth and Sports, Agency for Social Inclusion, Social Housing Platform, authors' calculations



Summary:

- Non-investment transfers that should be used by the state to, e.g., provide for the supporting professions and measures designed to help children from disadvantaged backgrounds, are slightly higher in socially disadvantaged areas. The relationship is weak, however, and probably caused by the fact that schools in these areas are smaller.
- Funding does not in all probability reflect the prevalence of the most serious problems that destabilize families and are closely linked with educational failure (debt collection, housing distress, etc.).
- ORPs struggling with a general social disadvantage – which are often smaller and poorer – are, moreover, affected by some of the lower investment types of spending on the part of municipalities.
- The funding problems are intertwined – the state sends slightly more money to smaller and poorer municipalities where the teacher-student ratio is higher. These municipalities lack, however, the resources for other kinds of spending. ORPs struggling with destabilizing poverty (debt collection and housing distress) do not benefit from the above-average rates of either type of funding.
- The relationship between financing and educational success is therefore extremely weak and unclear, perhaps due to this reason.

The Impact of Funding in Relation to Destabilizing Poverty in ORPs

The lack of any linkage between the prevalence of educational problems and the funds allocated to education within ORPs is surprising. It should be understood, however, that the relationships among variables in networks only reflect total correlations among all ORPs. There is the possibility that these relationships differ according to the social situation in an ORP. The analysis has already indicated that the key social phenomenon associated with educational failure is the prevalence of destabilizing poverty (parents subject to debt collection and housing distress). More specifically, two questions can be raised:

1. Is the relationship between non-investment spending and educational problems different among ORPs with a different prevalence of destabilizing poverty? In other words, do municipalities with the same level of destabilizing poverty manifest lower educational failure rates if they spend more on their schools' operations?

2. Is the relationship between non-investment transfers and educational problems different among ORPs with a different prevalence of destabilizing poverty? In other words, do municipalities with the same level of destabilizing poverty manifest lower educational failure rates if they receive more money for pedagogical and supporting staff from the state?

To answer these questions, all ORPs were divided into four groups (quartiles) based on the prevalence of destabilizing poverty: the 1st quartile has the least problems while the 4th quartile has the most. Given the low number of observations and the spread of values, the observed relationships are merely tentative and require further analysis using more detailed data – ideally on the level of the six thousand individual municipalities in the Czech Republic.[14]

Chart 6 shows the average values of the index of educational problems for the four ORP groups divided based on the prevalence of destabilizing poverty and the amount of non-investment education spending by municipalities. Chart 7 demonstrates a similar combination but highlights the correlation with the amount of non-investment education transfers from the state. There is a clear relationship between educational problems and destabilizing poverty. Currently, none of the types of funding – either from the state or the municipalities – significantly disrupts this relationship:

- In non-investment spending, the only influence is discernible in the quarter of municipalities with the lowest prevalence of destabilizing poverty; where these municipalities increase non-investment spending for the operations of their schools, they have a lower than usual rate of educational failure.
- In municipalities with the highest prevalence of destabilizing poverty, the relationship with non-investment spending is the opposite, but insignificant. ORPs struggling with poverty with higher spending also have a higher prevalence of educational failure. This may be caused, among other things, by the fact that ORPs with high failure rates operate small segregated or semi-segregated schools that are expensive to run (non-investment expenses also include heating, etc.).
- Socially and economically weak municipalities (the upper quartile of destabilizing poverty) with high non-investment transfers from the state for pedagogical and supporting staff manifest slightly reduced failure rates. The difference, however, is extremely small.

14) Due to the low number of observations and the large number of tested variables, the relationships among the variables cannot be meaningfully statistically tested on this level.

Chart 6: Municipal non-investment spending and education problems according to the prevalence of destabilizing poverty

Source: Czech School Inspectorate, Czech Statistical Office, Ministry of Education, Youth and Sports, Agency for Social Inclusion, Social Housing Platform, authors' calculations

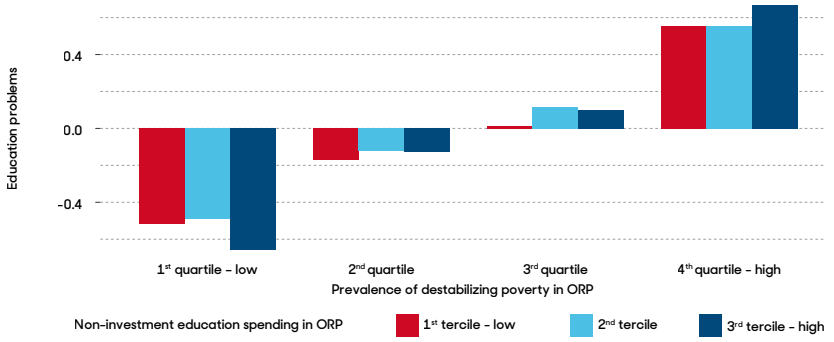
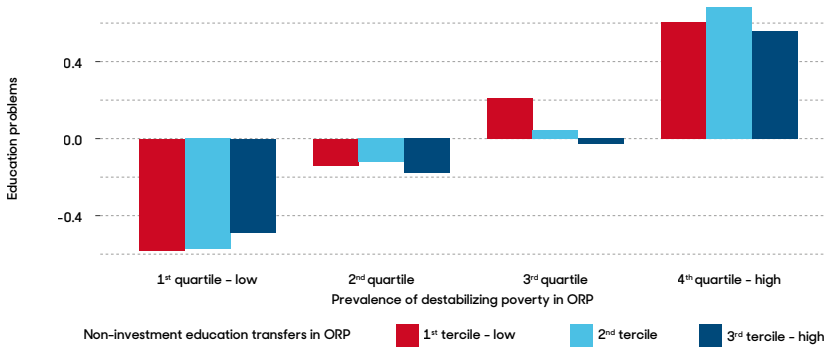


Chart 7: State non-investment transfers and education problems according to the prevalence of destabilizing poverty

Source: Czech School Inspectorate, Czech Statistical Office, Ministry of Education, Youth and Sports, Agency for Social Inclusion, Social Housing Platform, authors' calculations



Summary:

- The results of the quantitative analysis indicate certain relationships between school funding and the social situation in ORPs. That being said, these relationships are weak.
- Municipal school funding seems to be more effective in richer areas where the schools are renovated, and where their operators are able to use the funds to reduce the already low educational failure rate.
- ORPs with a high degree of destabilizing poverty benefit slightly if they receive more funding from the state for pedagogical and non-pedagogical staff. They often do not receive, however, such funding (see Chart 5 – low relationship between destabilizing poverty and funding) and the effect is extremely small – in many such municipalities, transfers from the state are not used efficiently to reduce the educational failure rate.

Additional research using more detailed data and time series should seek answers to the following questions:

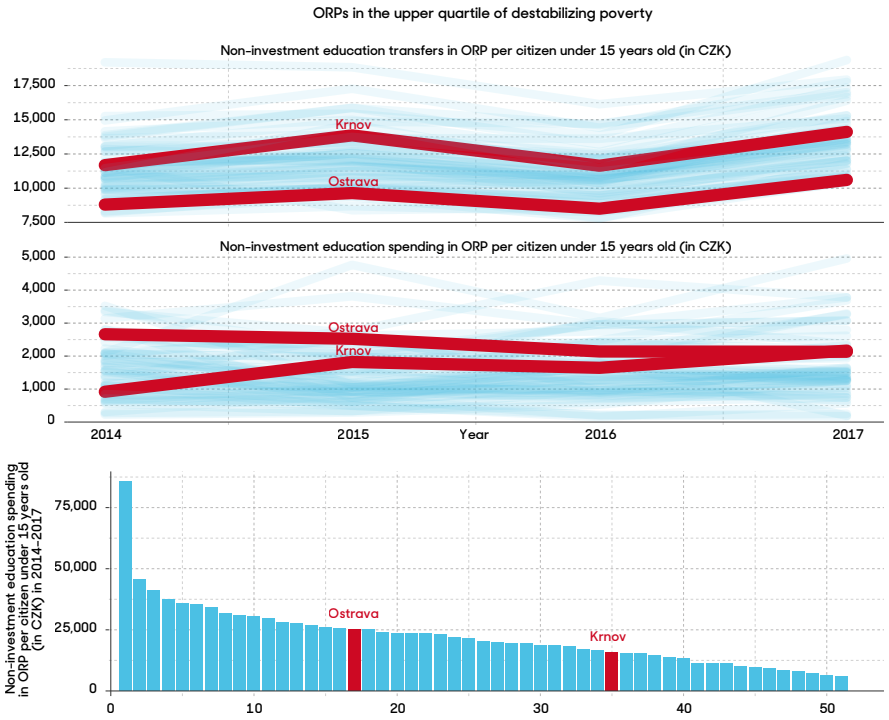
- Is education funding used to help students who need it?
- Does increased funding positively affect the quality of education (and under what conditions)?
- How are teaching assistants (and other supporting staff) funded, and what role do they play in reducing educational inequalities?

Positive Examples of Municipalities in Combating Educational Failure

A quantitative analysis did not indicate any strong link between the amount of funding for schools and educational inequalities at the ORP level. There are known recent cases, however, of individual ORPs which have managed to improve their educational results and reduce inequalities through efficient use of funding and other measures improving cooperation and communication. This chapter introduces two such cases – the ORPs of Krnov and Ostrava. Among regions with similar social problems, these do not rank among the best in terms of education spending (Chart 8).

Chart 8: Non-investment spending and transfers in Krnov and Ostrava

Source: Czech School Inspectorate, Czech Statistical Office, Ministry of Education, Youth and Sports, Agency for Social Inclusion, Social Housing Platform, authors' calculations



Krnov

The Krnov micro-region has social problems that have the potential to reduce the student success rate in education. Despite its disadvantages, it has employed effective policies at least over the last 5 years to reduce educational inequalities. The main tools used by ORP Krnov for targeted assistance to students, families, schools, principals and pedagogical staff include especially the work of members of the Local Action Plan – Krnov, adherence to the Local Inclusion Plan and long-term follow-up projects for support and cooperative development of inclusive education in Krnov using various operational programs.

The most important interventions identified by the Krnov working group on education (responsible for implementing the Local Inclusion Plan) included tutoring of special needs students in schools and NGOs, cooperation between elementary school teachers and tutoring club staff, using extensive experience on the part of some NGO employees with educating students from socially excluded backgrounds, and the operation of a preschool center in a socially excluded area. All these interventions were key to ensuring not only

secondary school attendance, but also adaptations on the part of families (many of them Roma) and integration of their children into formal education. Krnov also operates an informal preschool center in a socially excluded area which works with children who would otherwise not attend a kindergarten. Apart from the high degree of competence on the part of the teachers, Krnov also benefits from quality tutoring and summer interest group activities that prevent a drop in the students' learning habits.

Despite the high prevalence of debt collection procedures in ORP Krnov, which our analysis revealed to predict educational failure, the targeted interventions have successfully reduced educational inequalities and created meaningful opportunities for disadvantaged children thanks to leisure time activities. Schools are also supported by providing sufficient staffing with teaching assistants, psychologists, special pedagogues and the pilot position of a school inclusion coordinator.

Ostrava

The statutory city of Ostrava is divided into 23 municipal districts, nine of which contain socially excluded areas or public housing facilities for the poor. These places are situated either in dense urban areas or in locations that are spatially separated and closed off. Thus, social and educational inclusion takes place in diverse conditions and reflects the spatial concentration of disadvantaged children. This has recently led to a redrawing of school catchment areas, the dissolution of a segregated elementary school in Ostrava-Poruba and the transfer of its children to other nearby schools. Segregated schools and classes still constitute, however, a problem in this ORP. The municipal district of Moravská Ostrava and Přívoz, which is also its own school district, is on the other side of the desegregation spectrum. Due to spatial segregation, there are schools with high numbers of (especially Roma) children from the socially excluded neighborhood of Přívoz, as well as schools that socially disadvantaged children do not attend.

A SWOT analysis of the Ostrava Local Inclusion Plan has identified dozens of weak points. Apart from the aforementioned, these include unwillingness of schools to accept children from socially excluded backgrounds, a lack of kindergarten capacity in the disadvantaged areas coupled with low kindergarten attendance, teacher disinterest in inclusive education and further professional growth, lack of specialist staff in schools (e.g. psychologists and special pedagogues), a low degree of cooperation between schools and NGOs and the unavailability of school clubs.

In response to the analysis, Ostrava is planning a number of measures based on its Local Action Plan and Local Inclusion Plan, both funded from an EU operational program. As the city is a regional capital, the City Hall has limited power over the individual municipal

wards, which, however, are the ones who operate the schools. Similarly as in Krnov, Ostrava is interested in supporting preschool work with children from the excluded area using preschool centers, educational events for parents, and sufficient school assistant staff. To support the educational outcomes of disadvantaged students, Ostrava has reinforced the school counseling center with specialized staff (psychologists and special pedagogues), home tutoring and informal clubs. It also trains the teachers in inclusive education. The ORP also plans to create the positions of an inclusion coordinator and teaching assistant methodologist for individual municipalities and implement teacher study trips abroad, as well as build up stakeholders' networks (student – family – body for social and legal protection of children [BSLPC] – Labor Office – NGOs) promoting good cooperation and preventing drop-outs from mainstream education. It should be mentioned that a drop-out may be caused by economic pressures (the need to bring in money to supplement the family budget or to make a living on one's own, etc.) – which means it is important to link and coordinate education and social policies.

The Impact of Covid-19 and Distance Learning on Education Quality in Regions and Educational Inequality

The pandemic and the ensuing need to switch to distance learning has increased inequalities in education not only due to the fact that students from disadvantaged backgrounds receive lower learning support at home, lack modern communication equipment and more frequently attend poor-quality schools, but also due to the impact on municipal budgets. The main financial impacts of the pandemic, which threaten to influence educational inequalities, are the following:

- **Computer equipment in schools and households**

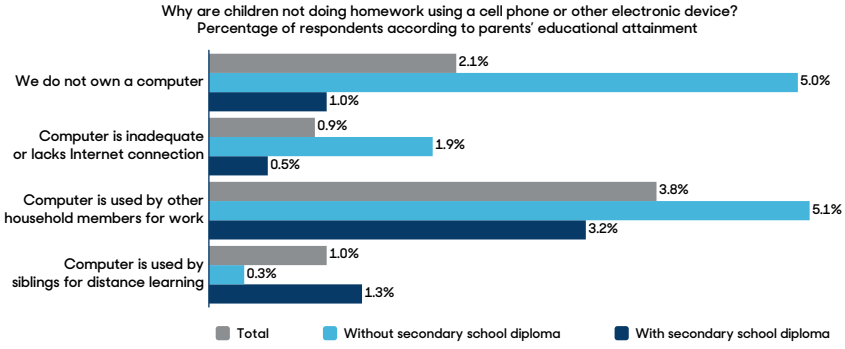
  The operators of schools (mostly municipalities) play a key role in providing funding for computer equipment and can help co-fund such tools in households. From a technical perspective, elementary and secondary schools were not ideally prepared for distance learning. Only 19% had a school information system accessible remotely by parents and students that could facilitate distance learning online. Less than half used some kind of online platform for teaching. Many teachers also did not have their own laptops and when they did have one, the computers were often inadequate for the needs of distance learning. The positive news is that, according to studies,[15] the lack

15) Czech Schools Inspectorate. *Vzdělávání na dálku v základních a středních školách (Distance learning in elementary and secondary schools). Tematická zpráva (Thematic Report)*, 2020.
FEDERIČOVÁ, Miroslava and Václav KORBEL. *Pandemie covid-19 a sociálně-ekonomické nerovnosti ve vzdělávání (Covid-19 pandemic and social and economic inequality in education)* [online]. May 2020 [retrieved on: 2020-09-27]. Available at: https://idea.cerge-ei.cz/images/COVID/IDEA_Nerovnosti_ve_vzdelavani_COVID-19_kveten2020_18.pdf.

of computer equipment in schools was not worse in socially disadvantaged regions. Socially disadvantaged families, however, more frequently lacked such equipment, or it was inadequate. The percentage of children without the necessary computer means ranged from 3% to 10% in the spring; it was more pronounced in socially disadvantaged families[16] as shown by Chart 9. A continuing pandemic could result in repeated closures of schools, which underlines the need to supply proper equipment to schools and households. This will be more acutely felt in areas with more pronounced social problems. The CZK 1.3 billion in funding allocated by the Ministry of Education, Youth and Sports could help, but these funds (CZK 20,000 per teacher) do not make provisions for different regional needs.

Chart 9: Changing parents' views on education

Source: Distance learning in the parent's perspective survey conducted by PAQ Research and IDEA



- **A drop in funding from the budgetary allocation of taxes (BAT)**

  Funding will drop for two reasons. First, the economy will contract, leading to lower tax yields. The Czech National Bank[17] expects the economy to contract by 8% in 2020. The second reason lies in the government steps that will impact municipal budgets. One, and the most significant, such step consists of abandoning the "super-gross

16) KORBEL, Václav and Daniel PROKOP. Vzdělávání na dálku pohledem rodičů: Report z longitudinálního výzkumu o vzdělávání navazujícího na šetření EDUin z prosince 2019 (Distance learning from the parents' perspective: A longitudinal study education report based on EDUin survey of December 2019). *PAQ Research* [online]. 20. 5. 2020 [retrieved on: 2020-09-27]. Available at: https://www.paqresearch.cz/post/vzdelavani-na-dalku-pohledem-rodicu.

17) KRÁL, Petr. Hloubka poklesu ekonomické aktivity ve 2. čtvrtletí 2020 zhruba odpovídala prognóze ČNB: Komentář ČNB ke zveřejněným údajům o HDP za 2. čtvrtletí roku 2020 (Depth of the decline in economic activity broadly in line with the CNB forecast in 2020 Q2: The CNB comments on the GDP figures for 2020 Q2). *Czech National Bank* [online]. 1. 9. 2020 [retrieved on: 2020-09-27]. Available at: https://www.cnb.cz/en/public/media-service/the-cnb-comments-on-the-statistical-data-on-inflation-and-gdp/Depth-of-the-decline-in-economic-activity-broadly-in-line-with-the-CNB-forecast-in-2020-Q2.

salary" concept used in the Czech Republic and introducing a 15% flat income tax, which is expected to reduce the state's income by at least CZK 70 billion.[18] In terms of educational inequality, a reduced budgetary allocation of taxes could more seriously impact municipalities with more pronounced social problems; these municipalities might prioritize other expenses, such as those associated with social problems.

- **Lack of pedagogical and non-pedagogical staff**

  The Karlovy Vary, Ústí and Central Bohemian administrative regions reported the highest demand for new teachers (10–12%). In addition, the Karlovy Vary and Ústí regions had more difficulties stemming from the lack of qualified and certified pedagogical staff.[19] According to the latest data, structurally disadvantaged regions had more serious school staffing problems. This could result in trouble for both in-class and distance learning. Due to more difficult (in terms of hygiene and teaching skills) conditions of in-class teaching, smaller schools with lower numbers of teaching staff struggle to provide quality education under such conditions. If some students or classes are quarantined, and teaching is partially moved online, teachers will find it difficult to reconcile the needs of the two types of teaching. In better staffed schools, teachers will be able to help one another better. Finally, if Covid-19 spreads and closely cooperating pedagogical and non-pedagogical staff are put under quarantine, it will be increasingly difficult for schools to continue with in-class teaching. All these situations may lead to reduced teaching which will more seriously affect socially disadvantaged students. This is aggravated by the fact that the pandemic is likely to last for a prolonged period of time. In this sense, positive NGO initiatives such as the one led by People in Need *(Člověk v tísni)*, which ensures tutoring for disadvantaged children by university and college students, can better and faster mitigate some impacts of teaching interruptions compared to governmental initiatives, although in a limited territorial scope.

18) Ministerstvo počítá kvůli zrušení superhrubé mzdy se snížením daně z příjmu, řekla Schillerová (The Ministry counts with a lower income tax due to the abandonment of super-gross salary, says Minister Schillerová). *IROZHLAS* [online]. 7. 8. 2020 [retrieved on: 2020-09-27]. Available at: https://www.irozhlas.cz/ekonomika/superhruba-mzda-zruseni-schillerova_2008071008_zit.

19) MARŠÍKOVÁ, Michaela and Václav JELEN. Hlavní výstupy z Mimořádného šetření ke stavu zajištění výuky učiteli v MŠ, ZŠ, SŠ a VOŠ (Main results of the extraordinary survey of the state of teaching in kindergartens, elementary, secondary and higher vocational schools). *Ministry of Education, Youth and Sports* [online]. 21. 5. 2020 [retrieved on: 2020-09-27]. Available at: https://www.msmt.cz/ministerstvo/novinar/ministerstvo-zjistovalo-stav-ucitelu-v-regionalnim-skolstvi.

Public Policy Recommendations

- **Well-considered investments in education** – our quantitative analysis indicates that the rate of educational failure is not affected by higher spending, investments and transfers by ORPs struggling with a higher proportion of families subject to debt collection procedures. More research is needed to understand these relationships over time. It is clear, however, that apart from the overall amount of spending, it needs to be better focused on key issues. We recommend:
  1. focusing on microregions, i.e., on individual struggling ORPs, not on the entire administrative regions;
  2. boosting funding in municipalities struggling with social problems that most strongly contribute to children's educational failure (high prevalence of destabilizing poverty, widespread debt collection, housing distress);
  3. channeling the funding into supporting professions and programs which, based on international evidence, help reduce educational failure (see the other recommendations).

- **Interdepartmental solutions** – social problems affect the students' motivation and conditions for learning due to the families' attitudes (to formal education, based on cultural and language differences), as well as practical limitations (housing distress, stress, frequent moving, financial barriers, more frequent sickness, absences, etc.). Solving these challenges requires a combination of social and education policies that comprehensively address the living standard of families and communities. Specific instruments supporting integration include e.g. debt relief, better availability of decent municipal housing (including rapid rehousing programs to address families' housing distress), and reducing the total cost of work for the least paid jobs.

- **Preschool education** – children at risk of social exclusion profit the most from preschool education, especially if they attend for at least two years prior to starting elementary school – it thus constitutes one of the best investments in reducing educational inequality.[20] We therefore recommend the broadest

20) MELHUISH, Edward, Katharina EREKY-STEVENS and Konstantinos PETROGIANNIS. A review of research on the effects of Early Childhood Education, and Care (ECEC) upon child development. *CARE project: Curriculum Quality Analysis and Impact Review of European Early Childhood Education and Care (ECEC)* [online]. January 2015 [retrieved on: 2020-09-27]. Available at: https://ecec-care.org/fileadmin/careproject/Publications/reports/CARE_WP4_D4__1_review_of_effects_of_ecec.pdf.
OECD. *Equity and Quality in Education: Supporting Disadvantaged Students and Schools* [online]. 2012 [retrieved on: 2020-09-27]. Available at: https://www.oecd.org/education/school/50293148.pdf.

possible support for timely and quality preschool care for children in ORPs with greater social problems and for children with a mother tongue other than Czech. This involves ensuring territorial availability and affordability, quality and motivation on the part of parents to use these services.

- **Support for inclusive education** – legislative entitlement for supporting measures needs to be robust in order to compensate schools for the teachers' time and other human and material resources expended to support children with special educational needs. Specifically, support should be individualized, and the skills of teachers and principals need to be developed through further training of pedagogical staff for work with diverse groups of children. Predictability of budgetary income also plays a significant role in this regard.

- **Local Action Plans/Local Inclusion Plans** – preparing conceptual documents to support inclusive education linked to funding represents good ORP practice that reduces educational inequality. ORPs can also connect local inclusion stakeholders (schools, NGOs, counseling centers, parents, etc.) and organize public events on education in disadvantaged parts of their districts.

  > **Good practice** – e.g., preschool clubs, staff reserved for communication with a preschool child's family, educational activities for parents, tutoring clubs, support for specialized (non)pedagogical work in the field and in schools, and further training of pedagogical staff in inclusive education.

- **School counseling centers (SCC) and social pedagogues** – SCCs organize the work of additional needed pedagogical staff: counselors, school prevention methodologists, school psychologists, special pedagogues and school speech therapists. Their cooperation leads to coordinated support for students in need, prevents educational failure and improves working with families.

  > **Social pedagogue** – a position not yet defined in the *Pedagogical Staff Act* and, therefore, lacking funding from the state budget (funding is provided exclusively from EU sources). Social pedagogues provide tailored casework aimed at helping individual students, including in their family environment.

- **Flexible educational paths** – people without completed secondary school are at serious risk of unemployment and constitute (in economic terms) a significantly higher financial burden for the state.[21] For this reason, it is important to make it easier for them to improve their qualifications and support lifelong learning in sectors that will cease to exist or will be significantly impacted by economic shifts and automation.

- **Indexed funding** – the state is currently unable to easily identify schools attended by students with a lower socioeconomic status and students living in substitute care. To help these students perform the same as their peers, the schools need to be provided with additional resources. The state should thus follow the example of other countries (e.g., identify students in need by their entitlement to free lunch as in the UK) and detect and monitor the life situation of students and apply, based on their knowledge and skills (and educational progress), targeted learning support.

- **Stable funding** – education spending contributes extremely effectively to the country's development. Funding should therefore be stable, predictable and not substantially sensitive to the ups and downs of the economic cycle. The crisis caused by the Covid-19 pandemic has revealed that the resulting economic downturn and lower budgetary allocation of taxes can destabilize education funding. It is possible that municipalities with reduced budgets will be forced to prioritize and postpone important investments. The state should thus incorporate anti-cyclical mechanisms to mitigate the impact of economic crises and should not aggravate economic hardships by further risks following from ad hoc and late decision-making.

21) OECD. *Equity and Quality in Education: Supporting Disadvantaged Students and Schools* [online]. 2012 [retrieved on: 2020-09-27]. Available at: https://www.oecd.org/education/school/50293148.pdf.