EEAG (2016), *The EEAG Report on the European Economy,* "Tuning Secondary Education," CESifo, Munich 2016, pp. 70–84.

Tuning Secondary Education

3.1 Introduction

Education is always on every parent's mind and repeatedly hit the headlines in Europe during 2015. In Italy, the government introduced legislation *(La Buona Scuola)* hiring up to 100,000 permanent teachers at substantial budgetary cost, improving school facilities with both public and tax-subsidised private funds, including some unpaid work activity by students in the high-school curriculum, and reforming education management: some organisational and personnel decisions are decentralised, granting more powers to school principals in selecting, coordinating, and rewarding teachers (whose unions protested very vocally).

In France, school reforms triggered first-page headlines, heated debates, and street demonstrations when the government introduced a broad reform of the lower secondary schools attended by 10–13 year old students *(Collège: mieux apprendre pour mieux réussir)*. The new curriculum relaxes disciplinary constraints, introducing "pragmatic" pedagogy; it is partly chosen autonomously at the school level, where managers are granted more control over their staff. The socialist government's stated goal was to ease the difficulties encountered by disadvantaged students, deemphasising traditional subjects in favour of interdisciplinary approaches to themes of practical interest, and encouraging schools to adapt their teaching to the varied backgrounds of their students. The opposition criticised the watering down of sound disciplinary knowledge in favour of the superficial "zapping" of fashionable topics, and pointed out that the suppression of difficult optional subjects (including Latin and Greek) would prevent capable poor students from obtaining the elite knowledge others can obtain from their families or private tutors. Stronger criticism (and strikes and street demonstrations) came from teacher unions, which not only despised the inter-disciplinary approach, but also argued that school autonomy would widen the gap between "good" and "bad" schools; that the new powers of school managers would reduce collegiality; and that the needs of disadvantaged students would be better served by smaller classes, suitably sorted according to student ability.

In Finland, were public school teachers are highly regarded and students have performed very well in international, standardised tests, the right-wing government introduced sweeping and controversial reforms: to reduce budgetary costs, private school attendance is to be subsidised by public funds (at a per-student cost lower than that of public schools); to make schooling more relevant and interesting, school curricula are to be reorganised around practical topics (such as "restaurant operations") rather than traditional academic subjects (such as languages, mathematics, and chemistry, all of which can be useful when running a restaurant).

Education reforms can have large short-term budgetary effects and a strong influence on longer-term growth and inequality trends. Those briefly summarised above differ widely in these respects, but all are similarly controversial and all deal with the more or less practical orientation of curricula, with school autonomy and private education, and with teacher management. This chapter reviews such issues, focusing particularly on the organisation of the secondary or "middle" education level which, across European countries, is configured more differently than elementary education (where children achieve the basic skills necessary to interact with society beyond their immediate family) and tertiary education, (where young adults obtain the more specialised knowledge they will individually bring to the labour market). Even more than in other economic policy areas, opinions about education policy differ sharply, and tend to be rooted in one's own experience and viewpoint, rather than on hard evidence and broader perspectives. This is particularly the case at the secondary school level, which steers teenagers towards the labour market or higher education, and plays a crucial role in shaping both social and economic outcomes.

Section 3.2 outlines how the pros and cons of different secondary education models depend on various institutional, political, and economic features. Section 3.3 uses those insights to discuss how education systems have evolved over time in Europe. Section 3.4 briefly reviews heterogeneous educational institutions within and across European countries. Section 3.5 inspects the resulting heterogeneity of schooling outcomes, their dynamics over time, and interprets current reform tensions in the light of the insights and evidence discussed in previous sections. Section 3.6 asks whether and how country-level policy choices might benefit from supranational EU-level coordination, and Section 3.7 offers some conclusions.

3.2 Education policy problems

There are several conceptually distinct reasons why education is a matter not just of individual choice, but of collective policy.

3.2.1 Public benefits

Some of the benefits of education (in the form of income and social status) accrue to individuals being educated. But some spill over to other individuals, especially when taxation or collective bargaining imply that net income is not closely related to individual productivity. And because society as a whole benefits when individuals communicate and cooperate, education is partly a public good. Society wants children to be educated not only because of a paternalistic interest in their future individual welfare, which their parents may not appropriately take into account, but also because it is in everybody's interest that all members of society acquire basic social skills. Education skills are necessary for the creation of well-functioning economic and sociological networks; and as such, they involve substantial positive externalities that justify public intervention from everybody's point of view. The mandatory and collectively financed basic education of every family's children thus stems from basic economic considerations.

While these aspects are clearly relevant for elementary or primary education, at more advanced levels each individual's social and economic position can be strengthened by increasing his or her own education, a "human capital" that yields returns that are not public, but private, and all the more so because skills are more valuable when they are scarce. There are, however, good (if controversial) reasons for policy to shape individual skill accumulation: unlike other private goods and services, skills are produced and traded in markets plagued by financial constraints, imperfect information, and externalities.

3.2.2 Financial imperfections

Employers can finance the acquisition of "specific" skills that are useful only when working for them. The acquisition of broader "general" skills should be financed by the same individuals who will reap investment returns in the labour market: but human capital is not good collateral for loans, and equity participation in a person's labour income is hardly enforceable by private contracts. Poor children cannot self-finance their own education, and in free markets would acquire inefficiently low skills. Society is the ultimate employer of all its members, and it can be efficient to finance their education with public funds.

3.2.3 Imperfect information

Information about the quality of education, unlike that of fruit and vegetables, is difficult to obtain by inspection and impossible to assess through experience: those who by middle age find out that their education was of poor quality cannot go back and try again. So it can be efficient for education to be produced, or at least monitored and certified, by public bodies, if the latter can assess and enforce quality standards better than individual market participants.

3.2.4 Coordination problems

Besides financial constraints and imperfect information, externalities also make it difficult for markets to supply education efficiently. Education is group activity because the average cost of individual education is smaller in larger classes and, much as one might want to tailor school curricula to each student's ability and ambitions, within each community students must be grouped in a limited number of school types. The production process and the value of education are influenced by the quality both of group teachers and of fellow students (through "peer effects"). So it would be very hard for markets to price education so as to appropriately influence individual choices. Even in the

absence of financial constraints and information problems, only very complicated pricing schemes (where school fees depend on each student's and the classmates' assessed and possibly evolving quality) could ensure that all individual choices appropriately take into account interpersonal spillovers. In more realistic situations, good students may hoard into schools that are good only because they are populated by good students: a preference on the part of good teachers for teaching good students reinforces this mechanism, and nothing guarantees the efficiency of the resulting polarised quality distribution of schools.

3.2.5 Policy imperfections

For all these reasons education is very rarely left completely to market forces. Policy decisions, however, also need to tackle difficult issues. To what extent should education be funded privately or by tax revenues? Should it be provided by public or private organisations, and in either case should families be allowed to choose among different schools? Should students be offered the choice of different curricula, or selected in specific ones, or should they all receive the same education? Should such policy decisions be taken centrally, or decentralised? The answers depend on the amount and quality of information available, and on whether that information is used in ways that fulfil suitable policy objectives, in each possible configuration.

3.2.5.1 Centralisation of control

The state cannot know everything, and administrative decisions may not necessarily be based on good information, particularly given that teachers may manipulate it. Because the performance of teachers and the output of schools is difficult to assess, administrative controls focus on inputs and on bureaucratic processes, but cannot control teacher effort and behaviour tightly. Hence, the public production of education may end up benefitting school workers, rather than school customers. Parents who enrol their children in private schools, or sit on the board of a school financed by local property taxes, can observe the school's operations more accurately, and provide more stringent oversight of school staff, than a distant ministerial bureaucracy. However, they may or may not use that information, and the power resulting from their ability to choose and control powers in the broad public interest, or even in their own. Incompetent school customers may well be more easily pleased by schools that teach and assess only very easy material and make students appear very clever, instead of making them work hard.

3.2.5.2 Decentralised choices

In the presence of market failures, market-like allocation mechanisms that let families influence school resources (via the direct payment of fees, or mobility across locally financed school districts, or the allocation of public vouchers or enrolment-based transfers) need not be beneficial. Families are not only poorly informed about school output, but their choices may fail to internalise the relevant externalities: schools may end up being good only because they are attended by the culturally privileged children of rich families. Moreover, since school quality is relative and depends on the quality of enrolment, allowing school choice can trigger an arms race: even although half of the students will ultimately have to be enrolled in schools of lower-than-median quality, parents will spend whatever resources are needed in order to try and stay ahead.

3.2.5.3 The pros and cons of differentiated schooling

There are two conceptually distinct, but tightly related ways of "tracking" or "streaming" students across classrooms and schools. One, more relevant at young ages, is to separate them according to ability, but teach them the same material at different levels and in different ways. The other, more relevant at subsequent stages, is to group students by attitude and work objectives and teach them material that is substantively different, in programmes of different duration.

Society is obviously better off if medical studies and other long and demanding educational programmes are attended by youths who find it easier to learn and understand, while those with lesser intellectual ability should be assigned to routine jobs. Hence, selecting students into different education programmes can be a good idea if the abilities and talents of individuals can be reliably assessed. The implications of ability grouping, however, are not as clear for average achievement, and very clear for achievement inequality. Grouping students according to their ability can improve or worsen average education depending on how effective-

ly teachers can deal with class heterogeneity and on whether, through "peer effects," the quality of fellow students benefits low performers more or less than it slows down stronger students. Policy is more strongly influenced by the more obvious distributional implications of mixing or separating heterogeneous students. It can be efficient to impart different education to students of differing capabilities, regardless of whether their abilities are truly their own as individuals, or stem from family influences. But assessing individual ability is very difficult, and family background plays a crucial role in determining children's school careers and achievements. To the extent that education contributes to individual human capital, high quality students are naturally more interested in their own education, than in that of their classmates. Hence, views and opinions on the structure of education beyond the very basic elementary level are unavoidably polarised and controversial. Disadvantaged students and society may well benefit from comprehensive schooling, but segregation furthers the advantage of privileged students.

3.3 Historical trends

Mandatory, free, and uniform elementary education was essential to ensuring the economic viability and political sustainability of the country-sized nations that a few centuries ago replaced family- and village-level interactions with industrial production and extensive specialisation of labour. To participate effectively in such a socio-economic system, individuals obviously need to use a common language and abide by common rules. Hence the public-good role of education, as a means of fostering social communication and cooperation, was and remains a crucial element of European socio-economic systems.

3.3.1 Secondary schooling

If primary education was the first form of education to be publicly funded and organised in Europe's nation states, secondary education followed as soon as technological and organisational progress required more advanced skills and delayed the age of labour market entry.

The secondary school programmes attended by teenagers provide youths with more advanced general skills, useful for those who will attend tertiary education, but also for those who will be learning-by-doing or training in the labour market. However, secondary schools can, and often do, also teach more practical skills to the many youths who will seek employment immediately after completing their secondary education and, especially in cases where skills are not firm-specific, youths cannot count on employers' willingness to train them while working as apprentices (as in the Swiss system described and analysed by Wolter, et al., 2006; Dionisius et al., 2009, document and discuss also the German system, where formal schooling and institutional constraints play a more important role).

Their role in sorting youths into and out of tertiary education, and between early and later job market entry, respond to technological and political changes. When machines replace brute force and production takes place in complex organisations, schools have to equip workers with technical and supervisory skills. As in other policy areas, European countries historically pursued similar goals with different tools, implementing various combinations of locally and nationally organised education, often funding and regulating private education, as well as organising public schools.

The timing and character of the process that sorts students across various curricula has also changed over time in every country's history, in response to technological and socio-political forces. Over time, academic schools meant to prepare students for tertiary education (such as private elite schools run by the Jesuit order, Napoleonic *Lycées,* Austro-German *Gymnasiums*) evolved alongside vocational secondary education institutions that traced their origin to the apprenticeship system of craftsmen's guilds, came to be organized by industrial employers or their associations, and were formalised by nation-states in the form of dual education systems that combine public education with practical skill transmission by private employers.

As more complex socio-economic interactions began to require not only basic literacy, but also more advanced general skills, a role similar to that of elementary schools became natural for similarly comprehensive secondary schools, which could also be politically attractive to the extent that tracked schooling tends to perpetuate and extend socio-economic inequality. For these reasons, reforms typically delayed not only the age at which students enter the labour market over time, but also the age at which they are sorted across academic and vocational tracks.

Many European countries adopted comprehensive lower secondary schools in the 1960s (Italy, for example, did so in 1963; France's relevant legislation was introduced in 1959, but some curriculum differentiation persisted until 1975). Scandinavian countries took the same route somewhat later and more drastically: for example, in Finland a reform phased in between 1972 and 1977 increased the tracking age in secondary education from age 10 to 16, abolished academically-oriented upper secondary private schools, and was associated with significantly stronger intergenerational income mobility (Pekkarinen et al., 2006). Socialist countries kept early tracking and vocational education as a mainstay of the secondary school systems way beyond the 1970s; Poland's educational reform only delayed tracking in 1999 and this, together with greater resources devoted to education (particularly to instruction time), resulted in significantly better PISA test results (OECD, 2011).

3.3.2 Tracking versus comprehensive schooling

While these trends are broadly similar across Europe, their timing and the resulting organisation of secondary education are very different across countries and over time. And there is a notable exception to the trend towards delaying tracking and extending comprehensive education in German-speaking countries, where children as young as 10 are already sorted according to their school performance, into tracks teaching standard subjects at different levels and in different ways. In Germany, Austria, and Switzerland the preparation offered by the more academically ambitious lower-secondary tracks is suitable for upper-secondary tracks that lead to University enrolment; that offered by the less ambitious tracks is suitable for vocational upper-secondary tracks, mixing classroom work with workplace apprenticeships, meant to bring students quickly to labor market or in some cases to practical tertiary education programs.

Because secondary schools meant to provide universal and mandatory education face a task that is more complex and difficult than preparing students either for work or for higher education, transitions from the latter "tracked" to the former "comprehensive" model typically were, and often still are, problematic. Schools tasked to teach a common curriculum to students with very heterogeneous backgrounds and different goals are, in effect, asked to perform a multitude of tasks. They may end up performing none well, as obscure compromises between supporters of an egalitarian single track and those who stress the efficiency of early tracking can result in a gradual relaxation of quality standards, monitoring, and comparability of results (Bertola and Sestito, 2011 and 2013, review Italy's comparative experience in this and other respects).

Confused policy guidelines naturally result in a relaxation of administrative controls. To the extent that egalitarian pressures are effective, some equalisation may result in the grades attained by students. But lax control may allow schools and teachers to minimise their own efforts, instead of maximising either the vocational or the academic achievements of their students. From this point of view, it is not surprising that, after the vast expansion of European educational systems in the baby-boom years, the downsizing of teaching staff was often avoided by decreasing class sizes or reducing teacher class time. Yet, in the absence of pedagogical efforts targeted to weaker students, actual competencies will be largely determined by family background, and remain highly unequal.

3.4 Heterogeneity, within and across countries

The structure of European educational institutions is very heterogeneous in many more respects that it is possible to consider here, but some aspects are particularly relevant to the policy issues outlined in Section 3.2.

3.4.1 The role of family background

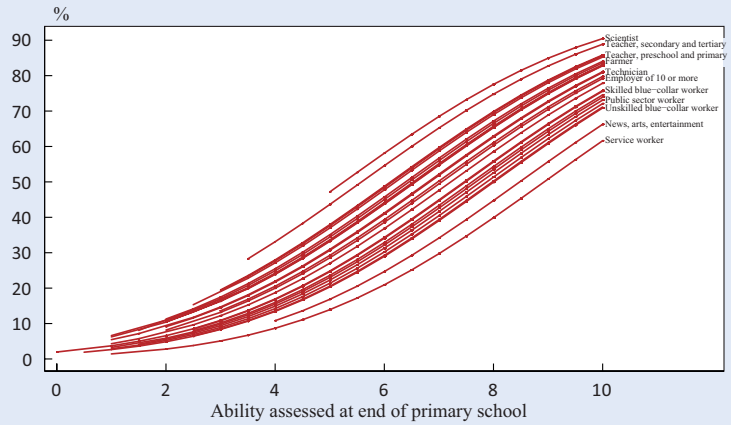
The implications of early tracking are very different for different social groups, because the "quality" of students that plays a crucial role in arguments supporting simpler schooling is very closely linked to family background. Test score differences between children at the extremes of the distribution of the number of books at home, an observable proxy of a family's socio-economic level, can be as much as three times what students on average learn during a whole school year (this is the case in England, the country with the largest such differential among those studied by Hanushek and Wößmann, 2010).

Family background is extremely relevant not only to school results, but also to university enrolment, and to further socio-economic success. Figure 3.1 shows that this is also very much the case in France, a country

Figure 3.1

Tertiary school enrolment probability predictions in France

by student´s achievement at age 10 and occupation of the family´s head[a)]



[a)] Lines span observed achievements within each family type.
Source: EEAG calculations on Panel d'élèves du second degré, recrutement 1995, 1995–2011, DEPP – Ministère de l'Éducation (producer), ADISP–CMH (distributor).

where family background influences test scores relatively mildly (Hanushek and Wößmann, 2010, report a difference equivalent to about one school-year between households with the most and the least books at home). It is not surprising to see in the figure that children hailing from better backgrounds are, on average, more competent at age 10, when they have already been able to take advantage of their family's cultural background. It is more unsettling to see that many children from underprivileged families are just as smart as their peers at that age but, even in a relatively egalitarian and meritocratic school system, socio-economic privilege strongly determines the probability of reaching advanced education opportunities. If the family's head is a scientist or a teacher, a child assessed at ability level 5 on a 1–10 scale has a 50 percent probability of enrolling in higher education, a key step to further economic and social success for him and his children; while a similarly clever child has less than a 10 percent probability of success when the head of his family is unemployed, or fails to report any occupation. The ability of some children in the latter situation is scored at 9 or 10, but even they have only a 50 percent chance of success. If it is so difficult for the smart children of disadvantaged families to reach higher education, not only is inequality higher and more persistent, but society is also missing an opportunity to exploit the available talent pool.

3.4.2 The role of tracking

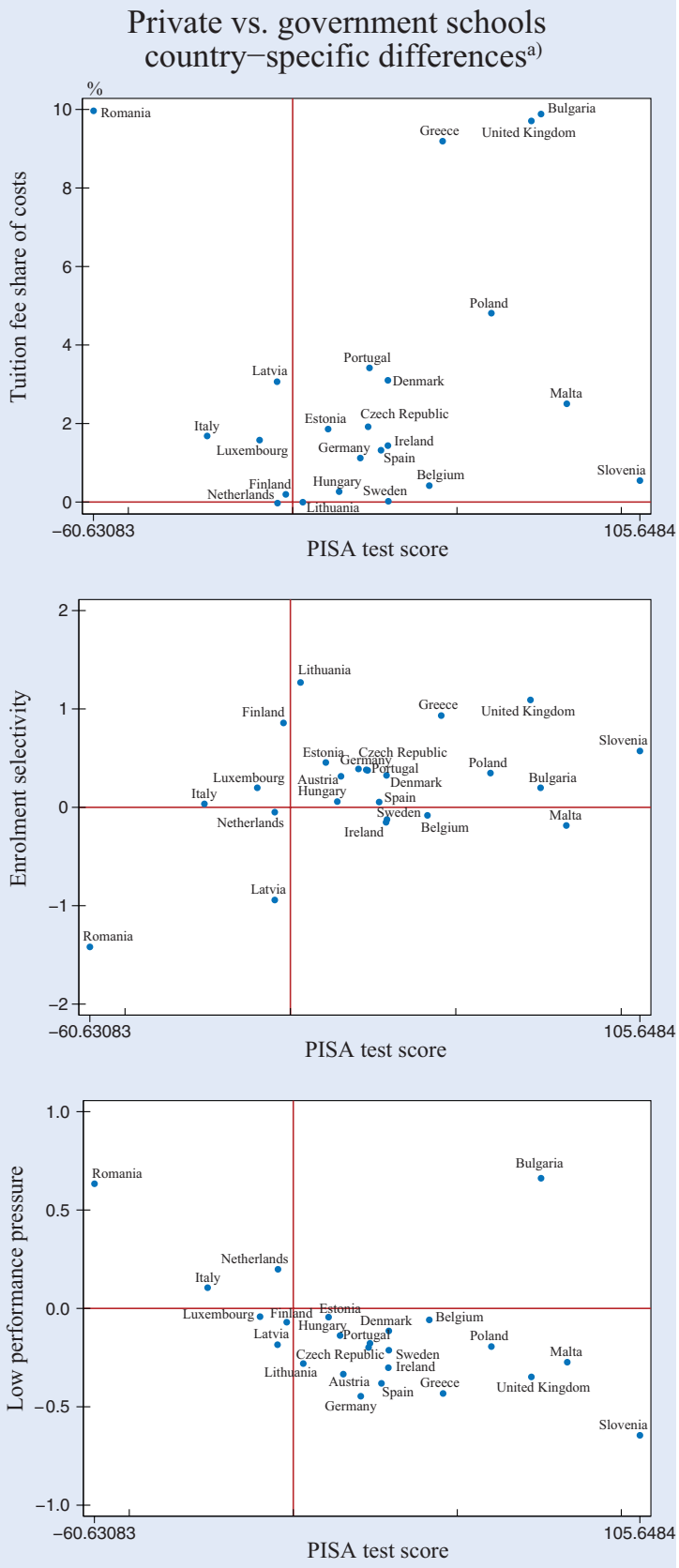
The relevance of socio-economic background varies across countries in ways that both theory and evidence suggest depend on the age at which secondary schools students are "tracked" across more or less demanding curricula. Because tests can easily misjudge talent, one's ability to learn or to perform can only be assessed by actually trying and possibly failing to do so. And because children from low-income households can hardly afford to try and fail, school systems that either allocate or allow self-sorting of youth across different programmes tend to aggravate and perpetuate socio-economic inequality.

This mechanism influences income inequality and socio-economic status persistence at two levels (Brunello and Checchi, 2007). Early tracking makes it more difficult for the brightest among underprivileged students to reach higher education, but can make it easier for the average underprivileged student to obtain training and valuable intermediate skills. In countries with earlier tracking, it is not impossible, but typically quite difficult for students to move from less demanding to more demanding academic tracks if they do well. Still, the vocational upper-secondary school tracks do impart both general and practical skills, and prepare their typical students to perform strongly in a society that values jobs well done. In England, conversely, secondary schools target the rather specialised academic skills assessed by A-level exams, and the absence of well-developed and articulate vocational tracks leaves too many youths uneducated, leading to calls for education reforms aimed at developing character, resilience and communication skills, rather than just pushing children through "exam factories" (Corrigan, 2013).

3.4.3 The role of private schools

The percentage of students attending private schools varies widely in the *OECD Education at a glance* statistics, which distinguish between schools controlled by a non-government organisation but largely funded by public money (among the EU member countries of the OECD Belgium, Spain, Denmark, and France feature double-digit percentages of primary and secondary student enrolment in such schools), and independent schools for which over 50 percent of core funding is private (these schools enrol over 10 percent of upper secondary students only in Poland and Portugal).

Figure 3.2



[a)]Average PISA 2009 test scores and prevalence of some school characteristics.
Source: Bertola and Checchi (2013).

The appeal of private schools is related to the intensity of tracking, because in a comprehensive system privileged families may prefer to segregate their children in socially selective schools. Not only the size, but also the characteristics and role of the private school sector differ significantly across countries, including those within the EU.

Figure 3.2 plots some evidence for EU member countries covered by the OECD survey. In the top panel the test results are not correlated across countries with a measure of private funding: while privately managed schools typically do cover more of their costs with user fees than government schools, their students do not always perform better in the standardised PISA achievement test. This would be quite surprising if the best students were selected into a private sector that supplies better education: performance should be stronger in private schools, all the more so where the percentage of school funding from fees or charges paid by parents differ more across private and government schools.

The middle and bottom panel of the figure show possible reasons for this. PISA test scores quite intuitively tend to be better in more demanding schools, which attract more capable students and make them work harder. But private schools are not always more selective and more rigorous than public schools: in other countries, such as Italy, the opposite is the case (for definitions and formal evidence).

Government-organised schools may cater for low or high ability students, leaving different market niches to be filled by privately-funded schools. School resources can be configured in ways that complement individual

ability, or remedy its deficiency. If public schools are tailored to suit average or median ability, there is room for expensive private schools that use their additional resources to cater for better students. But students in expensive private schools will be less talented when those schools use their autonomy in ways that attract slow learners away from demanding government schools.

3.4.4 Funding, choice, and control

Like vouchers and other schemes that allow families to choose between schools, the public funding of autonomously operated schools can relax the borrowing constraints that exclude brilliant, but poor students from better schools. More or less stringently regulated privately-managed schools are fully funded by the government in Austria, the Czech Republic, Finland, Germany (where federal states provide varying amounts of funding to private schools), Hungary, Iceland, Latvia, Lithuania, Netherlands, Norway, Slovak Republic, Serbia, Slovenia, and Sweden. Allowing the school system to cater more effectively to the distribution of heterogeneously skills can improve equality of opportunities, while simultaneously enhancing the productivity of society's educational resources. But if high-quality government schools attract the more capable segment of the student pool, then the public funding of privately-organised education benefits students who are not rich or dumb enough to purchase unsubsidised remedial education. While the resulting redistribution across differently wealthy and differently able individuals may be politically attractive in some cases, the public funding of private schools need not enhance the overall equality of opportunities and efficiency in countries where governments supply high-quality education (Bertola and Checchi, 2013).

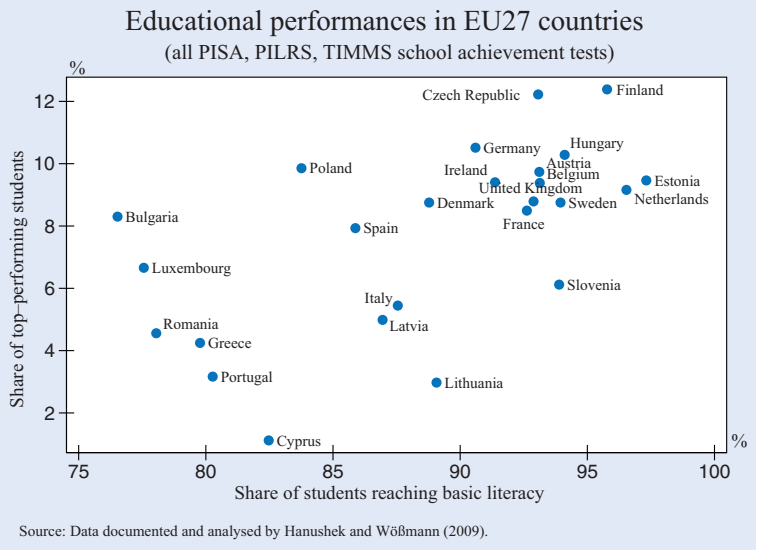
In France, the state pays and certifies all teachers in private schools that accept strict curriculum regulation, and for this reason French public and private schools are not flagged differently in PISA data. Because families may choose to enrol their children in private schools, rather than attend their local public schools, private school enrolment is to some extent driven not only by religion (most state-funded private schools are Catholic), but also by an avoidance of underprivileged classmates. Interestingly, the relationships illustrated in Figure 3.1 between achievement and family background are a little weaker at private schools, where parental education is also less relevant to student performance: children of culturally disadvantaged families who can afford to pay private school fees (which are small, but not negligible in France) appear to find more suitable help in private schools than in public schools where teachers have passed more stringent tests, and are more demanding, but less helpful (Bertola, 2015).

When public school teachers are academically competent, but have little incentives to help students who do not come from well-educated families, families that are culturally poor but financially unconstrained may pay for the remedial education they cannot obtain from state schools in private schools. In the English system, public schools are administered by local authorities, and families have limited freedom in choosing among them (Burgess et al., 2015). "Academy" or "Free" schools are semi-autonomous state-funded schools, and their appeal and performance at least partly reflects the fact that their management is more likely to serve students' (rather than teachers') needs.

While families' freedom to choose their children's school exerts performance pressure on educators, it can be problematic in practice. In Sweden publicly-funded, privately-operated schools cannot select applicants, and have to accept students on a first-come, first-served basis. As a result, demanding families have to apply for admission to "good" schools (attended by children of other demanding families) as soon as a baby is born. It is natural to doubt that choices made so far in advance can be based on reliable information, and to wonder whether choice really improves education quality in a system where good schools are good only because children hail from good backgrounds, rather than because of their teachers' quality and effort. Yet, it is difficult to control the natural and possibly detrimental tendency towards school segregation. Even in countries that restrict school choice by linking enrolment to residence, and aim to provide uniform education everywhere, similar mechanisms are at work through residence choices. Families that move to areas where schools are good raise housing prices. As housing becomes less affordable for poorer families, a self-reinforcing loop tends to segregate population segments geographically, and the opportunities offered by nominally similar, but really different schools tend to perpetuate those differences across generations. This mechanism is empirically detectable in France (Fack and Grenet, 2010), and plausible in any country where population is segmented, for exam-

ple, according to national origin or other cultural characteristics. It may be particularly relevant when, as is currently the case, European countries are receiving unprecedented numbers of asylum seekers. Allowing them to cluster in specific areas would endanger the broader cultural homogeneity that is essential to social and economic interactions within every country.

Figure 3.3



Source: Data documented and analysed by Hanushek and Wößmann (2009).

3.5 Schooling outcomes and reforms

Institutional differences are significantly related to schooling outcomes in ways that can be interpreted sensibly in the light of Section 3.2's outline of theoretical mechanisms. International evidence suggests that early tracking increases educational inequality and might perhaps reduce mean performance, which is enhanced by outside evaluation (typically in the form of standardised exams) of autonomous teachers and school administrators (Hanushek and Wößmann, 2006, 2010). Competition from private schools can also offer appropriate incentives to autonomous school choices, all the more so when privately-operated schools receive more generous public funding. For if good students, no matter how poor, may indeed choose private schools, competition forces public schools to use the degrees of freedom they are allowed in the production of education. The association of student achievement with school resources – whether measured in terms of expenditure, or of class size and teacher-student ratios – is empirically much weaker than that with socio-economic backgrounds. Teacher education and salaries do have a positive effect, especially when the class size is large. How much the teachers are paid does matter to the selection of good personnel, but motivation and respect matter more. And what they are made to do, particularly through the accountability implied by standardised exams and parental freedom of choice, may matter even more.

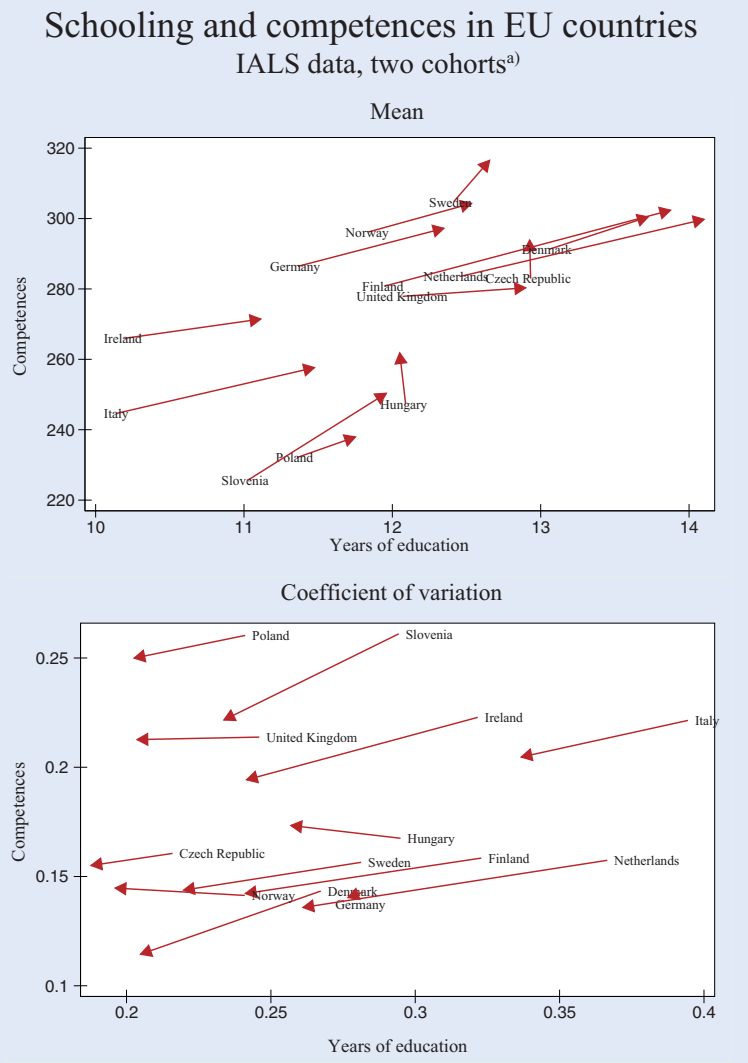
Here, we briefly outline and discuss some aspects of the wide cross-country heterogeneity of education outcomes across EU member countries. While very many other structural and policy features differ across and within those countries, these indicators are certainly related to the structure of countries' education systems on the one hand, and to the level and distribution of their citizens' income on the other.

3.5.1 Education across and within EU countries

Figure 3.3 reports summary indicators of student competencies in an international survey (PISA for 15 year-olds, PIRLS and TIMMS for 4th and 8th grade students). There are obviously very wide gaps across countries in the actual skills of individuals at similar stages of their education career. While better education appears to lead to faster economic growth on average (Hanushek and Wößmann, 2009), the competences assessed by international surveys are not obviously correlated with per-capita income. Some countries (such as Italy until the 1980s) have much higher incomes than one would expect on the basis of their students' school performance, presumably because formal education is not as complementary to their production structure as in other countries.

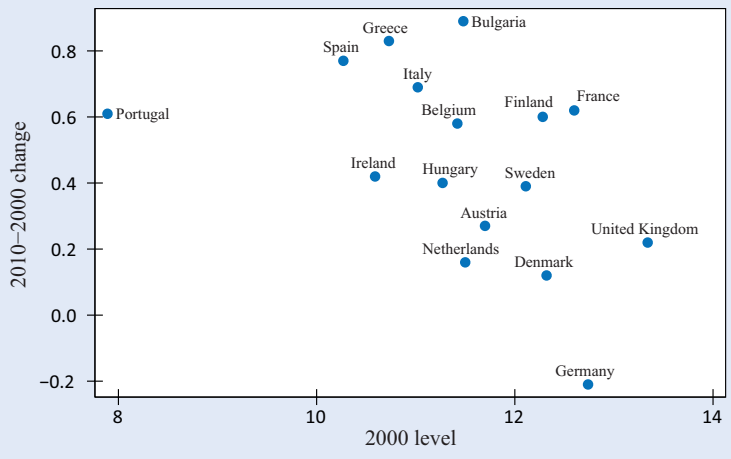
These statistics, which report the shares of more or less competent students, document that educational outcomes vary within as well as across countries. They obviously also vary over time, and an interesting source of relevant information is the International Adult Literacy Survey (IALS) that was collected in 1994, 1996, and 1998, and can be used to measure the number of years of formal schooling and skills (in terms of performance on a literacy test) of adult individuals whose schooling experience dates back to many years in the past.

Figure 3.4



[a)] Arrows from generations born in 1950–54 to those born in 1965–69.
Source: Meschi and Scervini (2014).

Figure 3.5



Source: Morrison and Murtin (2009).

Figure 3.4 displays the mean of years of education and of competences for individuals born in two different periods for all available EU countries, and also the coefficient of variation of these indicators. There is a high degree of heterogeneity across countries in both the duration of education careers and in the resulting competences (OECD's more recent PIAAC survey of adult competences detects similar cross-country patterns, particularly confirming the peculiarly low competences of Italian adults). The two indicators are positively related, but the same number of school years results in much higher competences in Nordic countries.

Interestingly, and perhaps as a result of differently organised education, the countries with lower mean competences and education years often also display higher levels of variation in these indicators across their citizens. Denmark and Germany, for example, are obviously very different in many respects: but if only their education systems were different, then one would conclude that the Danish system delivers both higher and more equal education outcomes than its German counterpart. Over time, however, cohorts born in later years in all countries feature both higher means and (except in Hungary) lower coefficients of variation of these education outcomes.

Heterogeneity of education is very high within as well as across EU countries, but does tend to decrease over time. Figure 3.5 shows that, as a result of both cohorts' education and demographics, average years of education in the working-age population converge across the EU countries for

which information is available. Between 2000 and 2010, 0.11 years of the initial educational difference were erased on average across the countries shown (0.20 if Portugal is excluded).[1] This process would obviously take a long time to substantially reduce the wide heterogeneity observed in 2000 (when average years of education ranged from 10 years in Spain, and below this figure in Portugal, to about 13 years in Germany and in the United Kingdom). However the underlying socio-economic trends, unlike the income fluctuations generated over the same period by the crisis, do indicate that EU countries tend to become more homogeneous over time.

3.5.2 Reform pressures and resistances

European school systems have been converging recently, but remain very different. It would be too complex and difficult to reconstruct the historical origins and discuss the implications of this heterogeneity. It is somewhat easier to discuss, in light of the insights and facts reviewed in the previous sections, the motivation and implications of reforms like those outlined in the introduction, focusing in particular on their tendency to invert previous trends privileging comprehensive education, and to emphasise practical and vocational education instead.

Historically determined schooling systems are difficult to reform, and the most important effects of any reform are not realised for a long time. However, because the pros and cons of school systems depend on circumstances, school reforms are endlessly debated among individuals and families whose circumstances differ, and occasionally implemented when society's own circumstances and perspectives change. The financial and public debt crises of 2008 and 2010 certainly did influence European countries' education budgets, as well as the appeal of their different education system structures.

Between 2009 and 2011 education expenditure fell continuously in Ireland, in Spain, and in Italy: these are the only 3-year spells of declining education expenditure in Eurostat data, and were plausibly a result of the euro crisis, as during the same three years, education expenditure always increased in Germany, France, and Luxembourg (EACEA, 2012).

And while comprehensive schooling was perceived as adequately providing the general skills to adapt new technologies and perform new jobs in flexible, evolving labour markets before the crisis, the strong performance of countries with "dual" track education systems triggered a reassessment of this view. Cross-country differences in the labour market situation of youths had always depended on educational system characteristics, and became much more pronounced as Germany and its neighbours withstood the crisis far better than other countries (EEAG, 2013, pp. 76–7). The implicit jobs-for-life promise of the Germanic systems of dual vocational education and tightly regulated occupational and wage-setting schemes seemed obsolete before the crisis, when academic skills and a flexible labour market appeared better equipped to adapt to frequent and unpredictable shifts in the demand for skills. But a crisis where flexibility and financial markets showed their shortcomings vastly increased its appeal. Dual education systems have had the advantage of leading to lower rates of youth unemployment. This is the reason why even the United States under President Clinton seriously discussed the introduction of a German-style dual education system as a possible way to increase average labour productivity and integrate disadvantaged youth into civil society.

Of course, it is difficult for other countries to simply adopt a dual educational structure that may not necessarily fit their other institutional and structural characteristics as well as it does in Germany, Austria, or Switzerland. The costs and benefits of vocational education need to be shared between the public and private sector in possibly unfamiliar ways, and should be assessed over a lengthy and uncertain transition period. These simple considerations may nevertheless explain why the reforms briefly outlined in the introduction above all tend to introduce practical aspects in more or less effective academic curricula, even if their budgetary implications are negative when the government aims to stimulate demand (as in Italy), or positive when the government adheres to the austerity paradigm (as in Finland). The discussion above also suggests reasons why reforms tend to introduce managerial control over public school teachers, and makes it unsurprising that reforms encounter two types of opposition: from those who, even under the country's new circumstances, support more egalitarian comprehensive education on the one hand, and from teachers

[1] The small decline in the average years spent in education in Germany is not due to recent reforms, which have reduced pre-tertiary schooling from 13 to 12 years in most states as of 2012. It began already in the 1990s (German reunification should not be influential because the data claims to refer throughout to the same territory). In the IALS data of Figure 3.4, years of education are higher for those born in 1940–44 than for those born in the following 10 years, and increase over younger cohorts.

defending both academic curricula and their own work habits on the other.

3.6 The role of EU institutions

Should some central authority or collective agency finance education, restrict choices, collect and certify information at the EU level? As discussed above, the answers are not clear-cut at the country level, because they depend on structural factors and points of view. However, the same questions and the same qualified answers are appropriate when considering policy issues across tightly integrated nations, and many aspects of the policy problem interact with European integration.

3.6.1 Cultural homogeneity

Homogeneous and publicly-provided elementary schools were a backbone of national projects, and mutually reinforced the cultural convergence originating from countrywide economic interactions. A suitable and possibly homogeneous cultural level is beneficial across national borders when international mobility becomes easier. EU institutions are, in fact, active in facilitating some relevant cultural exchanges. This is the explicit goal of such exchange programmes as "Erasmus" for university students and "Erasmus+" for secondary school teachers, administered by EACEA, the EU's Education, Audiovisual and Culture Executive Agency.

3.6.2 Monitoring

EACEA also monitors and documents the bewildering array of current configurations and ongoing reforms of education systems on its Eurydice website, which is the source of much of the information reported in the previous sections and interpreted in light of theoretical issues and broader international evidence. This information, and that collected and analysed by the OECD's Directorate for Education and Skills, is obviously very valuable, not least because it can foster cross-country "yardstick" competition. Families can hardly choose to send their children to school in other countries, and international competition among systems cannot exercise the same performance pressure exercised by private schools on public schools within countries. But families, and their political representatives, can in principle use information from other systems to gauge their own system's performance, and act accordingly.

As is the case within countries, this mechanism could be strengthened by availability of standardised exam results. As usual, when discussing EU issues it can be useful to consider how similar issues are addressed in the Unites States, a much older economic and monetary union with a solid federal layer of government. In the Unites States, states can adopt the "Common Core State Standards" specification of expected achievement at each grade level of elementary and secondary school, and good results in tests can give them access to some federal funds. As many as 42 states have adopted these standards since they were introduced in 2010, but increasingly many of these states (most recently Massachusetts in November 2015) are rejecting them for reasons that would certainly also be relevant in Europe: the achievement tests cover a curriculum that is necessarily very limited, with a danger of "teaching to the test" and neglecting broader, but less easily measured educational achievement, yet too uniform to fit states' diverse socio-economic circumstances. Conservative supporters of state autonomy, supported by teacher unions resenting evaluation of school performance by abstract and imprecise tests, have even reversed the initial adoption of Common Core standards in Massachusetts, replacing them with tests that are locally designed and administered.

3.6.3 Coordination

There are obvious reasons not to envision homogenous schooling across vast and diverse regions: diverse school systems, each homogeneous within, are difficult to design, and their boundaries need not coincide with those of countries or regions. In the education field, in fact, the European Treaties do not envision any "harmonisation of the laws and regulations of the Member States" through directives. As in welfare and labour policy, the historically determined configuration of national education systems is too heterogeneous and politically important to be subject to the same degree of harmonisation as goods market regulations, or to unification as in monetary policy.

European "Bologna process" guidelines exist for higher education: member countries and single institutions, on a voluntary basis, can harmonise the dura-

tion and, to some extent, the content of university curricula, making it possible to implement the ECTS university credit transfer system. The role of EU policies is similar, but even less significant in the vocational education and training aspects on which this chapter focuses. CEDEFOP, the European Centre for the Development of Vocational Training, is tasked and funded by the EU to study "[…] how transparency, comparability, transferability and recognition of competences and/or qualifications, between different countries and at different levels, could be promoted by developing reference levels, common principles for certification, and common measures, including a credit transfer system for vocational education and training." The 2010 Bruges communiqué, agreed upon in the midst of the euro crisis, envisioned a series of national actions aimed at improving, certifying, and internationalising initial and continuing vocational education, with some support and information activity at the EU level. CEDEFOP is in charge of much of the relevant coordination and monitoring action, and has guardedly assessed developments towards the 2014 first-stage objectives as a "multifaceted process which shows clear signs of progress, but with more work to do."

3.6.4 The pros and cons of centralised European education

Common and comparable standards would certainly contribute to European labour market integration: the first draft of the Bolkestein directive, meant to remove international barriers in services markets, would have forced automatic recognition of exactly those professional qualifications that, in tracked systems, are granted by vocational programmes and apprenticeships. Rejection by the European Parliament and subsequent dilution of the directive was partly motivated by the defense of qualification holders within each country against "Polish plumber" competition, opponents also invoked the need to avoid the deterioration of quality standards: in the absence of European guidelines, each country might have incentives to grant qualifications leniently to individuals who would work elsewhere.

Like almost everything (especially in matters of education), harmonisation has costs as well as benefits. Competition among standards has advantages in terms of accommodating diversity and allowing experimentation, and different standards may indeed be appropriate for different geographically segmented services markets. The relevant heterogeneity is in fact larger within than across European countries. In Germany, for example, regional cultural diversity arguments are considered so strong that there is not even a federal budget for schooling or universities.[2] While there are good reasons for different educational systems to coexist in each country and in Europe, economic and cultural interactions undoubtedly benefit from some standardisation (in language skills, for example, or of the way numbers are handwritten or typed using points or commas as a decimal separator), and basic economic reasoning implies that public funding of education should in principle be pooled and harmonized throughout areas where labor mobility lets an integrated labor market be the ultimate employer of all individuals, wherever they were educated.[3] In practice, of course, labour mobility is not as intense within culturally heterogeneous countries (let alone across the borders of European countries) to make this a serious concern.

3.7 Conclusion

Education is too important, and its quality is too difficult to assess, to be left to markets. It has some of the features of a public good, in that it provides youth with basic social skills and shared values: this always was, and certainly remains, important at the country level, especially as many are immigrants or children of immigrants, and extends across country boundaries as socio-economic interactions span the European continent and beyond. This motivation for public policy in education is strongest at the primary level, but extends to later ages as socio-economic interactions become more complex and require more sophisticated skills.

Whether and to what extent and level different types of education should be publicly funded and organised, rather than left to individual choices and markets, depends on the availability of accurate information, as well as on financial market imperfections. To improve on market outcomes, the public provision

[2] Wößmann (2007) documents within-Germany patterns of institutional features and school outcomes that are consistent with international evidence: test scores are less correlated to socio-economic status in states where tracking begins at an older age and, while German private school results are not better than those of public schools, their presence is positively associated with system performance at the state level.

[3] Locally financed education of mobile workers is obviously exposed to race-to-the bottom tensions, and might legitimate demands for a refund of the cost of migrating individuals (as was the case, before Germany's reunification, when citizens of the Democratic Republic relocated to the Federal Republic).

and regulation of education have to rely on effective administrative tools. This is a more likely outcome, both in theory and empirically, when public providers are subject to competitive pressure.

The choice of whether to allocate youth to vocational and academic tracks, or offer comprehensive education to all, depends on the extent to which society believes individual talents are observable early and should be allowed to influence life outcomes, even when they reflect the luck of being born to well-educated parents, as well as on implementation details.

Tracking children as young as ten into different academic streams may in theory tailor teaching to individual skills, but in practice tends to exclude from higher education many able students from a labour class background. And while it can reduce youth unemployment and make well-paid jobs with favorable social status available to underprivileged students, it tends probably to widen and certainly to perpetuate cultural inequality. In Germany, for example, both firm-based and school-based vocational education tracks are not only highly occupation-specific, which reduces their students' adaptability to labor market developments, but also strongly segmented by family origin and achievement (Protsch and Solga, 2015). To address these issues it is advisable to delay tracking to about age 15 and ensure that vocational students are equipped with suitably flexible cultural skills. Conversely, a comprehensive education system that keeps all youth together only effectively reduces cultural inequality if schools are geared towards helping students from disadvantaged backgrounds. This is more likely when teachers are suitably selected and are given appropriate pedagogical incentives. Otherwise, poor performance in academic education leads to long spells of unemployment or unskilled employment opportunities.

Both within and across countries, the advantages and disadvantages of differentiation across schools and school systems depend on circumstances. Practically-oriented teaching lets students learn concepts working on real-life problems, but may not let them develop the ability to face other problems as they arise. Because the pros and cons of choices depend on the economic environment in which they are made, countries should not rush to imitate configurations that did well in the recent crisis. The good youth unemployment performance of countries with dual education systems was also related to those countries' industrial structure and to the character of shocks. Just like different occupations may fare better or worse in the face of business cycles and structural change within a country, so across countries different ways of organising education and production may take turns in grasping good opportunities.

While competition among systems has advantages in terms of accommodating diversity and allowing experimentation, there are also advantages to the mandatory enforcement of at least minimum standards. It might therefore be advisable for Europe to develop a supranational framework that buffers unbalanced cross-country impacts on the one hand, and eases mobility across occupations and national borders on the other. Because the pros and cons of different systems differ drastically across different households, however, education policy is a politically-charged issue that cannot be assigned to the EU in the absence of effective supranational political processes. While the potential benefits of a European education policy are obvious it is safe to presume that, for the foreseeable future, European-level measures shall remain "voluntary and principally developed through bottom-up cooperation," and ineffective.

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