



Higher Education: Investing with Greater Equity and Efficiency

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The number of students in French higher education has not stopped growing, offering opportunities for both graduates and society in general. Contrary to conventional wisdom, this democratization of education has not been accompanied by a decline in the relative performance of the different diplomas. Based on empirical work, we show that holders of a bachelor's degree or a master's degree earn respectively 30 and 50 per cent more than holders of an academic or vocational baccalauréat, a relatively stable gain over time even though the number of diplomas awarded has increased sharply since the 1990s. This suggests that the higher education diploma continues to play an important role in protecting people against unemployment, as was verified during the 2008 crisis.

By devoting 1.5 per cent of GDP (1.2 per cent of which is the public portion) to higher education, France is in an average position within the OECD. However, spending per student has been declining since the 2010s, and the different programmes in higher education are unequally endowed. Based on detailed data on the investment in education, we identify major disparities: investment varies by a ratio of 1 to 4 between one year of a bachelor's programme (licence) and one year in a preparatory class for elite schools ("*Grandes Écoles*"). It also varies significantly across disciplines such as the humanities and social sciences on the one hand and the hard sciences on the other hand, by a ratio of 1 to 3. These differences are entirely driven by differences in teacher-to-student ratios and the volume of hours devoted to students. We also provide evidence of a strong association between the levels of per-student investment and students' graduation rates. Moreover, despite the massification of education,

we still observe strong social inequalities both in access to higher education and in the type of programmes attended in higher education: fewer than 30 per cent of children from low-income families have access to higher education, compared with almost 90 per cent of children from high-income families. When combined with an inadequate redistribution of social and fiscal aid, this results in regressive public spending on higher education.

These findings invite us to rethink the strategy of investment in higher education with the objective to promote greater equity and efficiency. First of all, reducing disparities between education programmes by increasing investment in bachelor's and master's degrees is key. This would help to raise the teacher-to-student ratio and the graduation rates in these programmes. It is also important to act upstream on the aspirations and information of students to better guide their choices. This could be done by publishing the salary levels associated with different diplomas, the professional integration rates, and the levels of investment in each program. To improve access to higher education for the most disadvantaged students, we recommend creating additional openings for these students, increasing and extending scholarships, boosting the supply of subsidized student housing, fighting against low confidence and self-censorship, and setting up quotas in selective courses. Finally, we recommend that the additional positions and resources be directed towards the fields of study with the highest relative returns, either social returns (such as positions in the education and health sectors) or monetary returns (such as in the scientific and technical fields).

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In 2020, according to the OECD,¹ 49 per cent of 25–34-year-olds in France will have a tertiary qualification, including 14 per cent with a short tertiary qualification (Bac +2) and 35 per cent with a long tertiary qualification (Bac +3 or above). These figures are similar to those of other European countries (46 per cent with tertiary education) and the United States (50 per cent), although the proportion of long tertiary graduates in those countries is closer to 40 per cent.

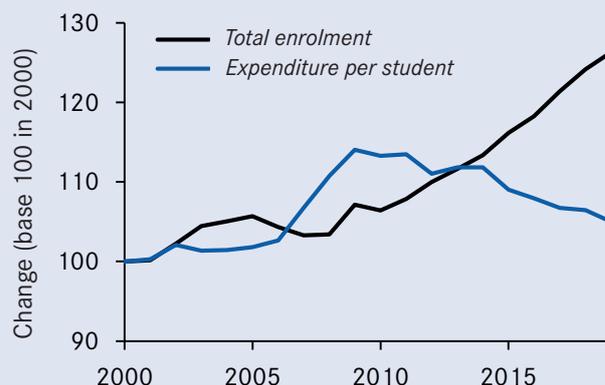
In fifty years, France has thus caught up with its lagging in terms of providing its population with a higher education, thanks to an effort by the public authorities to broaden access to higher education, which was previously reserved for an elite: there were 310,000 students in 1960 compared to 2.8 million today. This is the result of a general trend towards increasing educational levels over the generations: whereas nearly 32 per cent of people aged 55 to 64 have no or very low levels of education (with a diploma corresponding to a certificate of general education – *brevet des collèges* – at the most), only 13 per cent of those aged 25 to 34 do.² The proportion of people with a bachelor's degree rose from 37 per cent among the oldest to 69 per cent among the youngest.

This increase in access to higher education has recently been accentuated by the rise in the number of holders of bachelor's degrees, particularly through the successive reforms of the vocational streams at the end of the 2000s. In addition, the larger size of the cohorts born between the mid-1990s and 2010 has resulted in an additional increase in the number of students entering higher education.

Spending on higher education in France in 2018 amounted to approximately 1.2 per cent of GDP for the public share and 1.5 per cent when adding the private share, according to the OECD. France is thus in an average position compared to the main European countries, but lower than some Nordic countries such as Norway and Denmark, where the share of public expenditure amounts to 1.8 per cent and 1.5 per cent of GDP, respectively. However, when we look at total spending on higher education in relation to the number of students, we observe a downward trend that began in the 2010s, which might imply a lasting deterioration in the level of spending per student (Figure 1).

This observation is compounded by the fact that the reduction in total expenditure has been more pronounced for university students than for other groups, such as *classes préparatoires aux grandes écoles* (“CPGE” – preparatory classes) and students

1. Evolution of higher education expenditure per student



Note: In 2019, domestic education expenditure (DEE) per student was 5% higher than the DEE per student in 2000, while total enrolment has increased by 26%.

Source: MENJS-MESRI-DEPP, *Compte de l'éducation* [Education account].

in higher technical studies (*sections de technicien supérieur – STS*).³ This might lead to widening inequalities within the higher educational system. While student numbers at universities rose by 20 per cent between 2010 and 2020, the number of teachers fell by 2 per cent. The investment of 1.7 billion euros in higher education and university research planned in the Law on Research Programming (*Loi de programmation de la recherche – LPR*) by 2030 will certainly increase the attractiveness of an academic career for students, but it will not make it possible to increase teacher-student ratios in the least well-endowed fields (see below). In fact, the inequalities between the different fields of study invite us to rethink France's investment strategy in higher education. The decrease in funding per student may affect the success rate and the quality of education, with negative long-term consequences on the labour market, productivity and innovation. From an economic point of view, public spending on higher education must indeed be seen as an investment and must also be analysed with regard to its benefits, which may have changed in the context of the massification described above. It is therefore necessary to examine the returns to higher education expenditure as well as their evolution over time in order to evaluate the efficiency of this public investment.

In addition to the question of efficiency, there is a question of social equity. Indeed, despite the massification of higher education, there are still very significant inequalities in access to higher education and in the type of education according to social status.

The authors would like to thank the members of the CAE for their advice; Hamza Bennani, Scientific Advisor at the CAE, for his follow-up; Madeleine Péron, Economist at the CAE, for her help in the elaboration of this Note; as well as Ariane Alla and Gabriele Dabbaghian for their contribution on the econometric part. They would also like to thank the various people they met in the course of this work, in particular Jean-Serge Boiteau, Camille Galap, Danielle Kerneis, Yves Guillotin, Marie Duru-Bellat, François Dubet and Stéphane Zuber.

¹ OECD (2021): *Diplômés de l'enseignement supérieur : indicateur*.

² INSEE (2019): “France, Social Portrait”, *INSEE Reference*, 2020 Edition, December.

³ See MESRI (2021): *État de l'Enseignement supérieur, de la Recherche et de l'Innovation en France*, no 14 (Graph 01.04).

This *Note* uses original data to examine the costs and benefits of higher education as well as how they are distributed between social categories, in order to offer proposals to make investment in higher education both fairer and more efficient.

The effectiveness of higher education spending

The benefits of higher education

Higher education is an investment with both private and public costs and benefits.

The private benefits of higher education are measured by the set of economic and social benefits that individuals who pursue higher education obtain relative to individuals who have the same characteristics but do not pursue higher education. The existing literature focuses mainly on economic benefits measured by income and labour market integration. The OECD, for example, publishes international comparisons of wage differences according to individuals' level of education.⁴ In France, among people aged 25 to 64 working full time, holders of a *licence* have an income 36 per cent higher than people with only the high school *baccalauréat* (all sections taken together), which corresponds exactly to the average gap observed in the European Union. This gap is much smaller (6 per cent) in Norway and much larger (66 per cent) in the United States, in line with the income distributions in these two countries: narrower in the former and more dispersed in the latter. However, these differences should be interpreted with caution, as they do not accurately measure the benefits of secondary education: people who obtain a bachelor's degree have different initial characteristics than people who stop at the *baccalauréat* level, so that an income gap could have existed even in the absence of a difference in education.

Studies have been able to eliminate these biases. A study of US data, comparing young people just below and just above the cut-off points for admission to a public university in Florida, finds that one extra year of higher education leads to an 11 per cent increase in earnings.⁵ A study of French data exploited the "accidental" increase in *baccalauréat* pass rates in 1968 due to the events of May and the resulting

greater leniency of examiners. It shows that an additional year of higher education led to a 14 per cent increase in income at that time.⁶ A recent summary of the income effects of secondary and tertiary education in advanced economies shows that an additional year of education generally leads to an increase in income of between 5 and 15 per cent.⁷ There is thus relative consensus in the causal estimates of the average effect of higher education on individual earnings.

However, these average effects on income cover significant disparities according to the disciplines and the level of selectivity of the courses taken. For example, in Norway, individuals earn three times more income from an additional year in science than in humanities, even when individual characteristics and selectivity levels are equal.⁸ It is therefore necessary to analyse the costs and benefits of education at a more detailed level, in particular by distinguishing between degree levels and disciplines.

Moreover, the private benefits of education are not limited to monetary benefits in the labour market. The literature has shown that education also leads to an increase in health indicators and life expectancy,⁹ which in turn has an impact on well-being and life satisfaction. A summary of the effects of education on health shows that the higher the additional year of education, the greater the effect on life expectancy.¹⁰

Finally, higher education produces not only *private* benefits but also *public* benefits, in the sense that its effects do not only impact those who pursue higher education but society as a whole, including those who do not pursue higher education. These effects, known as "positive externalities", take several forms. First, investment in higher education spurs innovation, which increases economic growth. For example, a study of European regions between 1950 and 2010 shows that a 10 per cent increase in the number of universities in a given region increased GDP per capita in that region by 0.4 per cent, and that this increase is explained by an effect on innovation.¹¹ The increase in productivity generated by a more educated population also ensures wage growth for all. Second, private profits increase wages and thus tax revenues. A recent study in the United States comparing different public policies shows that education spending, regardless of the level of education considered, is self-financing in the long run, in the sense that the increase in tax revenue it creates exceeds the expenditure.¹² Moreover, if we relate

⁴ OECD (2020): *Regards sur l'éducation : les indicateurs OCDE*, Table A4.1.

⁵ Zimmerman S.D. (2014): "The Returns to College Admission for Academically Marginal Students", *Journal of Labor Economics*, vol. 32, no 4, pp. 711-754.

⁶ Maurin E. and S. McNally (2008): "Vive la Révolution! Long-Term Educational Returns of 1968 to the Angry Students", *Journal of Labor Economics*, vol. 26, no 1, pp. 1-33.

⁷ Gunderson M. and P. Oreopolous (2020): "Returns to Education in Developed Countries", in *The Economics of Education*, Academic Press, pp. 39-51.

⁸ Kirkeboen L.J., E. Leuven and M. Mogstad (2016): "Field of Study, Earnings, and Self-Selection", *The Quarterly Journal of Economics*, vol. 131, no 3.

⁹ See Van Kippersluis H., O. O'Donnell and E. Van Doorslaer (2011): "Long-Run Returns to Education: Does Schooling Lead to an Extended Old Age?", *Journal of Human Resources*, vol. 46, no 4, pp. 695-721, and Lleras-Muney A. (2005): "The Relationship Between Education and Adult Mortality in the United States", *The Review of Economic Studies*, vol. 72, no 1, pp. 189-221.

¹⁰ Cutler D.M. and A. Lleras-Muney (2006): "Education and Health: Evaluating Theories and Evidence", *NBER Working Paper*, no 12352.

¹¹ Valero A. and J. Van Reenen (2019): "The Economic Impact of Universities: Evidence from Across the Globe", *Economics of Education Review*, no 68.

¹² Hendren N. and B. Sprung-Keyser (2020): "A Unified Welfare Analysis of Government Policies", *The Quarterly Journal of Economics*, vol. 135, no 3.

the private gains to the *net* cost of these policies (once fiscal externalities have been deducted), education policies have the highest return among all the policies studied (including employment policies, direct social aid, continuing education, and taxation of high incomes). From the point of view of the efficiency of public spending, investing in higher education is therefore one of the best public policies.

Finding 1. Public and private profits from higher education are very high.

Disparities in education costs in higher education in France

According to the figures in the Education accounts, the average expenditure per student was 11,530 euros in 2019, with disparities between types of education: 10,110 euros at university, 14,270 euros for higher technician sections (STS) and 15,710 euros for preparatory classes for the *grandes écoles* (CPGE).¹³ But these figures are incomplete for two reasons: first, the costs are presented at a very aggregate level and do not make it possible to appreciate the differences between disciplines. Second, these costs include expenses related to research, the organization of the education system, and most of the direct and indirect financial aid granted to students, which plays an important role but is not directly related to the content and quality of each course. Although teaching and research are complementary in more than one way in higher education, we propose here a conservative definition of education costs. In fact, in order to assess the cost of education *in the strict sense of the term*, and differentiating according to level and speciality, we use more precise data from the programme "Knowledge of the costs of the activities of higher education and research establishments" [*Connaissance des coûts des activités des établissements d'enseignement supérieur et de recherche*] carried out by the General Directorate for Higher Education and Professional Integration (DGESIP).¹⁴

These data were collected between 2016 and 2018 from 65 higher education institutions representing approximately one-third of all French students, a representative sample of all higher education courses attached to the Ministry of Higher Education and Research (MESRI).¹⁵ The methodology used makes it possible to separate the share of the budget that is allocated to research and the share that is allocated to

education. For example, the salaries of teacher-researchers are divided into two parts, one for education and the other for research, in accordance with the statutory distribution of their working hours. These data make it possible to distinguish education costs according to the level of the degree, the specialty and the type of institution. For courses that do not fall under the responsibility of the MESRI, other sources were used: estimates from the Ministry of National Education for the CPGE and STS, and information on institutions available on the website of the Commission for the Evaluation of Management Training and Degrees (CEFDG) for business schools. All the information on data sources and calculation methods is available in Bennani *et al.* (2021), *op.cit.*

The results show, first, that the costs of education in the strict sense are on average 5,250 euros per year and per student in the MESRI's programmes, which is less than half the figure in the Education accounts. The difference is mainly because expenses related to research activities are not considered as education expenses in our calculations.

Second, the cost differences between types of education are much more important: the average annual cost varies from 3,700 euros for a year of a bachelor's degree to almost 13,400 euros for a year of a CPGE, i.e. a ratio of 1 to 4. The other levels of education have intermediate average costs, which are listed here in ascending order: master's degrees, professional licences, business schools, university technology diplomas, engineering schools and higher technician sections.¹⁶

Third, the disparities between specialities are also significant, ranging from an average annual cost of 3,100 euros in the field of "regulation and institutions" to 8,700 euros in the field of "maths, computer science, engineering sciences".¹⁷ A very clear demarcation is observed between the humanities and social sciences on the one hand, and the hard sciences on the other, with the life sciences occupying an intermediate position.

Finally, if we combine the duration of the course (without repeating a year) and the annual cost according to the level and speciality of the degree, the disparities in total investment between different courses are very large, as illustrated in Figure 2: 11,000 euros for a bachelor's degree in foreign languages, 15,700 euros for a master's degree in law, more than 31,000 euros for a master's degree in computer science and almost 60,000 euros for an engineering degree.

¹³ Direction de l'Évaluation, de la Prospective et de la Performance (DEPP) (2021): *Repères et Références statistiques*.

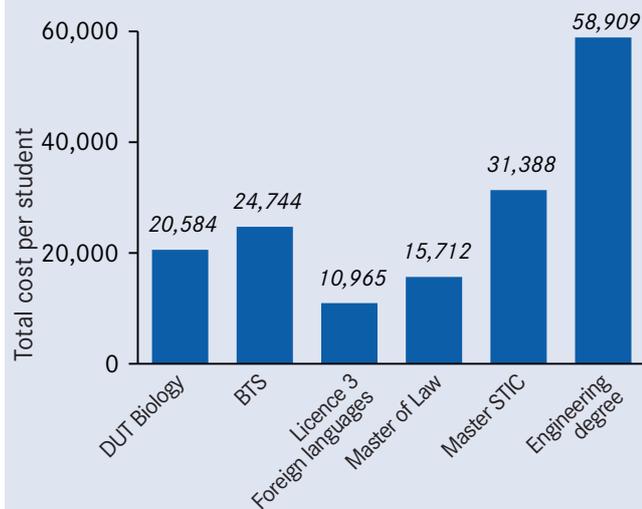
¹⁴ Boiteau J. S. and C. Jameux (2019): "Le projet de connaissance des coûts des activités des établissements d'enseignement supérieur et de recherche : retour d'expérience", *Recherches en Sciences de Gestion*, vol. 4, no 127, pp. 215-240.

¹⁵ See section 3.2 in Bennani H., G. Dabbaghian and M. Péron (2021): "Les coûts des formations dans l'enseignement supérieur français: déterminants et disparités", *Focus du CAE*, no 074-2021, December.

¹⁶ The average annual training costs *stricto sensu* can be found in Graph 13 in Bennani *et al.* (2021), *op. cit.*

¹⁷ See Graph 7 in Bennani *et al.* (2021), *op. cit.*

2. Disparities in education costs: illustrations



Note: The total cost of a DUT in biology without repeating a year (in 2 years) is 20 584 euros per student.

Source: Bennani, Dabbaghian and Péron (2021).

Finding 2. The costs of education courses are very unequal, depending on the course of study, and vary by a ratio of one to four.

Our analyses show that these differences can be explained essentially by the difference in the number of teachers and the number of hours. The status of teachers (temporary and contractual versus permanent) as well as administrative costs also influence the cost of training, but their contribution is much smaller. For example, there are 3.5 teacher-researchers for every 100 students in bachelor's degrees, compared with 8.9 in *DUTs* [two-year technical college degree] and 9 in engineering schools, i.e. a supervision rate that is twice as high. If we compute the sum of all the teaching hours relative to the number of students, we obtain a ratio of 16 hours per student in a *licence* as against more than 40 in a *DUT*.¹⁸ These two variables alone explain all the difference in education costs between degree levels, and about two-thirds of the difference in costs between specialities. It is therefore these two levers that should be activated first if we want to increase investment in higher education in general and in certain courses in particular. In order to know which strategy to adopt, however, it is necessary to first examine the benefits¹⁹ to be expected from an increase in educational investment.

The link between wages and education in France

In France, there is a lively debate on the decline in the returns to diplomas. The democratization of education is in fact put forward as one of the causes of the decrease in the gap between employees with higher or lower qualifications.²⁰ Increasing the qualifications needed to enter certain socio-professional categories is said to have led to a devaluation of certain diplomas.²¹

However, the available data do not allow us to conclude definitively that returns to education have declined significantly in France over the last 50 years. First of all, it should be stressed that existing studies on the evolution of wage differences between degrees in France are not, for the most part, based on a causal estimate of the gains from education. To do this, one would have to compare the income gains of individuals having exactly the same characteristics and following exactly the same curriculum between the 1960s and 2020, compared to individuals who would not have been affected by the democratisation of education. In practice, however, even if the names of the diplomas have not changed, their selectivity and the content and methods of learning have evolved considerably over the period. Moreover, the democratization of education has extended to access to higher education, with a sharp increase in the number of holders of bachelor's degrees for the generations born from the 1970s onwards, so that all levels of qualification are now concerned. We have thus seen an increase in the annual number of diplomas awarded at all levels of higher education since the 1990s, with the exception of *DUTs* since 2000 and doctorates. This increase first concerned undergraduate degrees (in particular the two-year BTS technical degree and the *licence*, the number of which increased by 150 per cent over the period). The increase is more recent for master's level degrees and the *grandes écoles*, the number of which have tripled and doubled respectively in 30 years. A study exploits this time lag in the phases of increase in the number of students in the *grandes écoles* and other education programmes so as to analyse the effect of the democratization of education on salary benefits.²² The study shows that the most voluntarist phases of educational expansion coincided with a very significant improvement in the salary situation of those who benefited from the increase in training compared to graduates of the *grandes écoles*, which contradicts the hypothesis that the democratization of education would not bring any substantial wage gain. In

¹⁸ See Tables 3 and 4 in Bennani *et al.* (2021), *op. cit.* The volume of hours per student is obtained by dividing the total number of teaching hours for all teachers by the number of students. It does not correspond to the number of teaching hours received for one student, which we do not know.

¹⁹ It should be noted that our analysis does not take into account the public benefits (see above), the calculation of which would require making assumptions on the growth of innovation, job creation and changes in the tax base. The benefits presented therefore represent a lower bound of the total benefits linked to investment in higher education.

²⁰ Verdugo G. (2014): "The Great Compression of the French Wage Structure, 1969-2008", *Labour Economics*, no 28, pp. 131-144.

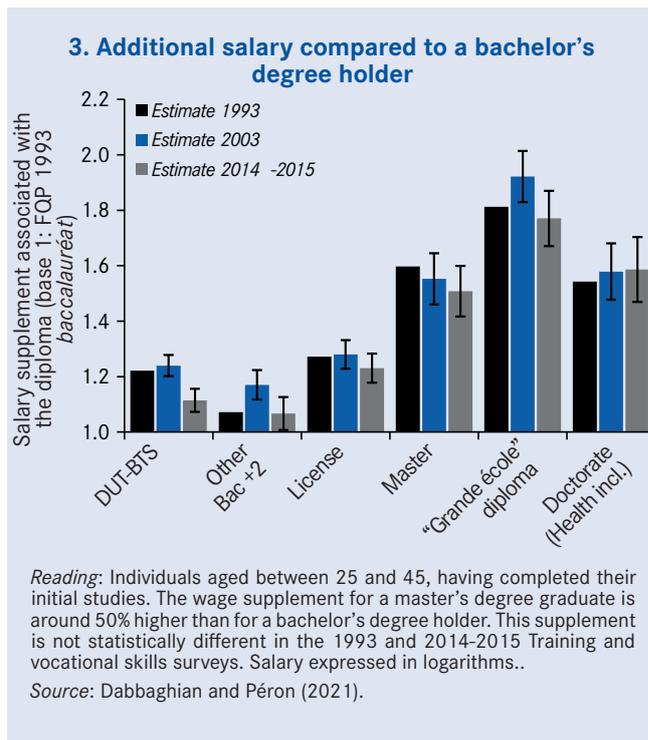
²¹ See Dubet F. and M. Duru-Bellat (2020): *L'école peut-elle sauver la démocratie?*, Éditions du Seuil, and Goux D. and É. Maurin (2019): "Forty Years of Change in Labour Supply and Demand by Skill Level. Technical Progress Labour Costs and Social Change", *Économie et Statistique*, no 510-511-512.

²² Gurgand M. and É. Maurin (2006): "Démocratisation de l'enseignement secondaire et inégalités salariales en France", *Annales. Histoire, Sciences Sociales*, no 61, pp. 845-859.

fact, the relative hierarchy of diplomas in terms of salaries is maintained. A study by INSEE (2021),²³ based on a panel of individuals, shows that wage differentials between higher education graduates remain very stable: at the age of 30, individuals who have studied for more than two years after the *baccalauréat* have a wage that is approximately 35 to 40 per cent higher than holders of the *baccalauréat* or a short higher education diploma, whether for generations born in 1950 or in 1980.

The analyses that we have carried out on the basis of the different waves (1993, 2003, 2014-2015) of the Training and vocational skills survey (*Enquête Formation et qualification professionnelle - FQP*) confirm that the relative wage advantage of higher education graduates continued between the years 1990 and 2010.²⁴ These analyses can be used to examine the link between degrees and wages at a much more detailed level. For this purpose, we regressed individual wages on the level of the degree, considering interactions between the degree and the year of the survey and controlling for experience and working time. The results confirm that the relative hierarchy of degrees has been maintained over time. All other things being equal, in 1993, people with a bachelor's degree earned on average about 30 per cent more than those with a general or technological *baccalauréat*, and those with a master's degree about 50 per cent more (Figure 3). For most higher education qualifications, these relative gains compared to the *baccalauréat* have changed very little over time,²⁵ despite a sharp increase in the number of graduates over the period.

The economic benefits of the degrees do not change significantly when comparing individuals with comparable *baccalauréat* results, which suggests that the measured effect is not due solely to a selection of the best students for long higher education degrees. Moreover, when the benefits are measured in terms of income (which also includes the resources of unemployed or inactive persons) rather than wages, the results remain similar. Moreover, we note that the role of higher education as a bulwark against unemployment is still as important as ever, and has even proved to be particularly effective for the younger generations who entered a deteriorated labour market in the wake of the 2008 economic crisis.²⁶ Moreover, our analyses suggest that the wage differentials between different disciplines for a given degree are substantial. Thus, a science degree (physical



sciences, computer science, mathematics, engineering) is associated with a salary that is 15 to 30 per cent higher on average than a degree of the same level in the humanities and social sciences.²⁷

Finding 3. The benefits of higher education degrees are substantial and have been sustained over time.

A comparison of education yields in France

After having carried out an analysis of the costs and benefits of higher education separately, the analysis of returns makes it possible to combine these two aspects, by relating the cost of each course to its benefits. This shows that the benefits of education are correlated to their costs, but that there are nevertheless substantial variations in returns.

To carry out this analysis, we consider that all individuals pursuing higher education bear a cost that is equal to the

²³ INSEE (2021): *Salaires des générations de 1940 à 1980: des effets différenciés du contexte économique et du diplôme sur les trajectoires salariales*, INSEE Références, 2021 edition.

²⁴ See the details of the study in Dabbaghian G. and M. Péron (2021): "Tout diplôme mérite salaire? An Estimate of Private Returns to Higher Education in France and their Evolution", *Focus du CAE*, no 075-2021, December.

²⁵ The case of the BTS-DUT is specific, as this category of diploma is one of the most difficult to compare over time in view of the many successive reforms that have sometimes profoundly modified the content of these diplomas over the last thirty years. Moreover, the data do not allow us to distinguish between them in 1993, and it is possible that the relative decline in wage gain measured in the regression reflects a compositional effect, with a relative increase in the number of BTS students compared to DUT students.

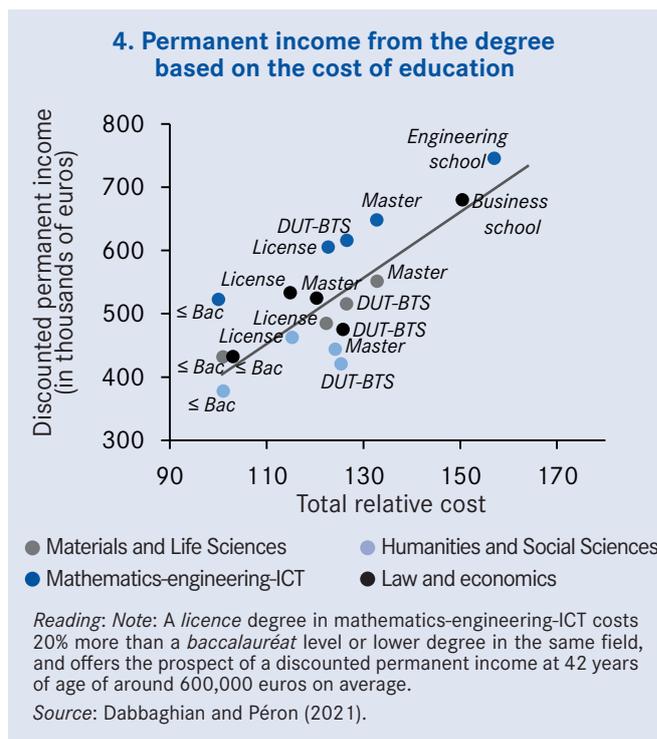
²⁶ Couppié T., A. Dupray, D. Épiphanie and V. Mora (2018): "20 ans d'insertion professionnelle des jeunes : entre permanences et évolutions", *CÉREQ Essentiels*, no 1.

²⁷ See Dabbaghian and Péron (2021), *op. cit.*

direct costs of their education (here, mainly tuition fees)²⁸ as well as an opportunity cost corresponding to the income they would have received as a young worker if they had started working from the lower degree (i.e. the average income of higher graduates with less than five years of experience). On the other hand, we estimate the permanent income as a function of the degree, which corresponds to the total income expected for a working life of 42 years.²⁹ To impute this income, we used wage data from the FQP survey in 2014-2015, controlling for gender and social origin (measured by parents' degree) and taking experience into account. The risks of unemployment and part-time work associated with each degree are taken into account in the sense that the average income for a degree level incorporates replacement income (unemployment insurance, etc.).

Such an analysis has its limitations, which are related to the lack of data currently available. On the one hand, the costs are estimated for a student who has not repeated a year, changed course or dropped out, and has therefore obtained his or her degree "on time". In practice, success rates vary greatly according to the type of degree, and courses where the expenditure per student is higher are more likely to have successful students. Thus, there seems to be a strong correlation between the cost of a year's training and students' success rate: the success rate for the *DUT* is 68 per cent, whereas the rate is 29 per cent for the *licence*, even though the academic profile of *DUT* students is slightly lower than that of *licence* students.³⁰ The benefits measured are not causal estimates of the return to the degree, but reflect the differences in wages between people who had an equivalent level on entering higher education and with different levels of degree in the 2014-2015 survey.

Despite these limitations, the calculation of returns carried out provides several insights (Figure 4). First, there is a strong positive correlation between the total cost of education and lifelong earnings. Second, there are large differences in returns to education. The points above the regression line in Figure 4 correspond to courses with relatively higher returns, while the points below the line correspond to courses with relatively lower returns. Some specialisations seem to be associated with higher returns than others, whatever the level of tertiary qualification considered. Specialised degrees in mathematics, engineering, information and communication sciences and technology are more remunerative than equivalent degrees in the materials and life sciences, for relatively similar costs. This suggests that their return on the labour market is relatively



high, potentially revealing underlying imbalances: these are indeed sectors for which the labour supply is insufficient, and which regularly experience recruitment difficulties.³¹ Conversely, degrees in the humanities and social sciences (social sciences, humanities, arts, languages, but also degrees in the field of social care) have the lowest average cost in the sample, but also the lowest salaries. Finally, business and engineering schools clearly stand out with high costs that also translate into high permanent income.

Finding 4. The relative returns on degrees are correlated to the costs of education and are very unequal depending on the speciality.

These analyses invite us not only to think about the regulation of places in the various diploma courses according to social demand for education, but also about how to guarantee all young people good study conditions to improve their success rates. The lack of information on the benefits and costs of education courses makes it difficult for young people to take all this into account when making their choices. However, given the differences in the returns to education, inequalities

²⁸ The cost of higher education here is in addition to the cost of primary and secondary education for all individuals.

²⁹ Future income is discounted to take into account the fact that individuals value the income they receive now more than the income they will receive in several years.

³⁰ See Graph 5.20 of the report Bonneau C., P. Charrouset, J. Grenet and G. Thebault (2021): "Quelle démocratisation des grandes écoles depuis le milieu des années 2000 ?", *Institut des politiques publiques (IPP) Report*, no 30, January. The rate of passing grades ("TB, B, AB" and "Passable") among students enrolled in the first two years of the bachelor's degree and STS are respectively: 8%, 16%, 29% and 47% for the bachelor's degree and 2%, 13%, 36% and 49% in STS. We can thus see that students enrolled in the bachelor's programme have a more favourable academic profile at the outset than students enrolled in the STS.

³¹ Niang M. and T. Vroylandt (2020): "Les tensions sur le marché du travail en 2019", *DARES Résultats*, no 032, October.

in access to and progression through higher education lead to lasting inequalities in income over the course of a lifetime.

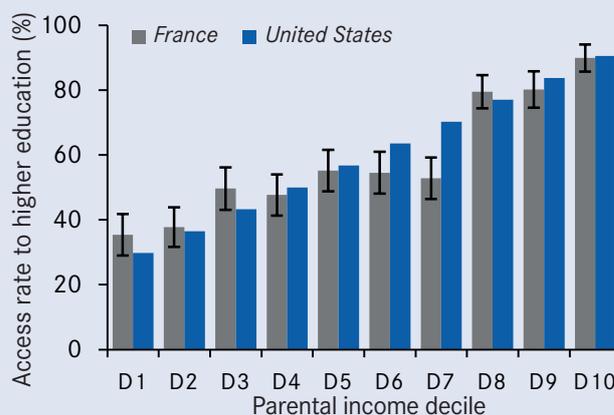
Equity in higher education spending

Very marked inequalities in access to and career paths in higher education

A vast literature in sociology and economics has addressed the issue of inequalities in access to higher education. Following the pioneering work of Bourdieu and Passeron³² in the early 1960s, which showed the very strong social inequalities perpetuated in the higher education system, other studies have pointed to a historical trend towards a decline in educational inequalities. In particular, several studies show that the link between social origin and educational destiny weakened between the generations of the early 20th century and those born in the 1970s and 1980s.³³ However, there is still some debate as to the effects of this democratization of education on inequalities: several studies converge in describing a shift upwards in the inequalities already observed towards higher levels.³⁴ In particular, access to the *grandes écoles* remains highly unequal from a social point of view, given the same level of schooling, thereby casting doubt on the process of democratizing higher education.³⁵

While the impact of parents' occupations or qualifications on their children's educational careers is often studied, it is less common, due to a lack of data, to observe this through the prism of income. In the United States, an initial study has shown that there are very large inequalities in access to higher education according to parental income.³⁶ In France, an initial estimate of the degree of inequality in access to higher education according to parental income has been carried out, thanks to the national survey on the resources of young people aged 18 to 24 carried out by INSEE and DREES in 2014.³⁷ This survey shows that access to higher education is almost three times more frequent among young people from well-off backgrounds than for those with the poorest parents: among the least well-off 20 per cent, about 1 in 3 young people are enrolled or have been enrolled in a higher education course, compared with 9 in 10 among the most well-off 10 per cent (Figure 5). Access to selective courses of study is even more unequal: 5 per cent of young people whose parents belong to the least affluent 50 per cent have access to the CPGE, medical school, the *grandes écoles* and doctorates,

5. Inequalities in access are as marked in France as in the United States



Reading: Note: Nearly 90% of individuals whose parents belong to the top income decile have access to higher education, in France as in the United States. The confidence intervals calculated in the French case are represented by the black bars.

Source: Bonneau and Grobon (2021) *op. cit.* for France, and Chetty *et al.* (2014) *op. cit.* for the United States.

compared to 30 per cent of young people whose parents belong to the top decile.³⁸

In the survey, two factors explain these very marked inequalities: parental financial support on the one hand, and strong differences in educational aspirations on the other. At age 18, 80 per cent of young people whose parents belong to the top income decile plan to obtain a master's degree or a doctorate, compared with less than one in three of those whose parents are the least well-off. Young people from the most affluent families receive on average three times as much direct and indirect aid from their parents as young people from modest families, a difference that public transfers, although well directed towards the least affluent, fail to make up (see Bonneau and Grobon, 2021). The result is a level of inequality in access to higher education in France similar to that observed in the United States, even though the institutional contexts are very different.

Finding 5. A young person from a wealthy family is three times more likely to access higher education than a young person from a low-income family.

³² Bourdieu P. and J-C. Passeron (1964): *Les Héritiers*, Éditions de Minuit.

³³ See in particular Thélot C. and L-A. Vallet (2000): "La réduction des inégalités sociales devant l'école depuis le début du siècle", *Économie et Statistique*, vol. 334, no 1, pp. 3-32 or Falcon J. and P. Bataille (2018): "Equalization or Reproduction? Long-Term Trends in the Intergenerational Transmission of Advantages in Higher Education in France", *European Sociological Review*, vol. 34, no 4, pp. 335-347.

³⁴ Prost A. (1986): *L'enseignement s'est-il démocratisé?*, Presses Universitaires de France; Goux D. and E. Maurin (1997): "Démocratisation de l'école et persistance des inégalités", *Économie et Statistique*, vol. 306, no 1, pp. 27-39.

³⁵ See in particular Duru-Bellat M. and A. Kieffer (2008): "Du baccalauréat à l'enseignement supérieur en France: déplacement et recomposition des inégalités", *Population*, vol. 63, no 1, pp. 123-157 or, more recently, Bonneau *et al* (2021), *op. cit.*

³⁶ Chetty R., N. Hendren, P. Kline and E. Saez (2014): "Where Is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States", *The Quarterly Journal of Economics*, vol. 129, no 4.

³⁷ Bonneau C. and S. Grobon (2021): "Unequal Access to Higher Education Based on Parental Income: Evidence from France", *PSE Working Paper*, forthcoming.

³⁸ Bonneau C. and S. Grobon (2021): "Enseignement supérieur: un accès inégal selon le revenu des parents", *Focus du CAE*, no 76-2021, December.

The regressivity of public spending on higher education

In addition to the social and economic obstacles that come into play upstream in the schooling process, certain mechanisms that are specific to public spending on higher education block these inequalities from being corrected. In fact, inequalities in access to and progression through higher education are reflected in a significant regressivity of spending in this area. Contrary to the principle of the redistribution and smoothing of inequalities through public spending, public investment in higher education for young people whose parents are the most affluent is much higher than for young people whose parents are less affluent. The order of magnitude is 1 to 2 when public spending on higher education for young people aged between 18 and 24 is added up (20,000 euros over six years compared to 10,000 euros - Figure 6).

These differences in public spending on education are due mainly to inequality of access to higher education rather than to disparities in the cost of education courses taken after entering the system. Indeed, inequality of access to higher education explains about 70 per cent of the gap between young people whose parents are among the wealthiest 10 per cent and those whose parents are among the poorest 10 per cent (*cf.* Bonneau and Grobon, 2021, *op. cit.*).

As for private expenditures, these are mainly related to enrolment fees and are concentrated among the most affluent. They reinforce inequalities, in particular concerning access to private institutions, which have grown strongly in recent years (+30 per cent of enrolments since 2010, compared to +15 per cent in public courses).

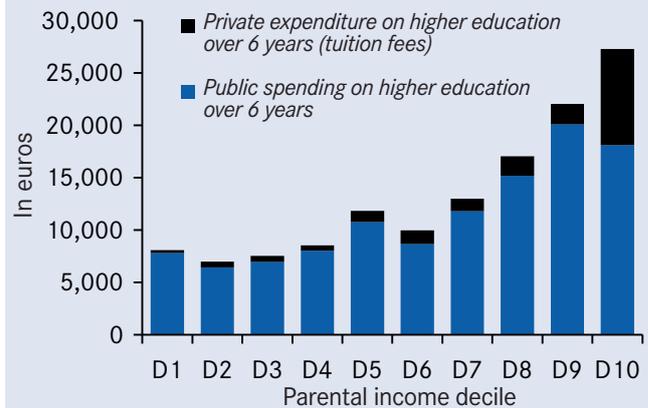
To measure inequalities in total public spending on young people, we must add the various social and fiscal transfers (scholarships based on social criteria, housing assistance, social and family allowances and tax deductions) from which young people and their families can benefit, and which follow a U-shaped curve according to family income. Indeed, while social transfers are effectively targeted at the families of the poorest young people, their redistributive effect is counterbalanced by the tax deductions from which wealthy parents can benefit when their children pursue higher education.³⁹ These tax deductions, which are all the greater the higher the parents' income, can amount to nearly 10,000 euros over six years for the most affluent households. The total average effect of all public spending is regressive: the most affluent young people and families receive on average 1.5 times more public aid than the least affluent young people.

³⁹ Tax deductions include the half-tax share granted to a student attached to his or her parents' tax household, the alimony scheme for young adults and the tax reduction for school fees.

⁴⁰ For an overview of social mobility in France in an international comparative perspective, see Dherbécourt C. (2020): "La mobilité sociale en France : que sait-on vraiment ?", *Point de vue, France Stratégie*, September.

⁴¹ While nearly 93% of students enrolled in L1 take the first semester exams, only 66% take the second semester exams, see <https://www.education.gouv.fr/mesure-de-la-reussite-etudiante-au-regard-de-la-mise-en-oeuvre-de-la-loi-ore-annee-2018-2019-305147>

6. Inequalities in public and private spending by parental income



Reading: Students whose parents are in the top 10% of the income distribution benefit from an investment of approximately 28,000 euros in higher education between the ages of 18 and 24, of which 18,000 euros is public spending and 10,000 euros is private spending (tuition fees paid by parents).

Source: Bonneau and Grobon (2021), *op. cit.*

Finding 6. Public spending on higher education is regressive, due to the low access of young people from less well-off families and insufficiently redistributive social and fiscal support.

The regressivity of total spending on higher education represents a major issue for equity and social justice. Even though tuition fees are limited compared to the Anglo-American countries and most of the educational expenditure is public, these analyses reveal strong inequalities in investment in human capital, which exacerbate the low social mobility observed in France.⁴⁰

Improving the efficiency and equity of higher education

Underinvestment in bachelor's and master's degrees at university is associated with much lower success rates than in other courses, even though the students have an equivalent or even better academic profile (only 36.5 per cent of general *baccalauréat* holders obtain a bachelor's degree in three years, half in four years). Offering courses with such low staffing levels and time requirements not only seems unacceptable, it also entails a considerable loss for the public purse, since the high drop-out⁴¹ and repetition rates

represent a loss in terms of public investment. In addition, there is the issue of holders of technological and vocational *baccalauréats*. Indeed, the vast majority of these people wish to go into short higher education courses (*DUT*, *STS*), which are, in principle, the most suitable for them. Nonetheless, in some cases, their initial wishes are not met because of the limited number of places offered each year. Some of them end up in a general bachelor's degree programme (25 per cent for the technological route and 16 per cent for the vocational route), even though their prospects for success are extremely low: the chances of obtaining a *licence* in three or four years are only 16 per cent for technological *baccalauréats* and 6 per cent for vocational *baccalauréats*.

In terms of numerical objectives, we propose two scenarios. The first consists in reducing the gap between bachelor's and master's degrees and the professional degree, which, for a relatively contained cost, has higher success rates. By increasing spending on bachelor's and master's degrees to the level of the professional degree and by creating additional places in short higher education courses, the additional cost is estimated at 2.6 billion euros. Another approach is to consider the overall efficiency of the university cycle and to take as a reference the *DUT*, which is among the courses with the highest staffing levels and the best success rates. In view of the mismatch between the aspirations of some students and the bachelor's degree course, we propose opening up additional places in the short technical courses in order to satisfy the demands of technological and vocational *baccalauréat* holders. This would reduce the number of students in the bachelor's degree programme but would not be sufficient to compensate for the gap observed with investments in the other branches. In this case, an additional investment is necessary, of the order of 5,100 euros for bachelor's degrees and 4,300 euros for master's degrees, in order to offer courses of a quality at least equal to that of the *DUTs*. This more ambitious proposal is estimated at 4.7 billion euros.

Recommendation 1. To improve the success rate, create additional places in short higher education courses and increase resources for bachelor's and master's degrees.

In order to reduce the gaps in access to higher education, it seems necessary to strengthen financial support for middle-class and working-class students. Several studies on French and American data have shown that eligibility for

a grant based on social criteria increases access to higher education.⁴² However, the current grants, with annual amounts varying between 1,000 and 5,700 euros, do not cover all student expenses. We propose to increase the current amounts by 1,000 euros per year and to widen access to the first level of grants so that funding reaches 66 per cent of families and thus covers all of the middle and working class. Furthermore, while support schemes for young people with few qualifications are essential to help them enter the labour market, it is also important to ensure that the amounts of the grants are an incentive for young people from the least well-off families to continue their studies. We estimate the annual cost of this measure to be around 870 million euros.⁴³ Moreover, one of the main items of expenditure for students is housing, with more than two-thirds of students not living with their family in 2016 according to the *Observatoire de la vie étudiante*. However, the stock of low-rent student residences corresponds to only 10 per cent of all student needs. Decohabiting students can benefit from housing subsidies, but these subsidies, which are not targeted according to parental income, can have an inflationary effect when they lead to a sharp increase in demand in city centres where the supply of housing is limited.⁴⁴ Efforts to inform students and their families about the higher education grant system are also needed.

The renovation and development of low-cost university residences would make it possible to supplement social aid for students from less privileged families, by widening the opportunities for studying away from home. With initial funding of 12,000 euros needed to build a place in a student residence,⁴⁵ increasing the public supply of student accommodation by 25,000 units per year (which corresponds to about 10 per cent of the current stock) would require an investment of 300 million euros per year.

Recommendation 2. Increase the value of grants, broaden the base of beneficiaries and improve access to student housing for working-class and middle-class students.

Despite the introduction of a growing number of programmes aimed at promoting equal opportunities for access to selective courses of study, the effect of these schemes on the recruitment of the most prestigious schools seems to have been limited, even though their numbers have recently increased. In fact, despite their visibility, the "*cordées de la réussite*" type schemes have remained targeted on certain

⁴² Fack G. and J. Grenet (2015): "Improving College Access and Success for Low-Income Students: Evidence from a Large Need-Based Grant Program", *American Economic Journal: Applied Economics*, vol. 7, no 2 and S. Dynarski (2003): "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion", *American Economic Review*, vol. 93, no 1.

⁴³ Assuming an access rate of 55% of a cohort of young people to higher education, financing an additional 1,000 euros of aid to 66% of students (i.e. approximately 290,000) for an average of 3 years would cost approximately 870 million euros per year.

⁴⁴ Fack G. (2005): "Pourquoi les ménages pauvres paient-ils des loyers de plus en plus élevés?", *Économie et Statistiques*, no 381-382.

⁴⁵ See Paris H. (2020): "Logement étudiant et politiques publiques", *Focus du CAE*, no 020-2017, November.

territories and, before their redesign in 2020, only benefited less than 1.5 per cent of secondary school students each year.⁴⁶ It is therefore necessary to adopt a more proactive approach in order to truly increase diversity in selective courses of study. The introduction of quotas for scholarship holders and students from outside the academy in Parcoursup offers real possibilities for diversifying recruitment, but for the time being it has not significantly reduced the social and educational segmentation between courses.⁴⁷ A more voluntarist increase in quotas must be envisaged to allow a real opening of the various courses to all student profiles.

Recommendation 3. Modify the admission criteria for selective courses of study to ensure more diversified recruitment according to students' geographical and social origin.

The portal of the centralized system of admission to higher education is a privileged source of information on higher education courses, but we believe it is essential to improve information on three important aspects to help young people make their choices. First, the criteria used by programmes to select students are generally relatively vague and should be made much more explicit, with, for example, the publication of the algorithms used by higher education institutions to rank candidates, including the precise weightings for each criterion taken into account during selection. These elements are indeed crucial to enable young people to adapt their choice of options in high school beforehand. Next, information on the salary levels at the end of the various courses and on the annual cost of each course (including the portion financed by the public authorities) must be included, as these are essential to guide choices. In order to publish these indicators, it is necessary to improve the statistical system so that the costs of all public and private training can be calculated. Finally, knowledge about the occupational integration of young people on leaving the education system must be improved, using administrative databases that allow monitoring by educational course. These indicators are based in part on greater transparency on the part of public and private higher education establishments with regard to their costs, the quality of the courses they offer, and the future of their students. Lastly, it is important to improve the information provided to students before their final year of secondary school, since the choices made at the end of the third year of secondary school affect their chances of admission to certain courses of study, thereby reinforcing inequalities.

Good information is not enough, however, because self-censorship mechanisms are partly responsible for the lower rates of access to higher education for pupils from modest backgrounds compared with pupils from more privileged backgrounds. Thus, the differences in educational ambition according to social origin are significant, even when comparing adolescents with the same level of education. The cause of these gaps is essentially linked to the weight of social stereotypes that undermine the feeling of competence and confidence in one's chances of future success. However, aspirations for higher education are in themselves a factor in academic progress because they determine the motivation and effort that students invest in schoolwork. It is therefore necessary to act on self-censorship upstream of orientation to higher education, from lower secondary school onwards, in order to reduce the social gaps in educational attainment at the end of secondary school and to increase the rates of access to higher education for pupils from modest backgrounds. The literature shows that this is possible. For example, the programme run by the Énergie jeunes association has shown that it increases the motivation and confidence of pupils from modest backgrounds, with a positive effect on both their school results and their academic aspirations.⁴⁸ A programme designed to encourage girls to take up scientific courses and careers has also shown a positive effect on the choice of scientific careers by high school girls with a good academic record.⁴⁹ In order to remove self-censorship mechanisms in a more systematic and effective way, it would be desirable to generalize the implementation of a programme dealing with the deconstruction of social stereotypes and the strengthening of feelings of competence. The programme could be developed during the hours set aside in junior and senior high schools for guidance and to involve relevant contacts for the discovery of occupations and knowledge of educational pathways.

Recommendation 4. Communicate clear and transparent information on the selection criteria, costs and benefits of education courses at the time of orientation choices and ensure that self-censorship mechanisms are removed.

A reasonable target for reducing the gap in access to higher education between students from better-off and worse-off backgrounds would be to completely eliminate the social background gap in the proportion of students who wish to

⁴⁶ See Bonneau *et al.* (2021), *op.cit.* In this respect, the redesign of the system will have to be evaluated.

⁴⁷ See Bechichi N., J. Grenet and G. Thébault (2021): "D'admission post-Bac à Parcoursup : quels effets sur la répartition des néo-bacheliers dans les formations d'enseignement supérieur?", *France Portait Social*, INSEE Références, November.

⁴⁸ Huillery E., A. Bouguen, A. Charpentier, Y. Algan and C. Chevallier (2021): "The Role of Mindset in Education: A Large-Scale Field Experiment in Disadvantaged Schools", *Preprint SocArXiv, Center for Open Science*, January.

⁴⁹ Breda T., J. Grenet, M. Monnet and C. Van Effenterre (2020): "Do Female Role Models Reduce the Gender Gap in Science? Evidence from French High Schools", *IZA Discussion Paper*, no 13163, April.

pursue higher education *at the same academic level*. According to the PISA data produced by the OECD, at the same academic level at the age of 15, working-class and middle-class students (66 per cent of the population) are 9 percentage points less likely to hope to go on to higher education than the top tercile.⁵⁰ Since the access rate to higher education among the first 66 percentiles is 46 per cent, the objective is to achieve an average access rate for this population of 55 per cent. The number of additional students would thus be around 50,000 per year.⁵¹ Assuming a minimum annual cost of 9,700 euros per student and an average study period of three years, the number of additional places to be created in higher education would be 150,000, with a total budgetary cost of 1.5 billion euros.

Recommendation 5. Open 150,000 additional places in higher education.

Given the differences in performance between courses, we recommend that new student places be allocated through a multi-year consultation between the MESRI, students, economic players and researchers. Researchers should be able to produce regular statistics on job insertion rates and exit salaries, as well as forecasts of future labour market needs. Indeed, the insertion rates, exit wages, and the dynamics of the needs identified on the labour market must make it possible to inform the decision to allocate places and resources to a given training course. Consultation between public and private partners allows for a broad appropriation and identification of education courses whose returns have been high in the last decade, for example today in the field of mathematics or engineering, as well as the identification of

promising sectors and the future needs of the economy. The work of the “Prospects for occupations and qualifications” group led by France Stratégie in partnership with the DARES is an example of useful documents that can stimulate reflection on the allocation of new places in higher education.

Recommendation 6. Direct the additional places and resources to scientific and technical fields of study with a higher relative return.

The sum of the measures we propose represents an annual budgetary cost of 5.4 billion euros for an initial scenario and 7.6 billion euros for a second, more ambitious scenario. These ambitions need the support of both the public authorities and the higher education institutions, and their implementation requires strong coordination. The public authorities must commit to providing the necessary resources to the institutions, which must themselves commit to meeting the objectives of democratizing, opening up places and increasing the student-teacher ratios, as defined by the public authorities in the light of clear objectives and associated indicators.

While the amounts set forth may seem large, the benefits to be expected from this investment are high. Because this represents between 0.2 and 0.3 points of GDP, it would just put us at levels of expenditure per student comparable to those of Germany and Denmark in the first scenario, and to those of the Netherlands in the second scenario, while remaining well below virtuous countries such as Sweden and Norway, where expenditure per student would still be about 25 per cent or 20 per cent higher, depending on the scenario. ●

⁵⁰ Barone C., P. Givord, E. Huillery and A. Touw, 2021: “Social Gaps in Self-Confidence, Hope, and Expectations: An International Comparison”, *LIEPP Working Paper*, April.

⁵¹ 823,000 young people born in 2002 * 66% * 9% = 50,000 additional students.

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| TSA 20727 75334 PARIS Cedex 07 (France) | | Ph: +33(0)1 42 75 76 84 | Fax: +33(0)1 42 75 51 27 |
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