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**The Potential Economic Benefits of  
Education of Migrants in the EU**

EENEE Analytical Report  
Prepared for the European Commission

Holger Bonin (*IZA*)

MARCH 2017

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**European Expert Network on  
Economics of Education (EENEE)**

**The Potential Economic Benefits  
of Education of Migrants in the EU**

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**The Potential Economic Benefits  
of Education of Migrants in the EU\***

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28 February, 2017

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## **Executive Summary**

While international mobility has developed into a major driver of population change in the European Union, people with immigrant background in the Member States continue to be placed in disadvantaged socio-economic positions. They are often hampered by a lack of host country specific skills and knowledge. Many native-born children of immigrants – the “second generation” – obtain lower levels of educational achievement than those of non-immigrant background. In consequence, migrants tend to show lower labour market activity rates and income levels compared with people without immigrant background. They also tend to be exposed to higher risks of unemployment and depend on social welfare more often. These stylized facts indicate that the provision of proper education to people with immigrant background is an important element in policies for building a more inclusive society in Europe. It may also help enhance competitiveness of the European knowledge-based economies.

The purpose of this report is to provide an overview about the potential economic returns to education of migrants at the aggregate level. It covers the current state of economics research as regards returns in three different areas: economic output and growth, labour markets, and governmental budgets. The challenge in doing so is that populations with immigrant background and their economic stance are hugely diverse across Member States, and that quality empirical research findings on the topic in sum are still fairly limited, fragmented, and case specific. Hence there is little scope for meaningful cross-country comparisons and all-encompassing cost-benefit analyses in this field.

The broad picture emerging from the survey is as follows. First, to the degree that advances in human capital raise individual productivity, they also generate higher economic output. In addition, lasting positive growth effects may arise from skilled people with immigrant background fostering innovation through enhanced diversity, entrepreneurship, or international investment and trade, yet there are no precise estimates concerning the size of these effects. Second, the main consequence of education of migrants on labour markets, according to the evidence, is significantly improved employment and income opportunities for the migrants themselves. Besides, the labour market position of low-skilled natives may improve, and thus earnings inequality within the non-immigrant workforce may fall, when people with immigrant background become better qualified. But such effects are probably quite small in comparison to the direct effect on the non-immigrant workforce. Third, as regards government budgets, the available evidence supports the view that current as well as lifetime net contributions of people with immigrant background strongly rise with education levels.

The potential economic gains constitute a rationale for devoting public resources to the education of migrants, especially to foster human capital development of socio-economically disadvantaged migrants without sufficient resources. First-generation immigrants and their descendants partly require special educational support. A foremost challenge is bridging language gaps. Command of the host country language is a pre-condition for economic integration and further accumulation of host country specific capital. Another challenge is compensating for loss of human capital that is not transferable across borders, and provision of cultural capital that is specific to the host country – knowledge, skills, competencies and values – that lays a basis for rapid learning and acculturation in a foreign environment.

Empirical research on the causal effects and efficiency of education policies targeting people with immigrant background is quite limited so far. Early intervention appears to be the most efficient strategy to advance educational outcomes. This demands directing attention to tutoring and special tuition of children with immigrant background in kindergartens and elementary schools, but also to the design of school systems which may be more or less conducive to social inclusion of disadvantaged pupils. Early intervention also means addressing the professional qualification needs of adult immigrants upon arrival, especially if they arrive through non-economic immigration channels, like the humanitarian immigration or family reunification channels. Well-targeted measures in this realm require reliable recognition of the formal certificates and more importantly of the skills that people carry from abroad. Considering higher education, in particular counselling and financial aid for low-income students may foster enrolment and completion rates of the socio-economically disadvantaged.

In view of the large diversity of populations with immigrant background and their achievements across the EU Member States, it is obvious that a “one size fits all” approach to education of migrants in Europe would be inappropriate. Instead, tailor-made local solutions are needed. Ideally, these should be embedded into a comprehensive strategy working against economic and social exclusion of people with immigrant background. Immigration policies securing residence status, labour market policies removing employment barriers, or town and country planning preventing ethnic segregation, for example, may help render specific interventions in the domain of education of migrants considerably more effective.

The returns to public resources may not be immediately visible. They tend to grow over time and may become substantial only over the longer term. This makes education of migrants a social investment case: the expected future returns could well justify public resources devoted to it today.

## **Executive Summary (German)**

Während sich internationale Mobilität zu einem maßgeblichen Treiber einer veränderten Bevölkerungsstruktur in Europa entwickelt hat, sind die Bevölkerungsgruppen mit Migrationshintergrund in den Mitgliedstaaten weiterhin sozioökonomisch benachteiligt. Sie werden häufig durch den Mangel an spezifischen Fähigkeiten und Wissen des Gastlandes gehemmt. Viele im Gastland geborene Kinder von Immigranten - die „zweite Generation“-erreichen ein geringeres Bildungsniveau als die Kinder ohne Migrationshintergrund. Das hat die Folge, dass Migranten geringere Arbeitsmarktaktivität zeigen und ein niedrigeres Einkommen beziehen als Personen ohne Migrationshintergrund. Außerdem sind sie tendenziell einem höheren Risiko von Arbeitslosigkeit ausgesetzt und beziehen öfter Sozialhilfe. Diese stilisierten Fakten legen nahe, dass die Bereitstellung von angemessener Bildung für Personen mit Migrationshintergrund ein wichtiger Bestandteil ist, um eine integrativere Gesellschaft zu fördern. Es kann auch dazu beitragen, die Wettbewerbsfähigkeit der europäischen, wissensbasierten Wirtschaften zu verbessern.

Das Ziel dieses Berichtes ist es, einen Überblick über die möglichen Bildungsrenditen von Migranten auf aggregierter Ebene zur Verfügung zu stellen. Dies umfasst den derzeitigen Stand der wirtschaftswissenschaftlichen Forschung zu Bildungseffekten auf drei Gebieten: wirtschaftliche Produktion und Wachstum, Arbeitsmärkte, und öffentliche Haushaltsausgaben. Die Schwierigkeit dabei ist, dass sich der Bevölkerungsanteil der Personen mit Migrationshintergrund und deren wirtschaftlicher Status über die EU-Mitgliedstaaten hinweg stark unterscheidet und dass verlässliche empirische Forschungsarbeit zu diesen Themen immer noch beschränkt, bruchstückhaft und sehr spezifisch ist. Daher ist ein aussagekräftiger Vergleich zwischen den Ländern und allumfassende Kosten-Nutzen Analysen stark begrenzt.

Das gesamtheitliche Bild, das von der Migrationsökonomik gezeichnet wird, lässt sich wie folgt beschreiben. Erstens, in dem Maße wie das Humankapital steigt und deren Produktivität erhöht, wird auch eine höhere Gesamtwirtschaftsleistung erzeugt. Zusätzlich können nachhaltige, positive Effekte durch qualifizierte Immigranten entstehen, welche Innovationen durch mehr Vielfalt, Unternehmertum oder internationale Investitionen und Handel fördern. Dennoch gibt es noch keine präzisen Schätzwerte zu diesen Effekten. Zweitens, hat die Hauptkonsequenz höherer Bildung von Personen mit Migrationshintergrund auf dem Arbeitsmarkt signifikant bessere Einstellungs- und Einkommensmöglichkeiten für die Migranten selbst verbessert, so die Forschung. Darüber hinaus können sich die Arbeitsmarktbedingungen der gering qualifizierten einheimischen Bevölkerung verbessern,

und dadurch Einkommensungleichheiten zwischen den einheimischen Arbeitskräften gesenkt werden, wenn Personen mit Migrationshintergrund besser ausgebildet werden. Jedoch sind diese Effekte voraussichtlich sehr gering im Vergleich zu dem direkten Effekt auf die einheimischen Arbeitskräfte. Drittens, werden wohl öffentliche Haushalte durch gegenwärtige und zukünftige Nettobeiträge der Personen mit Migrationshintergrund mit dem Bildungsstand stark ansteigen, so vorhandene Studien.

Diese potentiellen wirtschaftlichen Erträge sind ein guter Grund um öffentliche Mittel für die Ausbildung der Migranten zu verwenden, insbesondere um Humankapital bei sozioökonomisch benachteiligten Migranten zu fördern, die selbst nicht die Möglichkeit dazu haben. Dabei benötigen Migranten der ersten Generation zum Teil aber spezielle Unterstützung. Zu aller erst geht es darum, Sprachlücken zu schließen, da die Beherrschung der Sprache des Gastlandes eine Voraussetzung für wirtschaftliche Integration und der Aneignung von landesspezifischen Kenntnissen ist. Eine weitere Aufgabe ist es, die Verluste des Humankapitals, das nicht über die Landesgrenzen hinweg übertragen werden kann, auszugleichen, und für das Gastland spezifisches kulturelles Kapital beizubringen – Wissen, Fähigkeiten, Kompetenzen und Werte – welches die Grundlage für schnelles Lernen in einem ungekannten Land bildet.

Empirische Forschung zu den kausalen Effekten und der Effektivität von Bildungsmaßnahmen für Personen mit Migrationshintergrund sind, wie sich herausstellt, sehr beschränkt. Dennoch zeigt sich, dass früh angesetzte Maßnahmen die effizienteste Methode sind, um Fortschritte bei der Ausbildung zu erzielen. Man sollte demnach die Betreuung und spezielle Unterrichtung von Kindern mit Migrationshintergrund im Kindergarten und in der Grundschule hervorheben, aber auch die Konzeption von Schulsystemen beachten, die sowohl mehr, als auch weniger förderlich für die Eingliederung von benachteiligten Schülern sein können. Frühe Maßnahmen beziehen sich auch auf, die beruflichen Qualifikationsbedürfnisse von erwachsenen Immigranten von Beginn an, insbesondere wenn Migranten nicht aus wirtschaftlichen Gründen, sondern mit humanitären Programmen oder zur Familienzusammenführung ankommen. Gezielte Maßnahmen auf diesem Gebiet erfordern eine zuverlässige Anerkennung von Abschlüssen und noch wichtiger, der Fähigkeiten, die Immigranten aus dem Ausland mitbringen. Vor allem im höheren Bildungsweg, können Beratung und finanzielle Unterstützung von Studenten mit niedrigem Einkommen als förderlich für Einschreibungs- und Abschlussquoten sein.



Im Hinblick auf die großen Unterschiede der Bevölkerung mit Migrationshintergrund und deren Leistungen über die verschiedenen EU-Mitgliederstaaten hinweg, ist es offensichtlich, dass eine "Universalmethode" zur Bildungsfrage von Immigranten nicht angemessen wäre. Stattdessen werden zugeschnittene lokale Lösungen benötigt. Idealerweise sollten diese in eine umfassende Strategie eingebettet werden, die eine wirtschaftliche und soziale Ausgrenzung von Personen mit Migrationshintergrund verhindern soll. Politikmaßnahmen zur Sicherung des Aufenthaltsstatus, Arbeitsmarktmaßnahmen zur Beseitigung von Beschäftigungsbarrieren oder kommunalen- und bundesweite Planung zur Verhinderung ethnischer Segregation können gezielte Eingriffe im Bereich der Bildung von Migranten deutlich effektiver gestalten.

Die Erträge aus öffentlichen Investitionen werden nicht sofort sichtbar sein. Die Erträge steigen mit der Zeit und werden voraussichtlich erst in der langen Frist ein bedeutsames Ausmaß haben. Deshalb stellt die Ausbildung von Immigranten auch eine Sozialinvestition dar: die erwarteten zukünftigen Gewinne können die heutigen dafür aufgewendeten Ausgaben sehr gut rechtfertigen.

## **Executive Summary (French)**

Tandis que la mobilité internationale est devenue l'un des moteurs des changements démographiques dans l'Union Européenne, les populations immigrées dans les Etats-Membres continuent de se trouver dans des positions socio-économiques défavorisées. Ils sont souvent empêchés par un manque de connaissances et de savoir du pays d'accueil. Beaucoup des enfants des immigrés nés dans le pays d'accueil – la « deuxième génération » – obtiennent une formation du bas niveau à l'égard des enfants natives. En conséquence, les immigrés ont tendance à avoir des taux d'activité et des revenus plus faibles sur le marché du travail que les natifs. Ils ont également tendance à être davantage exposés au risque de chômage et sont plus dépendants des aides sociales. Ces faits stylisés indiquent que fournir une éducation appropriée aux immigrés est important pour bâtir une société plus inclusive en Europe. De plus, il pourrait contribuer à améliorer la compétitivité d'économies européennes basées sur la connaissance.

Le but de ce rapport est de fournir un panorama des retombées économiques potentielles issues de l'éducation des immigrés au niveau agrégé. Il couvre l'état de la recherche économique entourant la question de l'éducation des immigrés dans trois domaines : production et croissance économique, marché du travail et budgets publics. Le défi d'une telle entreprise réside dans le fait que les populations immigrées et leur position économique sont extrêmement diverses entre Etat Membres, et que la recherche empirique de qualité sur ces questions est encore plutôt limitée, fragmentée et liée à chaque situation. C'est pourquoi il est difficile de faire des comparaisons probantes entre Etat et des analyses coût-bénéfices englobantes dans cette matière.

Les principaux éléments que l'on peut retirer de l'économie de l'immigration sont les suivants. Premièrement, dans la mesure où l'augmentation du capital humain accroît leur productivité individuelle, elle génère un surplus de production. De plus, des effets positifs durables peuvent découler des innovations permises par le surcroît de diversité, d'entrepreneuriat ethnique ou de commerce et d'investissements internationaux que les immigrés qualifiés apportent avec eux, même s'il n'existe pas à l'heure actuelle d'estimation fiable de la magnitude de ces effets. Deuxièmement, la principale conséquence de l'éducation des immigrés sur le marché du travail, selon les résultats, est l'amélioration significative des opportunités d'emploi et de revenus pour les immigrés eux-mêmes. Par ailleurs, une population immigrée plus qualifiée peut permettre l'amélioration de la position sur le marché du travail des natifs peu qualifiés, faisant reculer les inégalités de revenus au sein de la main d'œuvre native. Mais de tels effets sont probablement faibles en comparaison de l'effet direct sur les

natifs. Troisièmement, en ce qui concerne le budget de l'Etat, les résultats disponibles semblent accréditer la thèse que la contribution nette des immigrés, à court et long terme, augmente fortement avec le niveau d'éducation.

Les gains économiques potentiels constituent un des fondements pour allouer des ressources publiques à l'éducation des immigrés, et en particulier pour favoriser le développement du capital humain des immigrés défavorisés sur le plan socio-économique et sans ressources suffisantes. Les immigrés de la première génération requièrent en partie un soutien éducatif spécifique. L'atténuation de la barrière de la langue est un des défis prioritaires, puisque la maîtrise de la langue du pays d'accueil est une condition nécessaire à l'intégration économique et à l'accumulation de capital humain spécifique à ce pays. Un autre défi réside dans la compensation de la perte du capital humain qui n'est pas transférable d'un pays à l'autre, et l'octroi de capital humain spécifique au pays d'accueil – connaissances, compétences, et valeurs – qui pose les bases d'un apprentissage rapide dans un environnement étranger.

La recherche empirique sur les effets causaux et l'efficacité des politiques d'éducation des immigrés s'avère jusqu'à aujourd'hui plutôt limitée. Il ressort toutefois que l'intervention précoce semble la stratégie la plus efficace pour améliorer l'éducation des immigrés. Ceci requiert de mettre l'accent sur le tutorat et une prise en charge spéciale des enfants d'immigrés dans les écoles maternelles et primaires, mais également sur la conception globale des systèmes scolaires qui peuvent être plus ou moins favorables à l'inclusion sociale des élèves désavantagés. L'intervention précoce implique également que l'on s'attaque aux besoins de qualifications professionnelles des adultes dès leur arrivée, en particulier s'il ne s'agit pas de migrants économiques, accueillis pour des raisons humanitaires ou de regroupement familial. Des mesures ciblées dans ce domaine requièrent la reconnaissance des diplômes et des compétences que les immigrés ont acquises à l'étranger. Dans le cas de l'éducation supérieure, il se peut que le conseil et l'aide financière aux étudiants à faible revenus améliorent les taux d'inscription et de réussite chez les plus défavorisés.

Au vu de la grande diversité des populations immigrées et de leur réussite entre les Etats Membres de l'UE, il semble évident qu'une solution unique pour l'éducation des immigrés en Europe serait déplacé. A la place, il faut des solutions adaptées au contexte local. Idéalement, celles-ci devraient être incluses dans une stratégie globale de lutte contre l'exclusion socio-économique des immigrés. Des politiques visant à sécuriser le statut de résidence des immigrés, à lever les barrières sur le marché du travail, ou à éviter la ségrégation ethnique par

l'urbanisme, peuvent par exemple aider à rendre bien plus efficaces des interventions visant plus spécifiquement l'éducation des immigrés.

Les retours sur les dépenses publiques engagées peuvent ne pas être visibles immédiatement. Ils ont plutôt tendance à s'accroître au fil du temps et peuvent devenir substantiels sur le long terme. L'éducation des populations immigrées doit ainsi être vue comme un investissement social : les gains futurs espérés pourraient bien justifier qu'on y dévoue des ressources publiques aujourd'hui.

## 1 Introduction

Education plays a crucial role in fostering the integration of migrants in the receiving countries.<sup>1</sup> First-generation immigrants need to adapt or supplement their human capital, if qualifications and skills acquired in the country where they are born are not rewarded or not recognized in the foreign environment where they newly settle. Many of them also need to become proficient in the language of the host country, in order to improve their chances on the labour market and social inclusion. As regards the second generation– the children of immigrant parents who are born in the receiving country – prevalent gaps in education outcomes compared to the children of native parents can interfere with economic and social integration. Such gaps are not only related to parental background or disadvantages in language proficiency. They can also result from the design of educational systems or institutions.

Provision of better education to people with immigrant background is an increasingly important policy challenge for the European Union, since international mobility has developed into an important driver of population change. According to Eurostat, at the beginning of 2015 the total number of people living in the EU-28 born outside of the EU was 34.2 million, which represented 6.8 % of the population. In addition, 3.0 % of the population in the EU-28 were persons living in one of the Member States with a citizenship of another Member State (also often known as ‘mobile EU citizens’). There were an estimated 3.8 million immigrants to the EU-28 Member States in 2014. Among these 42 % were citizens of non-EU countries, 34% were citizens of a different EU Member State from the one to which they immigrated, and 23% (as return migrants or nationals born abroad) had the citizenship of the destination country.

The recent substantial inflows of refugees and asylum-seekers add to the education policy challenge. Since 2015, Europe has received more than one million people from conflict ridden countries seeking asylum on humanitarian grounds. Representative European data on the educational attainment of the recent asylum seekers is not yet available. It appears however that a rather large share has arrived with low general schooling and without formal vocational qualification, and therefore would not be immediately well-equipped for obtaining good jobs in the European knowledge-based economies. For example, according to a representative survey of recent refugees who have come to Germany, only 58% are endowed with ten or more years of education, compared to 88% of the adult resident population. 19% of the recent adult

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<sup>1</sup> The role of education as a tool for the economic integration of migrants has been discussed in a previous EENEE analytical report, see De Paola and Brunello (2016).

refugees to Germany have only completed primary school or did not attend school at all; 81% are not equipped with a university or formal vocational training degree (Brücker et al. 2016).

This report makes the case for education as social investment<sup>2</sup> in immigrants who settle permanently or at least for an extended period in the receiving country.<sup>3</sup> Providing education to people with immigrant background may have proportionally higher costs than for people without immigrant background. First, they tend to carry experiences and face environments comparatively less conducive to skills development. Moreover, they may have a need to acquire elements of human capital, in particular host country language proficiency or cultural knowledge, which natives basically inherit without a specific investment. Additional resources may also be needed in order to manage the additional linguistic or cultural diversity in the classroom. On the other hand, making progress on educational attainment of people with immigrant background could yield a range of economic benefits. First, higher education especially may be a source of lasting per capita growth due to knowledge spill-overs that render changes in total factor productivity larger than the gains in individual productivity through education. Yet even in the absence of such a lasting spill-over effect on aggregate economic output, a knowledge lift among immigrants may push the economy onto the path toward a new equilibrium, along which substantial gains in terms of economic output arise. Second, upskilling of migrants may benefit natives, in particular the less-skilled who may especially suffer from competitive pressure if migrant workers are crowded in low paid jobs.

Third, policies improving education of migrants may generate positive net fiscal returns. On the one hand, tax revenue and contributions made to social insurance become larger, as individuals' employment rates and taxable income are positively associated with their educational attainment. On the other hand, better educated people tend to rely less on social transfers, especially those transfers associated with unemployment and low income, and to make less intensive use of certain government services, like active labour market policies, public health care or law enforcement. As individuals' net contribution to the government

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<sup>2</sup> The term social investment, as it is used by the European Commission, refers to policies designed to strengthen skills and capacities and support them to participate fully in employment and social life. Key policy areas include education, quality childcare and training, as well as healthcare, job-search assistance and rehabilitation.

<sup>3</sup> The assumption of permanent migration still governs much of the empirical research on the economic impact of immigration, although a substantial part of international migration today is temporary (e.g., Dustmann and Weiss 2007). The human capital of immigrants affects economic success rates in receiving countries and the range of open mobility options. Thereby it also affects return migration and chain migration patterns. The net economic contribution of temporary and permanent migrants is clearly different (Andersen and Migali 2016, Dustmann and Görlach 2015). Estimation of economic returns from migration can be biased, considering that people who return or move on to another country can be a – positively or negatively – selected group.

budget generally improves by level of education, upskilling is associated with the potential of lower tax rates, which in turn may lead to smaller deadweight loss associated with the need to finance governmental activity.

A positive balance of social economic benefits and costs constitutes a case for government investment in education of migrants.<sup>4</sup> This policy would lead to additional spending of public resources in the short run, but unfolding economic returns would allow recover the initial costs in a longer term.

While economic cost-benefit considerations play an important role in shaping the attitudes of citizens towards migrants and migration policies, education of migrants may furthermore help promote other goals that are valuable for a society. It can transmit cultural norms and values of the receiving society or intensify relations between people with and without immigrant background, for example. It can thereby also help foster social cohesion and strengthen civil society. If one takes such societal benefits into account, the overall net benefits from immigrant education may be even larger than the pure net economic benefits. The potential worth of progress on societal challenges due to immigration, which are made through educational progress, however is very hard to measure and quantify, in monetary terms. We will not deal with it in-depth, and cover social integration aspects, in the remainder of this report, only indirectly: human capital of people with immigrant background is a key to their labour market integration, and labour market integration is an important factor in social integration.

The social investment approach to immigrant education is conceptually appealing. Yet it is virtually not possible to derive precise estimates of the optimum amount of public resources to be spent, or rather to empirically determine the exact aggregate economic return of a particular public investment. First of all, the association between resources devoted to education of migrants and their educational outcomes can be elusive, as for other all groups in education. More spending on education does not automatically yield better outcomes; institutional or organisational changes may be a more efficient way to improve educational

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<sup>4</sup> Economic net benefits from skilled migration also make a strong case for selective immigration policies. In fact, countries can to some extent manage the qualification structure of immigrants upon arrival (e.g., Clark et al 2002, Majda 2005). The focus of this report however is on education policies. Therefore the structure of newly arriving immigrants as treated as given. The report also does not cover the role of education and education policies from the perspective of the sending countries, in particular the discussions on potential brain drain (Beine et al. 2001, 2011; Gibson and McKenzie 2011), the role of remittances (Rapoport and Docquier 2006; Anghel et al. 2015), and strategies to enhance portability of migrants' human capital via internationalization of education institutions or trade in educational services (Larsen and Vincent-Lacrin 2002).

attainment than putting more money into the system. Second, it can be difficult to empirically substantiate the causal impact of changes in educational attainment indicators on changes in socioeconomic outcome variables. A core difficulty is that potential benefits, at the individual as well as the aggregate level, tend to emerge fairly slowly. Therefore, in an empirical analysis other factors can overlay the actual effect.

Third, an improvement in outcomes is only a sufficient, but not a necessary condition for an overall profitable social investment. To check the balance of benefits and costs, one needs to measure both sides using the same scale. This requires translation of aggregate returns into monetary units, which can lead to difficult valuation issues. As costs and benefits do not arise simultaneously, the assessment also hinges on assumptions as regards weighing the value of payments that occur at different points in time. Thus, whether future benefits outweigh current costs, is also a matter of the chosen social discount factor.

The above arguments apply to any attempt at measuring net returns to social investment in education, no matter what the target group of the intervention is. In our context, specific heterogeneities within the population of “migrants” further complicate matters. One needs to distinguish, for example, between people who are foreign-born and moved from their country of origin to the host country, and people who are born and raised in the host country but have one or more ancestors coming from a foreign country. The former group of people with direct immigrant background is often referred to as “first-generation immigrants”, whereas the latter group of people with indirect immigrant background is often referred to as “second-generation”, “third-generation”, etc. Obviously the needs and effective policies for education and training, and the respective returns, can be very different considering different generations of immigrants.

A second factor that creates systematically distinct groups within immigrant populations is ethnic background. Associated with it can be differences in cultural or linguistic distance that can be more or less conducive to cross-border portability of human capital, and the prospects of socio-economic integration into the host country (Belot and Ederven 2012). A third way to distinguish between different types of migrants is by channel of immigration. Immigration systems of different countries vary, but in general stipulate specific rules for entry and stay of economic immigrants, who come with the intention to work or invest, international students who come with the intention to study and train, relatives who come with the intention to unite with family members already in the country, and refugees or asylum seekers who are admitted



to enter on humanitarian grounds. Depending on the immigrant status upon entry, initial conditions as regards individual capacities to integrate in the host country environment and thus demand for and potential returns of immigrant education can be very different. The need for compensatory public investment into basic education and training, and completion of interrupted schooling careers, for example, is clearly much more pronounced among the recent third-country refugees received in Europe, than among third-country immigrants who arrive as sought-after specialists via economic channels to directly take up work.

The complexities discussed above explain why any general statement concerning the size of net gains from education of migrants in the EU is impossible, and why comprehensive cost-benefit analyses of education (policies) for particular groups of immigrants in particular EU countries are hitherto lacking in the literature. The scope of this survey therefore is far less ambitious. Covering theoretical and empirical perspectives, it seeks to demonstrate why better education of migrants could have overall positive effects on economic output, labour markets, and government finances. We do not aim at balancing these effects, however, against estimates of the costs involved in achieving the underlying progress in educational attainment. We rather only draw on qualitative findings from empirical impact assessment studies in order to assess what that type of policy interventions may in principle bring about the intended effects, given the specific needs and initial conditions of different types of migrants. The survey thus covers a wide education policy portfolio, acknowledging the diversity of migrant populations in the EU.

The remainder of the report is structured as follows. In the next section, we start with an overview of the qualifications and skills of people with immigrant background living in the EU Member States, as compared to non-immigrants. In three succeeding sections, parts 3 to 5 of the report, we shall discuss, respectively, why better education of people with immigrant background may positively impact on economic output, labour markets, and government finances. Section 6 elaborates on the implications for education policy making in the EU. Section 7 concludes.

## 2 Qualification and Skills of People with Immigrant Background Living in the EU

The human capital endowment of people with immigrant background who are resident in the EU is important for understanding the need to reflect on immigrant education policies. In the following, we present data retrieved from the 2014 ad hoc module of the European Labour Force Survey (EU-LFS) provided by Eurostat, which has focused on the labour market situation of first-generation immigrants and their immediate descendants who are at employable age (20-64 years).<sup>5</sup>

Figure 1 indicates that the educational level of people with immigrant background in the EU Member States is on average slightly lower than that of natives.<sup>6</sup> The reason is a disadvantage of first-generation immigrants. In this part of the population with immigrant background, the share of low-skilled is markedly larger than in the native-born population without immigrant background, while the population share of the medium-skilled is smaller. The educational levels of parents and children within immigrant families are strongly correlated (e.g., Borjas, 1993; Hammarstedt and Palme 2012). Nevertheless the second generation on the whole makes educational progress.

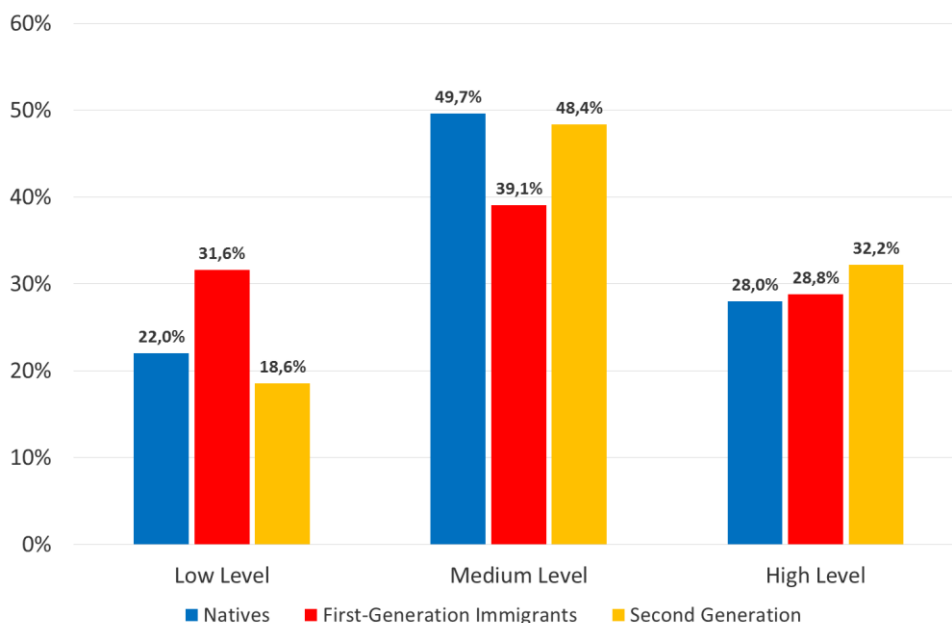
As shown by Figure 1, the descendants of the foreign-born who are born in the host country are characterized by a smaller percentage of people with less than upper-secondary education, and a higher share of people with tertiary education, compared to the native population. This favourable comparison however is partly a matter of cohort effects, as the second generation is on average younger than the native-born population without immigrant background.

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<sup>5</sup> The EU-LFS is a quarterly household sample survey of individuals aged at least 15, that harmonizes data collected in the 28 EU-Member States. The attached ad hoc module 2014 on immigrants does not cover Denmark, Ireland and the Netherlands. In addition, we discard the data on educational attainment of immigrants in Bulgaria and Romania, which is partly unreliable due to small sample sizes.

<sup>6</sup> This observation confirms results from earlier studies on the composition of immigrants in Europe by education, see Dustmann and Glitz (2011), Dustmann and Frattini (2012), Sweetman and van Ours (2014).

**Figure 1: Educational Attainment Level of Natives, First-Generation Immigrants and Second Generation in the EU Population Aged 20-64, 2014**



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Native-born with native background are referred to as natives, the foreign-born are referred to as first-generation immigrants, and the native-born with at least one immigrant parent are referred to as second generation. Low education: less than primary, primary or lower-primary education (ISCED 11 levels 0-2); medium education: upper secondary and post-secondary non-tertiary education (ISCED 11 levels 3-4); high education: tertiary education (ISCED 11 levels 5-8). Data for Bulgaria and Romania are excluded due to low reliability. Data for Denmark, Ireland and the Netherlands are not available.

Source: Compiled by the author based on data from EU-LFS, ad hoc module 14.

The aggregate figures hide remarkable heterogeneity across the EU Member States. Much of the diversity of people with immigrant background across countries stems from country specific historical roots and past immigration policies. There are often notable differences in the demographic and socio-economic characteristics of immigrants arriving in different historical periods.<sup>7</sup> Table 1 shows that some European countries have in particular attracted immigrants with low educational attainment. In Austria, Belgium, France, Germany, Greece and Sweden, for instance, the share of people with less than upper secondary education is much larger among first-generation immigrants than among the native population. On the other hand, there are also countries where the percentage of high-skilled among the first-generation immigrants is especially large, and markedly larger than in the native population. These countries include Hungary, Luxemburg, Poland, Portugal and the United Kingdom.

<sup>7</sup> See de la Rica et al. (2013) for a survey of the main trends and policies shaping immigration and immigrant populations in various important European destination countries and Europe as a whole.

**Table 1: Share of People with Low and High Education in Populations of Natives, First-Generation Immigrants and Second Generation Aged 20-64, Selected EU Member States, 2014**

	Percentage with Low Education			Percentage with High Education		
	Natives	First-Generation Immigrants	Second Generation	Natives	First-Generation Immigrants	Second Generation
Austria	12,1	26,7	16,2	29,0	28,1	28,0
Belgium	20,7	37,0	26,5	38,6	31,9	29,0
Croatia	15,4	20,9	12,1	21,1	16,6	22,5
Cyprus	20,3	24,6	11,2	39,6	38,4	52,2
Czech Republic	6,3	14,8	16,6	20,9	26,7	15,5
Estonia	10,8	4,2	8,3	33,9	41,5	33,9
Finland	12,3	23,6	12,6	38,9	30,4	30,8
France	18,4	34,2	18,2	33,4	31,6	36,0
Germany	8,2	31,7	19,1	26,6	21,8	18,5
Greece	28,5	43,5	25,3	27,8	14,0	25,8
Hungary	16,9	10,4	13,1	21,4	31,1	25,9
Italy	38,2	44,0	22,7	16,7	12,3	21,5
Latvia	11,2	7,2	8,2	30,4	21,4	28,3
Lithuania	7,6	:	7,2	33,6	36,9	35,1
Luxembourg	16,4	19,3	22,5	33,5	52,3	27,2
Malta	56,1	40,1	37,2	17,9	36,6	27,9
Poland	9,8	:	8,8	25,4	42,2	22,1
Portugal	57,2	37,3	29,7	19,8	28,8	34,3
Slovakia	9,0	15,1	8,2	19,4	23,2	20,7
Slovenia	12,8	25,9	9,9	28,7	14,4	30,8
Spain	42,0	39,6	35,3	35,9	27,0	35,2
Sweden	11,3	25,5	14,4	35,9	40,1	33,1
United Kingdom	23,2	18,5	18,8	34,6	47,4	42,5

Native-born with native background are referred to as natives, the foreign-born are referred to as first-generation immigrants, and the native-born with at least one immigrant parent are referred to as second generation. Low education: less than primary, primary or lower-primary education (ISCED 11 levels 0-2); high education: tertiary education (ISCED 11 levels 5-8). Data for Bulgaria and Romania are excluded due to low reliability. Data for Denmark, Ireland and the Netherlands are not available.

Source: Compiled by the author based on data from EU-LFS, ad hoc module 14.

Several factors can explain the differences in the educational composition of foreign-born people across the EU Member States. Labour market conditions affect location choices through the expected income gains from immigration. Low-skilled immigrants are more attracted to countries with a more redistributive tax and transfer system, whereas high-skilled immigrants would prefer less redistributive systems. Institutional features also play a role, in particular the channels and selectivity of the immigration systems in place now and in the past.

Further analysis of the data in Table 1 supports the presumption that the educational structure of people with immigrant background is closer to that of native-born without immigrant background in the second generation than it is the case in the first generation. The percentage of people with less than upper secondary education declines across the immigrant generations in most EU Member States. The few exceptions are mostly countries where the share of foreign-born with low education levels is small, judged by the educational structure of

the native-born population without immigrant background. A higher share in the second generation may therefore indicate that barriers to educational achievement gradually lessen over time.

As regards higher education, the European picture is more diverse. In some of the EU Member States, notably in Cyprus, Greece, Italy and Slovenia, the second generation has attained tertiary education at a much higher rate than their parents, and thus overtaken the native-born population without immigrant background. On the other hand, in some countries, like the Czech Republic, Luxemburg and Poland, the share of immigrants with tertiary education is considerably smaller in the second than in the first generation. In addition, there are countries where the percentage of foreign-born people with high educational levels is below that of the native-born population without immigrant background, and where the higher education gap between people with and without immigrant background is even wider considering the second generation. This concerns, for instance, Belgium and Germany.

A first explanation why the second generation does not attain better education levels is lack of parental investment in human capital. This may result from financial constraints, or from attitudes and intentions that are specific to migrants, for example, the intention of parents not to stay permanently in the current host country (Dustmann 2008). A second factor is the design and organisation of schooling (Dustmann et al. 2012). Educational institutions can be more or less open to people with immigrant background, and have features more or less conducive to upward mobility. For example, the age at first tracking, or the degree of accessibility or affordability in higher education, may help explain different educational advantage or disadvantage of the second generation from the same ethnicity group in different countries (Crul et al. 2012). A third factor is structural and cultural disadvantages of students, associated with language barriers, difficulties to navigate in the host country, social exclusion and segregation (OECD 2010).

The comparison of educational attainment levels can make the economically relevant skill differences between people with and without immigrant background appear smaller than they actually are. A first concern is that formal education is not an encompassing measure of productive skills. These include non-cognitive skills like patience, locus of control, willingness to take risks, self-efficacy, or decisiveness, which partly develop independently from cognitive abilities or education (Dohmen et al 2010). People with immigrant background may moreover show different non-cognitive skills than natives, as a reflection of habits or cultural norms

(Bruhin et al 2010; Vieider et al 2015). They may furthermore carry so-called “ethnic capital” affecting economic and social outcomes in the host country (Borjas 1992; Maani 2016).<sup>8</sup>

A second concern is incomplete portability of skills. Most first-generation immigrants acquire a major share of their human capital before they arrive in the destination country. Empirical evidence however suggests that foreign education is less valuable in the host country labour market than domestic education.<sup>9</sup> An obvious reason why education acquired in the home country is not fully portable is that parts of it are country specific. Another reason can be that the quality of transferable human capital acquired at a certain educational level in the source and destination country is different. It is also possible that while the quality of foreign and domestic education is indeed the same, recipients in the destination country may not understand, or may be unwilling to accept, that this is the case.<sup>10</sup> Immigrants may also require complementary knowledge, if they want to make full use of their human capital acquired abroad. They need orientation about labour market structures and institutions, for example. Yet probably the most important key to carry human capital effectively across borders is being proficient in the host country language.<sup>11</sup>

Figure 2 illustrates data drawn from the 2014 ad hoc module of the EU-LFS showing that the language skills of the first-generation immigrants are heterogeneous across Europe. Some of the differences are attributable to differences in the ethnic composition of the foreign-born populations. Language proficiency levels can also reflect educational attainment levels of the people with immigrant background. At present, in many EU Member States, more than a third of the first-generation immigrants report to have basic or moderate knowledge of the host country language only and therefore could face special difficulties to employ all of their skills.

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<sup>8</sup> The term “ethnic capital” is defined differently by different authors in the literature. Borjas (1992) in his seminal study uses it to describe the external effect of ethnicity, i.e., the average quality of the ethnic environment in which people make their choices. In more general terms, ethnic capital might be seen as the advantage arising from belonging to a certain ethnic group. Note that ethnic capital may not bear the usual trait of capital, namely that it is the outcome of an investment.

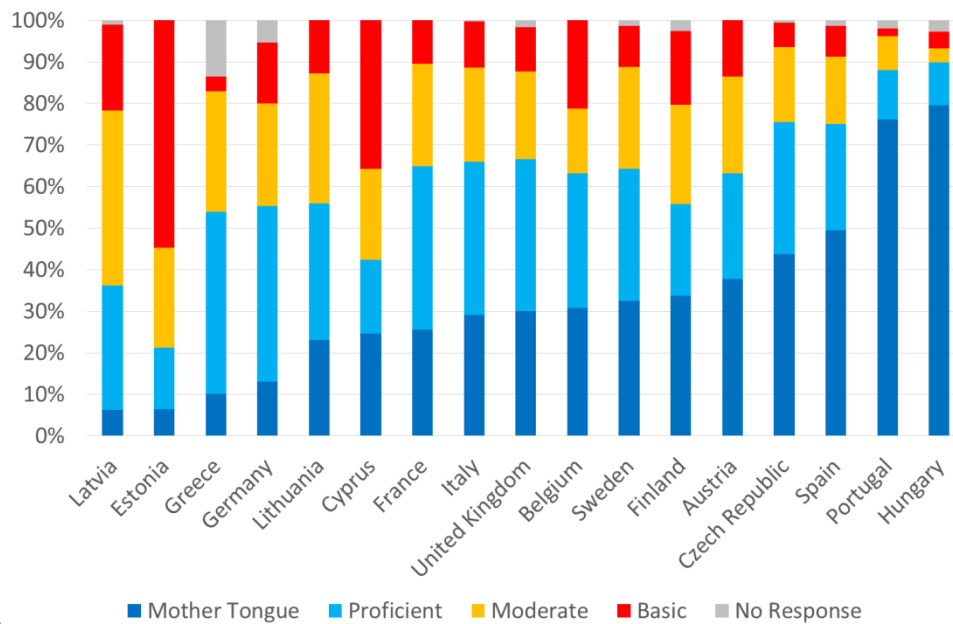
<sup>9</sup> Empirical studies that indicate incomplete portability of home country human capital for immigrants to Europe and the United States include Bratsberg and Ragan (2000), Kossoudji (1989), Schoeni (1997), Friedberg (2000), Schaafsma and Sweetman (2001), San Roma et al (2009), Basilio and Bauer (2010).

<sup>10</sup> To the extent that the latter is the source of effective non-portability, policies aimed at improved recognition of foreign degrees and qualification could improve education-skill match of immigrants and yield smaller native-immigrant wage differentials (European Commission 2011, Bardak 2014).

<sup>11</sup> There is ample empirical evidence supporting that language proficiency has a positive and strong impact on economic and social outcomes. See Chiswick and Miller (2014) for a survey. Studies based on European data include Dustmann and van Soest (2001, 2002) for Germany, Yao and van Ours (2015) for the Netherlands, Budra and Swedberg (2012) and Di Paolo and Raymond (2012) for Spain, Dustmann and Fabbri (2003) and Miranda and Zhu (2013a) for the United Kingdom.

The comparison of educational attainment levels can also be misleading considering the second generation. While issues of portability of human capital are less of a concern for the children of immigrant parents born and raised in the host country, language and non-cognitive skills, due to intergenerational transmission, can differ compared to the offspring of natives. Moreover the quality of skills acquired at given educational levels can be different. If people with and without immigrant background live in separate neighbourhoods, children may have access to schools of different quality (Borjas 1995a; Jansen and Rasmussen 2008). They can be exposed to different peers in their environment or within their class, and peer effects may affect human capital outcomes (Contini 2013; Hoxby 2000a).

**Figure 2: Skills in Host Country Main Language of First-Generation Immigrants, Selected EU Member States, 2014**



Data for Bulgaria, Croatia, Luxemburg, Malta, Poland, Romania, Slovakia and Slovenia are excluded due to low reliability. Resident population of the foreign-born is referred to as first-generation immigrants.

Source: Compiled by the author based on data from EU-LFS, ad hoc module 14.

In response to the shortcomings of educational attainment measures, much empirical research on immigrant-native education gaps today is based on achievement scores (provided, for example, by the OECD PISA studies, or the IEA TIMMS and PIRLS studies) that measure

proficiency in various skills in an internationally comparable way.<sup>12</sup> These studies generally observe that students with immigrant background achieve lower test scores than students without immigrant background, both in the first and in the second generation. The dimension of the achievement gaps however varies substantially between countries (Dustmann et al 2012). Characteristics like age at immigration, country of origin, proficiency in the host-country language, and parental socio-economic status in general account for a substantial part of the achievement gaps, but do so at a different degree in different countries. This suggests that features of education policies or institutions could matter for bridging the skills or qualification gaps between immigrants and natives.

### **3 Immigrant Education and Aggregate Economic Output**

The role of education for the economic costs and benefits associated with migration is mostly discussed and analysed considering an inflow of immigrants, that is to say a change in the population of foreign descent in the host country. After all, the idea that especially highly-educated immigrant workers would generate economic gains serves as justification of active and selective immigration policies that aim at a high percentage of this target group among the incoming migrants. Such policies are now in place in many OECD countries.<sup>13</sup> Much of the academic understanding about the economic consequences of high-skilled versus low-skilled immigration however can also serve to derive arguments why it would be beneficial to improve upon the skills and qualifications of populations with immigrant background already resident in their country of destination. At the same time, many of the arguments in favour of upskilling immigrants would equally apply to non-immigrants with a productive disadvantage due to insufficient skills or knowledge.<sup>14</sup> Yet the kind of policies appropriate for the two target groups in order to achieve their intended educational advancement could be different.

In the following, we give an overview about the potential economic (net) gains, if a population with immigrant background is or gets endowed with higher levels of skills and

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<sup>12</sup> See in particular Hanushek and Woessmann (2012). Studies of within country differences in achievement between immigrants and natives for EU Member States include Algan et al. (2010), Murat (2012) and Dustmann and Theodoropoulos (2010).

<sup>13</sup> See, for example, OECD (2016), Kogan (2015), Constant and Zimmermann (2005) and Kapur and McHale (2005).

<sup>14</sup> For general overviews of the economic relevance of education see in particular Checchi (2006), Brewer and McEwan (2010) and Hanushek et al. (2011).



qualifications. One way to make this apparent is studying the economic impact of low-skilled immigrants on aggregate economic output.

A fundamental notion in economic thinking about education is that it is an investment in the human capital of people that raises, via advancing general or specific cognitive skills, as well as non-cognitive skills, their marginal product in production processes (Becker 1964, Mincer 1974).<sup>15</sup> Functioning markets reward increased productivity with higher earnings at the individual level; on labour markets that are affected by imperfections, such as adjustment costs, institutional wage floors or incomplete information, more productive people in general enjoy higher employment rates and less unemployment. These returns allow recovering the initial costs of human capital accumulation at the individual level, which include the immediate expenses for education such as tuition fees as well as indirect costs such as foregone earnings while learning. Without liquidity constraints, individuals thus could enlarge their lifetime resources by investing into education up to the point that the marginal initial costs of human capital acquisition balance the expected marginal later returns.

To the extent that advances in human capital contribute positively to output in production at the individual level, they must lead to an increase in output at the macroeconomic level, too.<sup>16</sup> A one-off increase in the amount of human capital would only lead to temporarily higher growth rates, however, unless it generates externalities enhancing total factor productivity. Then investment in one's education does not only make the single individual more productive. It enhances productivity of other individuals, too. In particular, enhanced capacity of invention and innovation diffusion are possible sources of spillovers from human capital accumulation that could bolster growth of output per capita in an economy over the very long term.<sup>17</sup> Such human capital externalities can in principle originate from any individual in a population,

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<sup>15</sup> Education usually changes several productive traits of individuals at the same time. Disentangling the marginal return to specific skills, which is important for educational content design, is an empirical challenge. As progress on different skill dimensions tends to be positively correlated, here we refer to "education" as a summarizing term. Hanushek and Woessmann (2015) focuses the economic role of cognitive skills, whereas Heckman et al. (2006), Cunha et al. (2006), Borghans et al. (2008) and Lindqvist and Vestman (2011), amongst others, direct attention to the economic consequences of non-cognitive skill formation.

<sup>16</sup> In principle, additional educational attainment can create an individual return, even though it does not add to individual productivity. It can serve just as a signal that helps employers identify the most able workers (Spence 1973, Weiss 1995, Riley 2001, and Arcidiacono et al. 2010). To the extent signalling and screening is a drive of human capital accumulation, returns to education are smaller at the macro level than at the micro level.

<sup>17</sup> The direct correlation between productivity gains from education at the micro and macro model is formalized in so-called augmented neo-classical growth models, which treat human capital as a production factor that can be accumulated (Mankiw et al. 1992). Lasting positive per capita growth affects are formalized by so-called endogenous growth theory (Lucas 1988, Romer 1990; Aghion and Howitt 1998).

including people with immigrant background. Economists have however developed a range of specific arguments why skilled immigrants would drive economic output in addition to the direct effect of higher individual productivity on macroeconomic productivity.<sup>18</sup>

A first strand of these production side arguments covers possible effects between high-skilled immigrants on innovation. Borjas (1997) argues on the basis of the so-called Roy model that as a result of the migration decision, immigrants can constitute a positively self-selected group. This means that the immigrant population can be characterized by an elevated share of people with high abilities that give them a comparative advantage in accumulating human capital and make them more likely to be top researchers or innovators.<sup>19</sup> Immigration furthermore generates more diversity. There is evidence that ethnic or cultural diversity can be a source of innovation and better problem-solving in team production, and the dynamic returns to diversity may be stronger in a research or knowledge-intensive environment.<sup>20</sup> Ethnic networks in a diaspora can help foster diffusion of knowledge or innovations (Kerr 2008). Such diffusion effects are probably more important in areas with higher density of immigrants endowed with higher education, like in urban areas of university towns (Kerr 2010; Scellato et al. 2012). Independent of co-ethnic connections, there is some evidence for spatial clustering effects, that is to say positive links between the presence of skilled migrants in an area and innovation levels.<sup>21</sup>

A second strand of argument resembles the first one, but points towards entrepreneurship rather than innovation as a source of total factor productivity gains from skilled immigrants.<sup>22</sup>

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<sup>18</sup> See Nathan (2014) for a comprehensive survey of the literature in what is still a young field in the economics of immigration. Other surveys focusing wider economic gains from high-skilled immigration include Huber et al (2010); Kerr and Kerr (2011), Hanson (2012) and Chiswick (2005). Immigrants may affect the economy also via the consumption side, that is to say a change in prices for goods and services either through their own demand or changing patterns of production. Possible consumption side effects are however rather ambiguously related to the human capital levels of immigrants. See again Nathan (2014) for a more elaborate discussion of this issue.

<sup>19</sup> See Hunt (2011) and Stephan and Levin (2001). The expectation of positive human capital externalities can explain why immigration policy in many countries offers generous possibilities for high potentials to enter higher education and especially postgraduate or faculty positions.

<sup>20</sup> Berliant and Fujita (2009) analyse how the dynamics of knowledge creation and transfer depends on diversity from a theoretical perspective. Page (2007) reviews the management literature analysing the connection between measures of diversity and firm performance. Quantitative studies analysing the impact of ethnic diversity on innovation or performance at the team or workforce level, like Ozgen et al (2013), Parrotta et al. (2013) and Hoogendoorn and Van Praag (2012) arrive at mixed results.

<sup>21</sup> See Agrawal et al. (2008), Hunt and Gauthier-Loiselle (2010) and Peri (2007) for the United States, Niebuhr (2010) for Germany, and Ozgen et al. (2012) for EU regions.

<sup>22</sup> Fairly and Lofstrom (2015) is a recent survey of the literature on ethnic entrepreneurship and its economic benefits. Acs et al. (2004) provide a theoretical perspective on the role of entrepreneurship levels for endogenous

While immigrants generally exhibit higher rates of self-employment than non-immigrants with similar characteristics, this is not necessarily a matter of specific human capital. Especially low-skilled immigrants may set up small businesses with low productivity in response to labour market or social exclusion (Sepulveda et al. 2011; Kloosterman and Rath 2001). Skilled immigrants may give a boost to entrepreneurship in the host country (Kerr 2013). The positive self-selection argument made by Borjas (1997) implies that immigrants would carry more skills required to become a successful entrepreneur, like the willingness to take risks (Jaeger et al 2010; Kahn et al. 2013). They may also face a lower opportunity cost of investing in new skills or methods and are therefore more flexible in grasping business opportunities than non-immigrants (Duleep et al. 2012). In addition, skilled entrepreneurs with a migration background may gain comparative advantage from access to co-ethnic enclaves supporting diffusion of their innovations and products, and from enhanced possibilities to set up transnational firms due to their position as cross-cultural navigators and networkers.<sup>23</sup> An indirect productivity growth effect of high-skilled immigrant entrepreneurs developing new ideas for business may be that increased competition induces existing firms to innovate at a higher rate (Aghion et al. 2005, 2009).

A third strand of arguments why skilled immigrants may lead to higher total factor productivity in an economy is based on aspects of investment and trade.<sup>24</sup> If higher human capital leads to higher net-worth, skilled immigrants lend more to domestic firms and ease credit constraints. In their role as investors with a foreign background, they may also help triggering specific knowledge, in particular understanding of foreign markets and information on business opportunities abroad, which can foster innovation and productivity in the receiving firms (Markusen and Trofimenko 2009; Malchow-Møller et al. 2011) As skilled immigrants tend to have better networks and social capital, the information channel can also work, if they are not investors. The access of immigrants to co-ethnic international networks allows them to act as brokers and trust builders who reduce transaction costs and frictions due to incomplete information (Rauch and Casella 2003; Javorcik et al. 2011). The results can be positive scale

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growth. Empirically, creation of new businesses accounts for a substantial part of macroeconomic productivity growth. Therefore an entrepreneurship-productivity relation may be realized even in the short term (Lewis 2012).

<sup>23</sup> See Docquier and Lodigiani (2011), Honig et al. (2010) and Drori et al (2009). Docquier and Rappaport (2012) survey the empirical literature on the role of transnational ties and co-ethnic communities for economic development in general.

<sup>24</sup> The expectation of positive externalities can explain why immigration policy in many countries offers special ports of entries for investors.

effects through more foreign direct investment, more economic activity abroad by domestic investors, and more trade (Peri and Requena 2010; Rauch and Trindade 2002).

A final strand of arguments for a positive effect of skilled immigrants on total factor productivity refers to production complementarities. First, if the share of skilled labour in total labour supply rises, firms may have stronger incentives to use capital intensive production technologies.<sup>25</sup> Second, productivity at the firm level may benefit from the possibility of enhanced specialization of tasks in a workforce of high-skilled migrants and natives (Peri and Sparber 2011; Lewis 2012).

The economics of migration thus shows a wide range of effects on the production side of the economy possibly associated with skilled immigrants that could have long lasting positive implications for economic development. These may make a case for measures to improve upon human capital attainment of populations with immigrant background. Given the current state of knowledge, it is however not possible to quantify endogenous growth effects of upskilling migrants through educational policies in a meaningful way. Empirical analyses that study the impact of skilled immigrants on drivers of total factor productivity, or on aggregate productivity itself, generally rely on variation in the population of skilled labour that comes out of immigration policies or settlement patterns. Moreover the magnitude and significance of the estimated effects exhibits a huge amount of variation, depending in particular on the national or local environments, as well as the ethnic background of the immigrant populations under study. The studies also do not contain evidence as regards the long term effects on growth rates of economic output at the country level.

Difficulties to isolate the size of lasting growth rate effects that arise from human capital externalities abound also in the general empirical growth literature, which on the whole has delivered inconclusive evidence so far.<sup>26</sup> However, as has been argued in detail by Woessmann (2014) in EENEE report No. 20, the empirical distinction of endogenous growth effects after all may not be especially relevant for arguing in favour of education policies aiming at a better educated workforce. Macroeconomic simulations suggest that advances in the amount of human capital could contribute enormously to the prosperity of the European knowledge-based economies, even if the impact of growth rates would fade out in the very long term (Hanushek

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<sup>25</sup> See Paserman (2013), Kangasniemi, Mas et al. (2012) and Peri (2012).

<sup>26</sup> Core studies in this domain include Acemoglu and Angrist (2000), Moretti (2004), Ciccone and Peri (2006), and Iranzo and Peri (2009).

and Woessmann 2011a, 2012). This conclusion is consistent with the substantial body of estimation results showing that the quantitative amount of schooling is a key determinant of countries' economic output, and that more schooling leads to higher output.<sup>27</sup> In view of this evidence, one may expect that advances in the educational attainment of migrants would lead to changes in national product that are the larger, the bigger the immigrant population share and the bigger the initial educational disadvantage of the immigrant population compared to non-immigrants.

#### **4 Labour Market Impact of Immigrant Education**

In this section, we focus on the relation between the education of migrants and labour market outcomes. We first look at the labour force participation patterns of immigrant populations aged 20 to 64 residing in EU Member States, using data drawn from the 2014 ad hoc module of the EU-LFS.<sup>28</sup> Inspection of the data in Table 2 first shows that activity rates of people with and without immigrant background are highly correlated at all education levels.<sup>29</sup> Second, activity rates systematically increase with educational attainment levels among people with immigrant background (in the same way as for natives). Third, activity rates of lower educated people with immigrant background tend to exceed those of natives with similar education levels. In contrast, higher educated people with immigrant background tend to exhibit lower labour force participation rates than natives. Finally, in many instances the activity rate among the second generation is quite different from the activity rate among first-generation. The participation behaviour of the second generation seems to move closer to that of the native-born population without immigrant background. One should however be careful in interpreting this observation. It may reflect an unfolding economic integration process, but as well differences between the two groups as regards characteristics other than education that are strongly correlated with individual rates of labour market participation, most importantly age and gender.

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<sup>27</sup> See Delgado et al. (2014), Pritchett (2006), Sianesi and van Reenen (2003) and Temple (2001) for reviews of pertinent empirical literature.

<sup>28</sup> We refrain from an analysis of employment rates which would lead to qualitatively similar conclusions.

<sup>29</sup> The activity or labour force participation rate describes the share of the population that is either employed or in search of employment.

**Table 2: Activity Rates by Migration Status and Educational Attainment Level, Population Aged 20-64, Selected EU Member States, 2014**

	Lower Education Levels			Medium Education Levels			Higher Education Levels		
	Natives	First-Generation Immigrants	Second Generation	Natives	First-Generation Immigrants	Second Generation	Natives	First-Generation Immigrants	Second Generation
Austria	61,3	60,1	67,0	79,9	78,8	76,8	86,9	82,4	86,1
Belgium	54,1	56,6	52,1	74,0	71,9	69,0	87,5	79,0	82,5
Croatia	49,8	59,0	55,2	71,7	66,8	62,8	88,4	82,6	80,3
Cyprus	62,0	82,7	63,0	77,7	85,0	61,7	90,9	78,7	87,6
Czech Republic	51,1	54,0	55,4	79,4	81,4	79,6	84,4	84,5	85,3
Estonia	67,4	73,8	62,1	78,8	73,5	78,2	89,4	79,7	88,0
Finland	57,6	67,4	75,5	78,7	78,3	79,5	88,0	84,1	85,2
France	64,7	59,5	66,3	79,8	71,2	72,3	87,2	79,3	86,2
Germany	66,6	66,0	71,0	81,8	79,4	79,8	91,3	81,5	96,7
Greece	62,6	83,8	52,0	69,8	76,4	61,9	85,6	77,9	72,7
Hungary	53,8	60,2	52,4	73,1	73,2	59,9	83,5	84,8	76,7
Italy	56,1	69,3	56,2	71,6	76,0	63,3	82,3	78,4	72,4
Latvia	66,0	48,9	65,3	78,0	74,7	77,0	91,0	77,4	87,0
Lithuania	59,1	:	:	76,4	78,3	74,1	93,2	77,1	91,5
Luxembourg	53,6	68,8	63,7	68,3	72,4	74,3	83,7	87,5	88,2
Malta	57,2	69,5	50,2	80,0	70,2	85,8	91,5	80,9	84,5
Poland	46,4	:	43,2	70,9	68,2	57,7	87,6	88,5	87,6
Portugal	73,6	81,0	70,1	80,9	84,3	66,7	89,1	88,3	87,1
Slovakia	53,3	:	:	76,9	73,6	71,2	81,3	78,3	77,7
Slovenia	57,9	54,2	57,7	73,4	74,9	76,1	88,7	80,4	90,6
Spain	71,0	80,2	75,0	76,7	83,5	58,1	88,3	84,9	85,6
Sweden	76,4	70,0	72,1	87,1	79,0	85,6	93,4	86,8	93,5
United Kingdom	67,6	60,7	71,2	83,3	78,1	76,2	88,1	83,2	89,3

Native-born with native background are referred to as natives, the foreign-born immigrants are referred to as first-generation immigrants, and the native-born with at least one immigrant parent are referred to as second generation. Lower education levels: less than primary, primary or lower-primary education (ISCED 11 levels 0-2); medium education levels: upper secondary and post-secondary non-tertiary education (ISCED 11 levels 3-4); higher education levels: tertiary education (ISCED 11 levels 5-8). Data for Bulgaria and Romania are excluded due to missing values. Data for Denmark, Ireland and the Netherlands are not available. : indicates that value is not available.

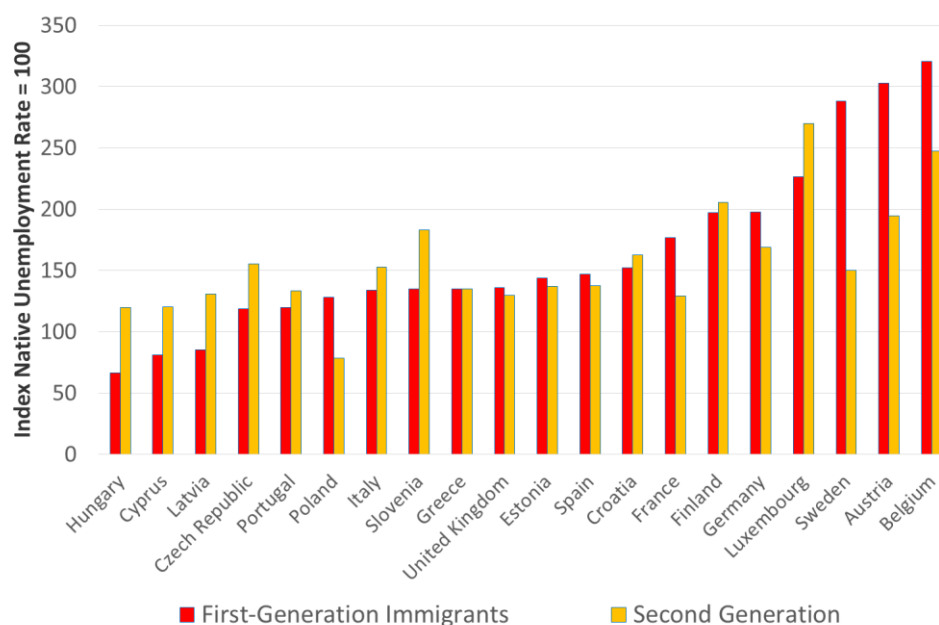
Source: Compiled by the author based on data from EU-LFS, ad hoc module 14.

We next consider the unemployment patterns of the immigrant populations aged 20 to 64 residing in EU Member States. Analysis of the data from the 2014 ad hoc module of the EU-LFS indicates that unemployment rates of people with and without immigrant background are even more strongly correlated than activity rates.<sup>30</sup> This observation suggests that changes in the unemployment rate of the immigrant populations in Europe would strongly hinge on how the general state of the host country labour market develops. The incidence of unemployment nevertheless is generally higher among people with immigrant background than among natives.

<sup>30</sup> The coefficient of correlation between unemployment rates of immigrants and natives computed on the basis of 19 available EU Member State observations of 2014 is 0.85 considering the first generation of immigrants, and 0.96 considering the second generation.

As shown by Figure 3, the unemployment rate differentials between the members of workforce with and without immigrant background exhibit substantial heterogeneity across EU Member States. In Cyprus, Hungary and Latvia, first-generation immigrants are characterized by an unemployment rate lower than that of natives. At the opposite end, unemployment rates of first-generation immigrants exceed unemployment rates of natives by 50 to 100 percent in Croatia, France, Finland and Germany. The relative gap between people with and without immigrant background is especially high in Luxemburg (127%), Sweden (188%), Austria (203%) and Belgium (221%). It can also be seen in Figure 3 that the disadvantage in terms of unemployment rates does not vanish for the second generation (here defined as people born in the host country with at least one immigrant parent).

**Figure 3: Unemployment Rates of First-Generation Immigrants and Second Generation in Relation to Unemployment Rate of Natives, Population Aged 20 to 64 Years, Selected EU Member States, 2014**



Native-born with native background are referred to as natives, the foreign-born are referred to as first-generation immigrants, and the native-born with at least one immigrant parent are referred to as second generation. Data for Bulgaria, Lithuania, Malta, Poland, Romania and Slovakia are excluded due to low reliability. Data for Denmark, Ireland and the Netherlands are not available.

Source: Compiled by the author based on data from EU-LFS, ad hoc module 14.

It is striking that the second generation fares generally worse in those EU Member States where the unemployment state of first-generation immigrants is relatively favourable compared to native-born. The clear exception in this group is Poland where the second generation

exhibits an even smaller unemployment rate than people without immigrant background. It is also worth noting that in Belgium, Austria and Sweden where first-generation immigrants are in an especially disadvantageous labour market position, the rates of unemployment among the second generation get a good way more similar to those of native-born without immigrant background. France and Germany show smaller but still sizeable improvements. Finally, there are several EU Member States (Croatia, Estonia, Finland, Greece, Spain, the United Kingdom) where the unemployment rates of the first-generation immigrants and the second generation are basically the same.

While there is surprisingly little empirical research establishing a causal impact of education on the individual propensities to become or stay unemployed, the negative relation between education of workers and their unemployment experiences is a nearly universal observation (Mincer 1991).<sup>31</sup> Therefore, considering the educational disadvantage of the populations with immigrant background in Europe, the higher levels of unemployment compared to the populations without immigrant background are hardly surprising.

Figure 4 illustrates a significant positive correlation between the share of people with lower education in the immigrant population of working age, and the unemployment rate among the immigrant population. This suggests that low educational attainment levels is an essential factor contributing to comparatively high unemployment among the members of the workforce with immigrant background in the EU Member States.<sup>32</sup> Differences in formal educational attainment levels however cannot fully explain the different unemployment positions of people with and without immigrant background on European labour markets. It has been observed that immigrants' labour market outcomes generally improve less with educational attainment than natives' (OECD 2012).

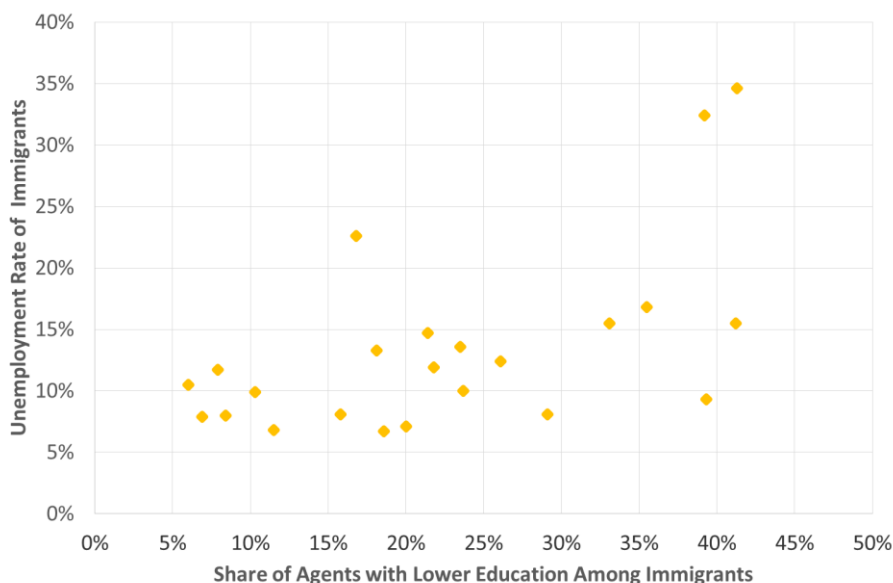
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<sup>31</sup> The overwhelming majority of the empirical literature focuses on the wage returns to education, which should arise on functioning labour markets provided that investment in human capital makes individuals more productive. See Card (1999), Harmon et al (2002), de la Fuente and Jimeno (2009), and Harmon (2012) for surveys. Li (2006) and Riddell and Song (2011) are among the few studies focusing the causal impact of education on unemployment at the individual level.

<sup>32</sup> Naturally, a positive correlation between the population share of people with lower education and the unemployment rate also emerges among natives. The statistical association is weaker than in Figure 4, however.



**Figure 4: Correlation between the Share of People with Lower Education among Immigrants and Unemployment Rates of Immigrants across EU Member States, Populations Aged 20 to 64, 2014**



Each marker represents the combination of share of people with lower education among immigrants and the unemployment rate of immigrants in one EU Member State. Immigrant population consists of first-generation immigrants who are born abroad, and of the native-born second generation with at least one immigrant parent. Lower education: less than primary, primary or lower-primary education (ISCED 11 levels 0-2). Data for Bulgaria and Romania are excluded due to low reliability. Data for Denmark, Ireland and the Netherlands are not available.

Source: Compiled by the author based on data from EU-LFS, ad hoc module 14.

Factors that may put people with immigrant background in a worse labour market position comprise i) differences in host country specific skills, including language, mismatch of the skills and knowledge acquired in the home country and the skills and knowledge that are in demand in the host country labour market, ii) problems of incomplete information, such as failure to recognize the human capital value of foreign degrees and occupations, iii) institutional barriers, or iv) outright discrimination. Still the bottom line from the above figures is that advances in the human capital are a key to reduce unemployment rates (and increase activity rates), especially among the low-skilled people with immigrant background, by a substantial margin. Considering the positive returns of education in terms of wages, this would also help foster material prosperity among the population of migrants.

An assessment of the relation between the skill levels of migrants and labour market outcomes would be incomplete without considering potential spill-over effects on people without immigrant background. It is not least fear of adverse labour market consequences for natives, which often governs popular debates about immigration and immigration policies.

From a theoretical point of view, the effects of immigrants on labour market outcomes of natives are indefinite, and they depend on the skill structure of either population group.<sup>33</sup> The bottom line is that immigrants may cause unwanted effects on the labour market outcomes of natives and distribution of income and that these effects become less relevant if the average skill level of the immigrants increases. Moreover, provided that markets are sufficiently flexible any effect on wages and employment of natives tends to become smaller over time: in particular, employers may adapt to the new environment by posting additional vacancies, whereas workers in response to competition may seek to move on to a different part of the labour market. Yet the precise impact of immigrants on labour market outcomes of resident workers basically remains an empirical question, and there is a vast literature estimating causal effects of changes in the size of the immigrant population or workforce.<sup>34</sup>

Viewed as a whole these studies suggest that the adverse effects of immigrants on wages cluster around zero and if they are negative, tend to be small, even in situations when a large number of immigrants enters the labour market. The findings of Borjas (2003) for the US suggesting that a 10% increase in immigrant labour supply leads to a decline of native weekly wages by 3-4% seem to constitute a kind of upper bound. The meta-analyses of individual country studies by Longhi et al. (2005, 2008) and Okkerse (2008) at least suggest smaller negative wage responses, in the range of around 1%. In addition, the impact of immigration has been found to vary considering different groups of incumbent workers. The estimated adverse effects tend to be larger considering incumbent low-wage earners (DeNew and Zimmermann 1994), or incumbent people with immigrant background (D'Amuri et al. 2010). In the context of European countries where wages are rather rigid, employment displacement effects may be more of a concern than wage effects. Most European studies studying the impact of immigration on native employment (or unemployment) are for Germany, which constitutes a

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<sup>33</sup> Elaborations of the theory how immigrants impact on labour market outcomes of natives are found, for instance, in Altonji and Card (1991), Borjas (1995b), Friedberg and Hunt (1995), Borjas (1999a), Gaston and Nelson (2000), Card (2001), Dustmann and Preston (2006), and Dustmann et al. (2005, 2008).

<sup>34</sup> The key challenges to identify such effects are that immigrants may prefer to settle where the labour market is especially dynamic, and the incumbent workers experiencing adverse effects from an influx of immigrants may respond by out-migrating to another labour market. In either case, the impact of immigrants could appear more positive than it actually is. See Okkerse (2007) for a survey of the methodologies to handle the endogeneity issues. Dustmann and Frattini (2010) and Kerr and Kerr (2011) tabulate the recent empirical findings. Summaries of displacement effects studies until the early 1990s are contained in Borjas (1994) and Friedberg and Hunt (1995). A different measurement approach that circumvents identification issues is simulation of immigration effects in a structural model framework based on pre-estimated production technology parameters, see for example Borjas et al. (1992, 1997). This approach however rests on the strong assumption of natives and immigrants in the same skill group being perfect substitutes, which seems to be in contrast to the evidence.

particularly interesting case in view of the sizeable number of unskilled immigrants the country received in the past. A typical result is reported by Brücker and Jahn (2010) who conclude that a 1% higher labour supply through immigration raises native unemployment by less than 0.1%. Studies for other European countries find comparatively limited displacement effects.<sup>35</sup> Also the meta-analysis by Longhi et al. (2006) suggests that employment effects by immigrants on the incumbent population are generally small.

To summarize, the empirical evidence on wage and employment spill-overs suggests that immigrants in general are rather imperfect substitutes to incumbent workers, even within educational groups. This may indicate differences in employable skills inducing sorting into different segments of the labour market. This interpretation is consistent with stronger adverse effects in segments that use only basic skills, as well as in specialist labour markets where native and foreign experts directly compete (Borjas, 2005). In view of the evidence, the main benefit from education of migrants on labour markets may therefore be better wage and employment opportunities for the migrants themselves. The benefit of advances in education of migrants on natives can be an improved labour market position of the low-skilled, and thus less earnings or income inequality within the members of the native workforce, but such additional economic gains appear to be quite negligible in comparison.<sup>36</sup>

## 5 Short and Long Term Fiscal Impact of Immigrant Education

In this section, we turn to the costs and benefits of education of migrants considering government budgets. The theory of the fiscal impact of immigration is not very developed (deVoretz 2006).<sup>37</sup> Whether people with immigrant background unburden or burden public budgets, that is to say pay more or less to the public coffers than they induce public spending is mostly an empirical question. A look at the typical net fiscal position of individuals by age and

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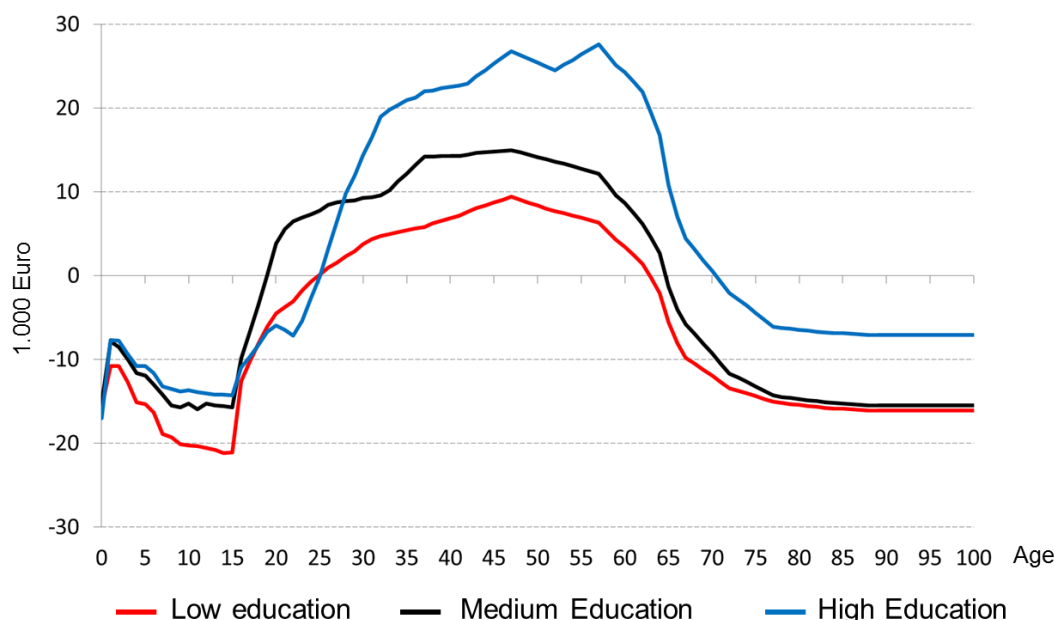
<sup>35</sup> See, for example, Winter-Ebmer and Zweimüller (1997) for Austria, Gross (2002) for France, Dolado et al (1996) for Spain.

<sup>36</sup> A caveat is that the wage and employment displacement literature estimates effects on the basis of changes in labour supply mostly stemming from an influx of new immigrants. Labour market effects on natives may be different if the supply of immigrant human capital increases due to better education of the incumbent population with an immigration background. The endogenous growth arguments of Section **Fehler! Verweisquelle konnte nicht gefunden werden.** however also imply that immigrant upskilling would have a longer term positive impact on labour market opportunities of natives.

<sup>37</sup> The welfare state magnet hypothesis points to the possibility that immigrants are self-selected in a way that makes them more heavy users of social welfare, as expected improvement upon insurance by the welfare state enters the migration decision (see for example Borjas 1999b). Specific tastes of immigrants may imply more or less heavy use of government services compared to natives. Incomplete information about host country institutions may be responsible for less heavy use.

education helps explaining key factors that determine the aggregate impact of immigrant education on government finances in specific settings.

**Figure 5: Average Government Revenue net of Government Spending per capita by Education Level and Age, Germany, 2014**



The calculus underlying the data presented in the figure is elaborated in Bonin (2016). Low education: less than primary, primary or lower-primary education (ISCED 11 levels 0-2); high education: tertiary education (ISCED 11 levels 5-8). People are grouped according to the highest education level reached in the course of the life cycle.

Source: Compiled by the author based on data from the German Socio-Economic Panel and National Account Statistics, the Federal Finance Report and the German Social Budget.

Figure 5 displays age and education specific net government revenue, that is, taxes paid minus transfers received including government spending per capita, for the German case.<sup>38</sup> Irrespective of educational attainment level, there is a characteristic age profile of individual net contributions to the public budget. Citizens, on average, are net transfer recipients until they enter the labour market. They reach their highest net tax payments in the age range from 40 to 55, when they are most productive, and become net transfer recipients again upon entry into retirement. This pattern reflects a “generational contract” normally inherent in public

<sup>38</sup> The underlying calculation distinguishes eight age and education specific items on the revenue side, and eleven on the spending side of the government budget, including spending on various sorts of education. Profiles have been calibrated to ensure that the population weighted sum is consistent with the overall public budget, including the federal level, state level and local government budgets, as well as the budgets of mandatory social insurances. The calculus is elaborated in Bonin (2016).

finances: the current young and old depend on income transfers from the current working age population.

Figure 5 also shows redistribution across educational levels within the same age group. Governments generally use taxes and transfers in order to reallocate resources from the rich to the poor. As income correlates strongly with educational attainment, people with more human capital systematically pay more taxes and payroll contributions, and receive a smaller amount of social transfers, than people with less human capital. The average net contribution to the public budget, at a given age, generally increases in educational attainment levels. In the picture, an exception to the rule is young adults. The reason is that the people categorized into the highest education group enter the labour market later, as they first need to complete their tertiary education.

These patterns have several implications that extend beyond the specific example. First, if migrants acquire more education, and thus attain a better income position, government budgets will benefit from a surplus provided that fiscal policy parameters remain unchanged. The surplus is the larger the more redistributive the tax and transfer system, that is the steeper net contributions to public finances increase with earnings. Second, the improvement in the public budget by lifting education is likely to arise with delay, as individuals still in education tend to be net transfer recipients. Therefore, if education is financed by the government, which explains a large share of the net transfers in young age on display in Figure 5, this is like a social investment. Government spending today will generate higher net revenue in the future, which could recover the initial costs.

Third, due to redistribution by age, an assessment of the net fiscal position of migrants needs to account for age and aging effects. In general the age composition of populations with and without immigrant background is not the same. The average person with immigrant background tends to be younger than the average people without immigrant background. Estimates of current aggregate net fiscal contributions of people with and without immigrant background therefore may not only reflect differences in skills structures, but also in age structures. Moreover, in order to uncover the full fiscal returns of education, it is necessary to accumulate the differences in average net payments to the government by education level over the entire remaining life cycle.

A forward looking long-run analysis however poses additional challenges. Per capita net payments to the government, as they appear in the current cross section of the population (and

are on display in Figure 5), are likely to change over the life course of individuals due to future fiscal policy changes. Since these changes are hard to predict over the longer term, they are often ignored in fiscal impact assessments of immigration in favour of a status quo assumption. With demographic ageing, which will affect many EU Member States in the next decades, however, this may underestimate the net fiscal contribution of migrants. As the population shares of net transfer recipients in old age grow, and population shares of net tax payers in working age are in decline, governments need to adapt fiscal policy and raise net tax rates in the future (European Commission 2016). To the extent that migrants carry parts of this adjustment, their net fiscal contribution is larger than a status quo calculation indicates.<sup>39</sup>

One can broadly divide the empirical studies that aim at assessing the overall net fiscal impact of migration in two categories.<sup>40</sup> Static analyses seek to estimate the overall taxes paid and transfers received by a population of migrants in a given year. The short-term view simplifies the calculations, but ignores the effects of prospective demographic aging and development of fiscal policies. Static analyses may be backward-looking, however, repeating the estimation of aggregate net tax payments by a population group for any year covered by the available data.<sup>41</sup> Dynamic studies are forward looking, and seek to evaluate the aggregate present value of future net payments of migrants over the remaining life cycle in the host country. A dynamic assessment requires more assumptions than a static assessment, and results obtained depend heavily on them. Many dynamic analyses employ the method of generational accounting (Auerbach et al. 1991, 1994; Bonin 2001) which is based on estimates of age specific net payments to the government for an average individual belonging to a certain population group, like those on display in Figure 5. The majority of these studies maintain the initial parameters except for demographic change. Integration of macroeconomic repercussions is however possible by adding a structural model of the economy (Storesletten 2000, 2003).

The challenges to compare the empirical results from the many aggregate fiscal impact of immigration studies are numerous, because of differences in the modelling approach, the underlying data, and the assumptions made in the implementation. The OECD (2013) has made

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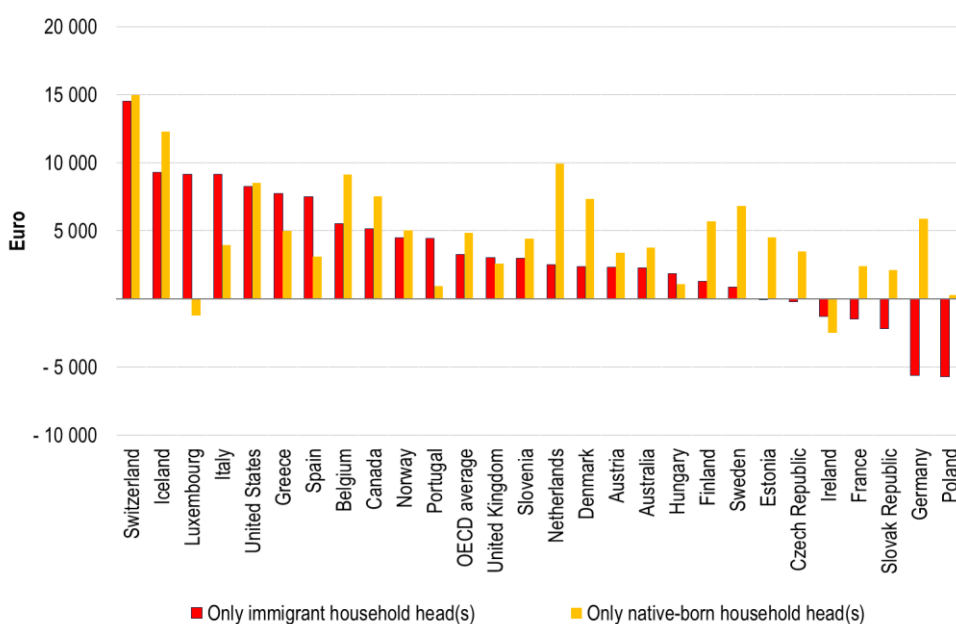
<sup>39</sup> If the adjustment is designed according to a progressive scheme, i.e., if it is systematically levied to a higher proportion on people with higher income, the degree of mismeasurement rises in education levels. A calculation based on status quo parameters then would miss parts of the long-term fiscal returns to migrant education.

<sup>40</sup> See OECD (2013) for a more comprehensive survey of methods used and results achieved of overall fiscal impact by immigration assessment studies.

<sup>41</sup> An example is a study by Dustmann and Frattini (2013) who estimate the overall fiscal effects of immigration to the UK over the period 1995 to 2012.

the most comprehensive attempt at a systematic comparative analysis of the fiscal impact of immigration.<sup>42</sup> Its approach is a static one. The comparison is based on a total of taxes on income, profits and capital gains, social security contributions, value added taxes and taxes on property, minus individually attributable transfers in the domains of social protection, education and active labour market policies, and health, received, at a given point in time.<sup>43</sup>

**Figure 6: Average Net Direct Fiscal Contribution of Households by Migration Status of the Household Head, 2007-09 Average, Euro (PPP adjusted)**



Source: Adopted by the author from OECD (2013).

Figure 6 reports the calculated average net direct fiscal contribution for the average over the period 2007-2009, by migration status of the household head. It illustrates that in most countries, households headed by immigrants are in a worse net fiscal position than households headed by natives. The differences in the net fiscal position of immigrant households across

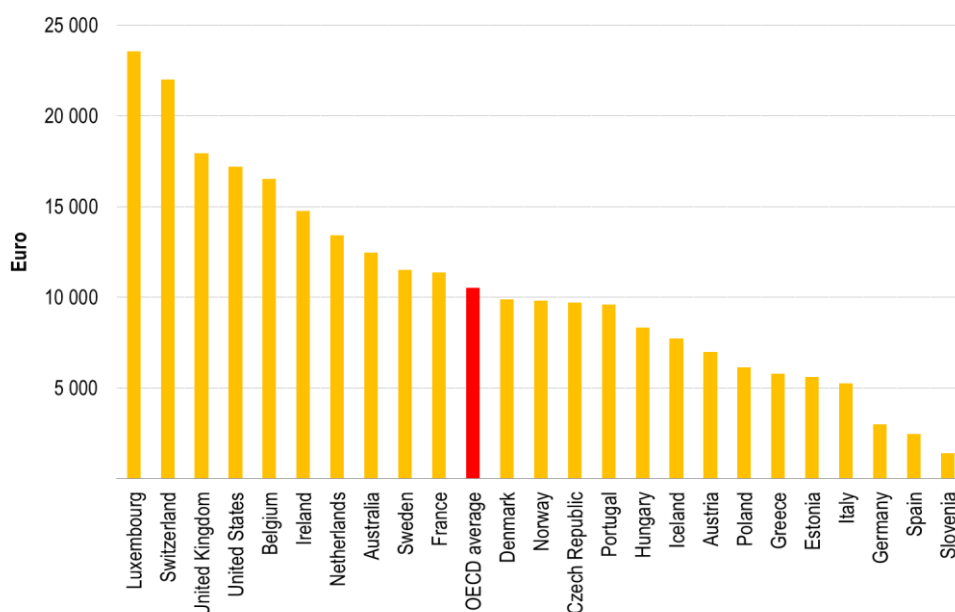
<sup>42</sup> Boeri (2009) employs data on public transfer receipts as well as taxes and contributions paid in the EU-Silc dataset to directly assess the current net fiscal contribution of migrants in several EU Member States during the years 2004 to 2007.

<sup>43</sup> The figures thus miss important items in the overall government budget. With respect to the revenue side, in particular corporate tax revenues, as well as taxes on specific goods and services (most importantly excise taxes) are missing. Regarding the expenditure side, public administration, infrastructure and defence are missing. Overall, the part of expenditures covered (63%) is smaller than the part of revenue covered (74%). Therefore, one cannot conclude from a positive net figure that immigrants would make a positive current contribution to the overall government budgets. A sensitivity analysis based on rough approximations provided in an Annex of the OECD (2013) report suggests that the present fiscal impact is in fact on average slightly negative, if one incorporates the impact of the omitted items.

OECD countries are large. In most countries, they have made a positive overall contribution to the government budget, in the period under study. Immigrant households only are net recipients of government transfers in Slovakia, Poland (countries with small immigrant populations), Ireland, France and Germany (countries with large immigrant populations).

The observed differences are systematically shaped by the design of countries' tax and transfer systems, that is, the degree of inter- and intra-generational redistribution through fiscal policies, as well as the structural features of countries' immigrant populations. One main driver is variation in age profiles. Current net contributions tend to be less favourable where immigration is less of a recent phenomenon, which means that the immigrant population is relatively old. A second driver is variation in educational attainment.

**Figure 7: Differences in Average Net Direct Fiscal Contribution between Households with Higher and Lower Educated Immigrant Household Heads, 2007-09 Average, Euro (PPP adjusted)**



Lower educated: ISCED-Level 2 and below, higher educated: ISCED-Level 5 and above.

Source: Adopted by the author from OECD (2013).

Figure 7 shows that in all countries, as expected, the current net fiscal contribution is larger for households with higher educated immigrant heads than for households with lower educated immigrant heads. Thus aggregate fiscal gains of raising the education levels of low-skilled people with immigrant background in Europe are potentially large. The differences



between the higher and the lower educated however are in general smaller in households with immigrant household heads compared to households with non-immigrant household heads. This is consistent with the observation that wages and employment rates exhibit a weaker positive correlation with formal educational levels among people with immigrant background than among people without immigrant background.

Countries where the net fiscal contribution of households with immigrant household heads increases little in education are characterized by a high share of immigrants employed in positions below formal qualification (like Italy and Spain), a high share of high-skilled humanitarian immigrants who did not come for employment (like Austria and Germany), or a high share of high-skilled immigrants still very young and therefore not in an advanced position on the labour market. This indicates that employment positions reached by immigrants are a third important – and independent – driver of their current net fiscal contributions.

Forward looking accounting studies taking into account the life-cycle of immigrants in the host country confirm the result that the aggregate fiscal gains of lifting the education of immigrants to higher levels could be large. The estimated positive fiscal effects appear even stronger adopting a long-run fiscal perspective, as annual net gains accumulate over time. Storesletten (2000) in an influential study for the US calculates that an average high-skilled immigrant creates a net government gain of 96,000 dollars, in present value terms, whereas an average medium-skilled immigrant causes a social net cost of 2,000 dollars, and the average low-skilled legal immigrant a social net cost of 36,000 dollars.

A generational accounting study by Bonin (2014) for Germany calculates that an average low-skilled person, traced from birth over the complete life-cycle under status quo conditions, creates a net fiscal cost, in present value terms, of 222,000 Euro.<sup>44</sup> In comparison to an average low-skilled person, the net fiscal position of an average medium-skilled person is 173,000 Euro larger, that of an average high-skilled person 330,000 Euro.<sup>45</sup> The skill effects remain large, if one looks at the future remaining lifetime net contribution to the public budget of people aged

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<sup>44</sup> The calculation considers, on the one hand, all taxes and social insurance contributions paid to, and on the other hand, all monetary and non-monetary transfers received from the government. It also considers, the per capita net value of government expenditure that is not immediately attributable to individuals, such as expenditure on defense or public infrastructure. The figures cover the federal, state and local levels of government, as well as all statutory social insurance schemes.

<sup>45</sup> In the German case, the lifetime net fiscal contribution made by an average individual is negative. This is a reflection of the fact that the status quo of fiscal parameters, in view of demographic aging and given the necessity to pay interest on past debt, is not sustainable.

25, a typical age of newly arriving immigrants. While the average low-skilled 25-year-old creates a net cost for the government of 11,000 Euro, the average medium-skilled 25-year-old creates a net gain of 154,000 Euro, and the average high-skilled 25-year-old of 440.000 Euro.

Roodenburg et al. (2003) in a generational accounting study for the Netherlands indirectly address the net fiscal returns to increasing education levels of immigrants. They find that the full lifetime net transfer receipt from the government of a representative immigrant with non-Western characteristics who mostly come from low-income countries and are often low-skilled amounts to 96,000 Euro. In contrast, the full lifetime net transfer receipt of the average individual with Dutch characteristics, characterized by a better educational attainment than the average non-Western immigrant, is only 38,000 Euros.

These differences make a strong case for targeting skilled-immigrants in immigration policy, but also investing into better education of the incumbent population with immigrant background. The social investment case of education is explicitly addressed in a recent study by Bonin (2016) that calculates, on the basis of the net tax payments profiles by age and education shown in Figure 5, the potential returns to promoting vocational education of the recent refugees to Germany. An analysis of a range of future scenarios shows the result that if 100.000 refugees upon completion of the labour market integration process on average attain the fiscal position of medium-skilled residents, instead of the position of low-skilled residents, the present value of the aggregate net fiscal burden from humanitarian immigration falls by about 30 bn. Euro. In other words, if the government had to spend less than 30 bn. Euro for lifting 100.000 refugees from low to medium education, this would be profitable investment.

## 6 Implications for Policy-Making

The possible positive effects on aggregate output, labour markets and government finances show the economic importance of education of migrants in the short run and in the long run. In view of the lasting disadvantages of people with immigrant background compared to people without immigrant background in educational attainment and skill levels in many EU Member States, measures that successfully advance endowment of the former with marketable human capital may therefore contribute to prosperity in the host countries. This section goes on to point out some elements that could work in a strategy aimed at better education of migrants. Any policy recommendations however must remain cautious. One reason is that the empirical research on the causal effects and efficiency of education policies for this target group altogether turns out to be quite limited so far. Another reason is that the steps necessary to effectively and efficiently improve economically relevant skills of migrants heavily depend on the specific institutional set ups, but also on the specific mixture of people with immigrant background present in the host countries. Being aware of the risk of over-simplification, the following will cautiously highlight some promising directions for policy making emerging from research in economics. We mostly discuss issues related to schooling, but higher education and active labour market policies for adults are also considered.

In view of high long term returns, which are dynamically reinforced by so-called self-productivity in learning (“skills beget skills”) and skill complementarities, a general advice for education policy is focus on formation of cognitive and non-cognitive skills early on in the life-cycle. The technology inherent in skill formation processes furthermore implies that directing educational investments to socio-economically disadvantaged children at young ages can be a powerful tool to reduce lifetime inequality.<sup>46</sup> Policies aimed at closing native-immigrants skills gaps thus should pay attention to pre-school education and elementary schools (Blau and Currie 2006).

An important element of early intervention strategies at these stages is closing gaps in cultural capital between people with and without immigrant background. The observed systematic negative impact of age at immigration on educational attainment of young

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<sup>46</sup> Seminal contributions setting up the structural framework of skill formation technology over the life cycle are Heckman (2006, 2008), Cunha et al. (2006, 2010), and Cunha and Heckman (2007). Pfeiffer and Reuss (2007) employ the skill formation technology framework and German PISA data to simulate the long term economic growth and distributional consequences of educational investments in children of different age who start from different socio-economic backgrounds.

immigrants indicates that the degree of acculturation may matter for the acquisition of host country specific skills and knowledge that are the basis of further learning (van Ours and Veenman 2006). A particularly important condition for effective early learning is acquisition of host country language skills. This shows, for example, in the observation that achievement gaps tend to be smaller for immigrant children where incoming migrants are systematically more likely to carry at least some knowledge of the host country language, like it is the case in English-speaking countries (Entorf and Minoiu 2005). Another piece of evidence is that first-generation immigrant pupils at age 15 who do not speak the host country language at home, even after adjusting for socio-economic status of the parents, suffer from a substantial disadvantage in reading proficiency in comparison to immigrant pupils who employ the host country language in their domestic environment.<sup>47</sup>

The latter result also demonstrates that successful education policies for children with immigrant background ideally should get their parents involved (Lee and Bowen 2006). In practice however outreach to and effective involvement of immigrant parents can be difficult. They themselves may not have good command of language or, in more general terms, may be in a distant position to host country culture, knowledge or institutions. Since this is more likely for first-generation immigrants who effectively have low educational attainment or originate from culturally distant countries, strategies that crucially hinge on mobilization of parents could be ineffective and eventually enlarge skills gaps of children with immigrant background.

This calls for compensatory interventions, like tutoring or special tuition to make children with immigrant background learn early and quickly the skills required to follow the host country curriculum, that are secured by kindergartens and schools. Policies to promote enrolment of immigrant children, such as entry into school at a young age and good accessibility of day care services, may help foster the effectiveness of these instruments (Cobb-Clark et al. 2012; Schneeweis 2011). Employment of instructors with an immigration background and a culturally-aware design of general curricula may lend additional support (Heckmann 2008).

Encouraging and supporting those parents with immigrant background in need to become more supportive to education of their children is still a useful complementary policy. A low-

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<sup>47</sup> See OECD (2012). This study contains a very comprehensive analysis of the between-country and within-country differentials of natives-immigrants gaps in the PISA 2009 test scores of pupils at a decisive age for the acquisition of advanced schooling or higher education. It also discusses possible policy directions for realizing the full potential of immigrant pupils.

threshold intervention, for example, is provision of orientation about the education system and the relative returns of different types of education in the host country, which can be very remote from what immigrants are used to in their country of origin.

While socio-economic disadvantage and ethnic background contribute substantially to the less favourable achievements of pupils with immigrant background, the variation in outcomes remaining when controlling for these factors points to the importance of environmental factors. Countries may pursue integration policies with different intensity, and the instruments in place may be arranged and governed more or less effectively.<sup>48</sup> Beyond the quality of interventions targeting immigrant pupils, the general design of school systems may be more or less conducive to social inclusion (Woessmann 2016). This concerns all children starting from underprivileged positions, but may be in effect more relevant for children with immigrant background who often make up a large portion of these children. It is also possible that certain education or social policies applying to all have different effects on pupils with and without immigrant background (OECD 2012).

Early tracking, that is a separation of pupils into different performance-based education tracks at a rather young age, may be one example of an education policy that could create special disadvantage for children with immigrant background.<sup>49</sup> Due to their background, they have a systematically higher probability to enter school with language, knowledge or skills deficits compared to children without immigrant background, which translate into lower chances to reach the performance standards required to move up to higher education tracks already at young age, irrespective of their true abilities. As early tracking decisions are often difficult to undo by educational mobility later in life, children from disadvantaged immigrant households may in effect suffer from a lifetime human capital disadvantage (Hanushek and Woessmann 2006; Woessmann 2009). This presumption is supported by empirical evidence that achievement of older immigrant students is lower in countries with early tracking in schools, even when carefully controlling individual level characteristics correlating with education outcomes (Cobb-Clark et al. 2012).

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<sup>48</sup> In the realm of education policies, the relations between inputs and outcomes are not straightforward and therefore difficult to measure and generalize (Hanushek 2003, Hanushek and Woessmann (2011)). A more strongly established empirical result is that elements of good governance of schools are important for high levels of achievement (Link 2012, Link and Woessmann 2012). There is however a lack of empirical studies focusing the specific interaction of governance and achievement of immigrants.

<sup>49</sup> Some EU Member States, like Austria, Germany, Hungary and Slovakia, track pupils as early as age 10, while the majority of the Member States tracks at age 15 or 16.

One policy answer to avoid disadvantages of pupils with immigrant background therefore could be to abandon or postpone tracking and co-educate all students as long as possible. Such a solution however can be hard to implement: it would constitute a major change in long-established school systems. A less invasive response is setting rules accounting for the disadvantage of pupils with immigrant background, such as lowering the threshold performance levels they require to be allowed to move on to a higher educational track. Distinguishing these alternatives is relevant for reflections on approaches to immigrant education policies reform beyond the particular application. Adapting regulation of schooling for those with special needs may be a more manageable way to create a more inclusive educational environment than changing the school system altogether. Examples for potential compensatory treatments of students with special learning difficulties, including children with immigrant background with poor starting conditions, include mandatory enrolment in kindergartens, priority for school entry at a younger than the regular age, or extended compulsory school attendance.

A final important concern as regards the schooling outcomes of children with immigrant background is their concentration in certain schools. Co-education of pupils with similar background may have some positive effects as teaching may become more efficient if classes are more homogeneous.<sup>50</sup> On the other hand, interaction of peers of different cultural background may generate positive externalities, such as quicker acquisition of language skills (Sprietsma and Pfeil 2015). In addition, a high concentration of disadvantaged pupils in certain schools may lower their quality, for example, if it results in a decline in the average quality of teachers. There is empirical evidence that educational outcomes of pupils with immigrant background may indeed be adversely affected by differences in school quality. Pupils in the second generation who themselves have an advantageous background but go to school with many disadvantaged students achieve lower test scores than comparable pupils who attend a school with many advantaged students. Adverse school quality effects appear to be especially pronounced in France, Germany, and Italy, whereas they are rather small in the Scandinavian countries (OECD 2012). They strongly relate to clustering of migrants in segregated neighbourhoods, which may reflect economic and social exclusion that affect even the better qualified among the immigrant parents (Sanbonmatsu et al. 2006).

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<sup>50</sup> See Epple and Romano (2011) for a survey of the extensive literature on peer effects in primary or secondary schools.

In the realm of education policies, giving more resources to low-quality schools may seem the obvious recommendation, but according to the evidence, this often does not seem to generate a substantial gain in educational outputs. Another option would be to expand school choices which would allow parents with immigrant background to send their children to better quality schools outside of their catchment area. Such measures however are controversial and the empirical evidence that socio-economically disadvantaged group benefit from them is not strong.<sup>51</sup> Therefore, more effective counteractions against adverse clustering of migrants may be found in the realms of housing market policies, labour market policies or anti-discrimination policies. Such policies however probably require a lot of time to develop full impact.

A special policy challenge related to general education concerns people whose schooling career is interrupted due to the event of migration. Parents when taking mobility decisions would seek to take possible difficulties for their children at school age into account. As a result, one would in general expect positive self-selection in the sense that families plan the timing of their move such that the transfer between school systems does not become too disruptive for the development of their children. This includes the possibility that adult immigrants leave minors behind with a part of the family in their country of origin. Still, as migration choices are not exclusively driven by parental concern for the well-being of their offspring, foreign-born children may arrive at an age that is disruptive to skill formation. In particular the timing of arrival may not be optimal with respect to develop language proficiency. This is a skill central to further skill formation, and while children are acquiring proficiency in a new language, acquisition of subject skills at schools is probably less efficient. These factors may explain the well-established empirical observations that children who arrive at an older age in the destination country suffer from worse educational outcomes during adolescence (e.g., Böhlmark 2008; Bratsberg et al. 2011), and worse adult socioeconomic attainment (e.g. Bleakley and Chin 2004; Lee and Edmonston 2011).

Such long-term dynamic effects suggest that systematic support of schools for provision of measures aimed at speedy language acquisition of immigrant pupils arriving at a rather late age could be in order. This calls for tuition in the new host country language outside the ordinary curriculum. Maintaining co-education with pupils with no immigrant background may foster acquisition of language proficiency through interaction with peers. At the same time, however, one may need to arrange for provision of additional specific coaching units, in order

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<sup>51</sup> See Edmark et al. (2014), Deming (2011), Hastings et al. (2006), and Hoxby (2000).

to balance possible difficulties with the acquisition of subject skills taught in a foreign language and to bridge cultural gaps in pupils' curricula.

Considering immigrants with interrupted schooling careers, the group of young refugees warrants particular attention. Among the refugees and asylum seekers who recently arrived in Europe the share of adolescents arriving with low levels of (or even no) basic schooling has been quite large. Many schooling careers have been cut short by turmoil and lack of access to public infrastructure in the main countries of origin. Thus the basic skills of teen-aged refugees can lag behind those of same-aged people raised in the receiving countries by a wide margin. Moreover, adolescent asylum seekers who are in principle old enough to start upper secondary education can suffer from basic skill deficits preventing access to vocational training. As the current situation is basically without precedent, the existing empirical research provides a rather weak basis for inferring what could work best to support educational development of this target group.

In designing general education policies to train refugees who need to complete an interrupted schooling career, attention needs to be paid to peer effects among pupils. Beyond the effect of increasing immigrant education, added diversity in the classroom due to inclusion of refugees with no native-language background, of refugees of markedly higher age with the same level of competencies, or of refugees of the same age with markedly lower skills may yield spill-over effects on incumbent pupils with or without immigrant background. The ample empirical research on peer effects in the class room, however, does not allow any definite *ex ante* predictions of the size – and direction – of such effects given this particular context.<sup>52</sup> Still, to the extent that in a specific environment negative side effects are to be expected on incumbent pupils, instruction of the refugees should take place in separation.

A more general policy issue is to open schools for young adult refugee pupils, in order to provide them with a possibility to complete lower-secondary education that is prerequisite to cope successfully with upper secondary education. Raising the compulsory school leaving age for young refugees with low levels of general educational attainment may help achieving this goal. In order to apply this measure on the right target group, development and use of adequate routines for skills measurement among people of different cultural and learning backgrounds is

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<sup>52</sup> Peer effects in the classroom associated with immigration, in the European context, have been studied, for example, by Schneeweis (2015), Brunello and Rocco (2013), Geay et al. (2013), Ohinata and van Ours (2012), and Jensen and Würtz-Rasmussen (2011).



a necessary complement. Precise measurement of basic general skills endowments of children and adolescent refugees may also provide information that is useful to avoid negative peer effects associated with changing classroom composition.

We now turn from basic schooling to higher education policies. While raising the share of people with immigrant background attaining tertiary education may be especially profitable for receiving countries from an economic viewpoint, targeted higher education policies receive very little attention in the economics literature. A possible explanation is that international students who enter the host country via student visa or special regulations for researchers, constitute a strongly positively selected group. Universities are involved in the selection process, and they would seek to admit the best foreign students. Excellence also is a selection criterion of scholarship and international exchange programs. Finally, international students in general need to substantiate adequate language capacity. Failure rates of international students therefore are generally low, and there is little need for additional support by education policy. The main policy issues concerning this immigrant population group therefore are how to promote their propensity to stay in the country upon completion of higher education, and to achieve a smooth transition into the labour market for the stayers. But these are matters of migration legislation and labour market policy, rather than higher education policy.

However, in the realm of higher education policies for immigrants, it is important to consider two target groups outside the international student channel. A first target group consists of foreign-born immigrants striving for academic qualifications who have arrived in the host country via economic, family reunification or humanitarian immigration channels. This group incorporates, for example, refugees and asylum seekers who have started but not completed university education in their country of origin may seek access to higher education in order to continue and complete their academic training. Here a first policy tool to advance higher education is proper measurement and certification of qualifications obtained abroad, in order to facilitate acceptance by institutions of tertiary education. In addition, in contrast to young adults who can directly access the university system as international students, people belonging to this target group may require especial provision of preparatory courses to overcome language or knowledge deficiencies.

A second target group consists of people with immigrant background born and raised in the host country, i.e. the second (or even third) generation. Here a challenge for education policy is that many in this group do not rise to the educational achievement levels that are

necessary to be accepted for tertiary education. To the extent that fundamental education fails, one is back to the realm of early intervention and school policies.

Within either of the two target groups, tertiary education policy needs to devote special attention to those people who would be sufficiently able to enter universities but do not do so, and those who do enter, but fail to graduate although they would in principle be able to do so. The issues that are at stake in this realms are basically the same as for other people with a socio-economically disadvantaged background, in particular people descending from families with low educational attainment and little previous exposure to an academic environment (Bowen et al 2009). As far as this target group is concerned, different types of interventions may achieve positive effects on tertiary education outcomes.

A first policy that may help raise tertiary enrolment rates is adequate counselling (Hurwitz and Howell 2014; Avery 2013). A subgroup of this strategy that has been shown to generate positive enrolment effects is near-peer counselling of school students by current university students (Carrell and Sacerdote 2013). Also later counselling of students coming from a disadvantaged background at the university may help overcome problems of academic integration which are a predictor of dropout and more frequent among those from lower socio-economic backgrounds or holders of different cultural capital (Zepke et al. 2006). A second strategy is to work on the potential liquidity constraints. On the one hand, tuition fees have been shown to dampen higher education entry and completion rates especially of socio-economically disadvantaged people.<sup>53</sup> On the other hand, repayment risk-free student loans such as those in the United Kingdom, seem to have negligible adverse impact on disadvantaged students (Chapman 2006; Lochner and Monge-Naranjo 2016). Financial aid for low-income students may help foster college enrolment rates, and have positive effects on student persistence and degree completion. These effects have been observed, for example, by Fack and Grenet (2015) in a study considering the single largest need-based student grant program in France.<sup>54</sup>

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<sup>53</sup> There is quite extensive empirical research on the relation of tuition fees and low-income student enrolment and persistence, which however mostly employs data from North America. See for example Coelli (2011), Dowd and Coury (2006) and Paulsen and St. John (2002).

<sup>54</sup> Most of the other evidence on the effects of student grant programs on higher educational programs focuses on small scale programs (e.g., Dynarski 2003), or on students already enrolled (e.g., Angrist et al. 2009), or on initial enrolment effects of large-scale programs, see Kane (2006) for a survey.

A third type of strategy to promote participation of minority and disadvantaged students in higher education institutions is diversity policies or affirmative action. However, the aggregate economic and efficiency effects of selective university admission rules that consider individual characteristics other than achievement are still a much debated issue, and a disparate picture emerges from the vast body of theoretical and empirical research on the topic (Holzer and Neumark 2004). It appears that affirmative action policies do not always lead to the intended positive effects on educational attainment by minority groups and may induce unwanted side-effects and efficiency losses (Arcidiacono and Lovenheim 2015). The possibly complex consequences suggest that policy makers should treat positive discrimination with caution, and keep sufficient weight on profiling of actual achievement (Cestau et al. 2015).

To conclude this section, we turn to policies that could help fostering human capital of migrants who have passed the stage of full-time schooling or learning, that is, policies in the area of adult education and training. Such policies are especially relevant considering first-generation immigrants upon arrival. The transition to another country requires acquisition of new host country specific skills, and compensation for loss of non-transferable human capital acquired at home. These challenges resemble the demands on adaptability of skills created by structural and technological change that constitute a rationale for lifelong learning. In helping individuals cope with changes in demand for specific skills, sufficient general education plays a key role. Immigrants however may not carry enough of it, in particular if they originate from countries with weak education systems. Accumulating them at adult age is a laborious task and, considering the technology of skill formation, probably much more costly than doing so at earlier ages.

If immigrants need to acquire general human capital in the host country, one should not expect that firms will contribute to the costs, as is the case for firm specific human capital. The reason is that they could not recover the cost on a competitive market. This constitutes a role for governmental intervention to support acquisition of general human capital by immigrants without sufficient resources. Governments should seek to identify immigrants' individual skill deficiencies right upon arrival, and nurture the acquisition of lacking skills that are relevant for successful adaptation into the environment from the earliest possible date. This requires encouragement, and giving new immigrants orientation about the relative returns to different skills, and how to attain them in the host country. Governments may furthermore need to finance training for educational advancement, especially among the immigrants who enter for

other reasons than work or study, like family members or refugees and asylum seekers. Note that the strategy described resembles the approaches pursued by some EU Member States, such as Germany, for handling education and training of the many recent refugees to Europe who are not well equipped with the skills required in a knowledge-based economy, and furthermore often do not carry enough of the basic general skills that would allow speedy acquisition of host country specific skills and knowledge.<sup>55</sup>

As regards adult migrants who are not recent arrivals, it is important to stress that current knowledge of what works best to rectify skills deficiencies or to achieve productive further learning and training at older ages is limited. Impact assessment studies suggest that in general job-related training is quite ineffective and also inefficient, no matter whether one considers training of the workforce (Oosterbek 2013) or training of the unemployed (Heckman et al. 1999; Card et al. 2010). A meta-analysis of more than 30 studies for European countries that estimate specific effects of several types of active labour market measures on migrants confirms this tendency.<sup>56</sup> Most of these studies present an insignificant effect of training on employment chances. The same is true for public sector employment and job-search assistance. The only type of intervention that appears to be systematically associated with a higher rate of positive employment outcomes across case studies is wage subsidies. Wage subsidies primarily compensate productivity disadvantage, which strengthens demand for workers with a skills disadvantage. They can however also contribute to skills enhancement, as learning on the job occurs. There is hardly any empirical evidence allowing to judge the size of this possible indirect skills effect, as the available analyses of active labour market policies considering migrants mostly address short term employment effects.

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<sup>55</sup> See Desiderio (2016) for a discussion of the policy options for integrating refugees into European host country labour markets. Rietig (2016) focuses on the German case. It is too early to say whether the early intervention policies to promote educational advancement and labour market integration of the refugees would reach their goals. Tentative evidence from an evaluation of the “Early Intervention” pilot program in Germany suggests that a combination of early diagnosis of skills and skills deficiencies, intensive counselling, training of fundamental host country skills and establishing contacts with the labour market may help make progress. The example however also suggests that the gains achieved, at least over the shorter term, are rather small, and that benefits are rather small in relation to costs (Büschel et al. 2015). See Konle-Seidl and Bolitz (2016) for a thorough review of strategies and good practices to foster labour market integration of refugees.

<sup>56</sup> See Butschek and Walter (2014). Their meta-analysis also contains a comprehensive list of the relevant studies in this field of research.

## 7 Conclusion

This report makes a strong case for raising educational outcome levels of the populations with immigrant background in Europe on economic grounds. At the individual level, better education nurtures integration into the labour market and thus earnings. At the aggregate level, it leads to higher economic output and growth, and a smaller share of low-skilled individuals may help reduce income inequality and make Europe more inclusive. It is important to stress that most of the arguments in favour of better skills for migrants also apply to other people who are at disadvantage in European knowledge-based economies due to low levels of educational achievement. It is rather the content of the required interventions that makes migrants a special case. A foremost challenge is bridging language gaps, as command of the host country language is a pre-condition for successful integration into labour market and accumulation of host country specific capital. Another key challenge concerning immigrants is compensating for loss of human capital that is not transferable across borders, and provision of host country specific cultural capital – knowledge, skills, competencies and values – that lays a basis for rapid learning in a foreign environment.

Early intervention appears to be the most efficient strategy to advance educational outcomes of migrants. This demands directing attention to integration and special tutoring of the second generation in kindergartens and elementary schools, but also to adult immigrants upon arrival, especially if they arrive via non-economic immigration channels. The returns to public resources devoted to immigrant education may not be immediately visible. They tend to grow over time and ultimately can become substantial. This makes immigrant education a social investment case: the expected future returns could justify public resources devoted to it today.

In making educational investments, policy-makers need to set priorities, as government resources are limited. Where budget constraints limit choices, one should concentrate resources on children with immigrant background at very young age. Furthermore one should employ policies that target the migrants, respectively groups of migrants, benefitting the most from public education policies. This however requires effective profiling. Such profiling requires reliable recognition of the formal certificates and more importantly of the skills that immigrants carry from abroad, considering that integration issues are partly related to a lack of information, rather than a lack of skills.

In view of the large diversity of populations with immigrant background and their education achievements across the EU Member States, it is obvious that a “one size fits all” approach to immigrant education in Europe would be far from efficient. Instead, tailor-made local solutions are needed. Ideally, these should be embedded into a comprehensive strategy working against economic and social exclusion of migrants. For example, immigration policies securing residence status, labour market policies removing employment barriers and encouraging labour market participation, or town and country planning preventing ethnic segregation may help raise the individual and aggregate returns to education and thereby render specific policies in the domain of immigrant education more effective. As current knowledge about what works to promote economic and social inclusion of migrants is rather limited, fragmented and case specific, integration programs targeted to migrants in Member States should be subject to careful impact evaluation and be subject to ex-ante pilot testing before they are implemented in full. Experts' networks fostering permanent sharing of collected experience and approaches across Member States and mutual learning activities would also be beneficial.

In short, advancing education of migrants is a considerable challenge for host countries. It requires coordination of different policy areas and involvement of many stakeholders. It also requires political stamina as positive effects probably arrive with long delay. In the long term the overall gains for the economy may be substantial and warrant a strong focus on education policies fitting migrants. Better social integration via education may also help create more positive attitudes of European citizens towards people with immigrant background and immigration, in a time of rising international mobility and growing scepticism about foreigners.

## References

- Acs, Z. J., D. B. Audretsch, P. Braunerhjelm and B. Carlsson (2004), The missing link: The knowledge filter and entrepreneurship in endogenous growth, CEPR Discussion Paper No. 4783, London.
- Acemoglu, D. and J. D. Angrist (2000), How large are the social returns to education? Evidence from compulsory schooling laws, in: B. S. Bernanke and K. Rogoff (eds.), NBER Macroeconomics Annual 2000, Cambridge, MA: MIT Press, 9-59.
- Aghion, P. and P. Howitt (1998), Endogenous growth theory. Cambridge MA: MIT Press.
- Aghion, P., N. Bloom, R. Blundell, R. Griffith and P. Howitt (2005). Competition and innovation: An inverted-U relationship, *The Quarterly Journal of Economics* 120, 701-728.
- Aghion, P., R. Blundell, R. Griffith, P. Howitt and S. Prantl (2009), The effects of entry on incumbent innovation and productivity, *Review of Economics and Statistics* 91, 20-32.
- Agrawal, A., D. Kapur and J. McHale (2008), How do spatial and social proximity influence knowledge flows? Evidence from patent data, *Journal of Urban Economics* 64, 258-269.
- Algan, Y., C. Dustmann, A. Glitz and A. Manning (2010), The economic situation of first and second-generation immigrants in France, Germany and the United Kingdom, *Economic Journal* 120, F4–F30.
- Altonji, J. G. and D. Card (1991), The effects of immigration on the labor market outcomes of less-skilled natives, in J. M. Abowd and R. B. Freeman (eds.), *Immigration, trade and labor*, Chicago: University of Chicago Press, 201-234.
- Andersen, T. M. and S. Migali (2016), Migrant workers and the welfare State, IZA Discussion Paper 9940, Bonn.
- Anghel, R. G., M. Piracha and T. Randazzo (2015), Migrants' remittances: Channelling globalization, in: L. S. T. and S. McMahon (eds.), *Handbook of the international political economy of migration*, Cheltenham and Northampton: Edward Elgar, 234-258.
- Angrist, J., D. Lang and P. Oreopoulos (2009), Incentives and services for college attainment: Evidence from a randomized trial, *American Economic Journal: Applied Economics* 1(1), 139-163.
- Arcidiacono, P., P. Bayer and A. Hizmo (2010), Beyond signaling and human capital: education and the revelation of ability, *American Economic Journal: Applied Economics* 2, 76-104.
- Arcidiacono, P. and M. Lovenheim (2015), Affirmative action and quality-fit tradeoff, NBER Discussion Paper No. 20962, Cambridge MA.
- Auerbach, A., J. Gokhale and L. Kotliff (1991), Generational accounts: A meaningful alternative to deficit accounting, *Tax Policy and the Economy* 5, 55-110.

- Auerbach, A., J. Gokhale and L. Kotliff (1994), Generational accounts: A meaningful way to evaluate fiscal policy, *Journal of Economic Perspectives* 8, 73-94.
- Avery, C. (2013), Evaluation of the College Possible program: Results from a randomized control trial, NBER Working Paper No. 19562, Cambridge MA.
- Bardak U. (2014), Migration and Skills Development Agenda in ETF partner countries. ETF position paper, European Training Foundation, Turin.
- Basilio, L. and T. Bauer (2010), Transferability of human capital and immigrant assimilation: An analysis for Germany, IZA Discussion Paper No. 4716, Bonn.
- Becker, G. S. (1964), Human capital: A theoretical and empirical analysis, with special reference to education. New York: National Bureau of Economic Research.
- Beine, M., F. Docquier and H. Rapoport (2001), Brain drain and economic growth: theory and evidence, *Journal of Development Economics* 64, 275-289.
- Belot, M. and S. Edrven (2012), Cultural barriers in migration between OECD countries, *Journal of Population Economics* 25, 1077-1105.
- Berliant, M. and M. Fujita (2009), Dynamics of knowledge creation and transfer: The two person case, *International Journal of Economic Theory* 5, 155-179.
- Blau, D. M. and J. Currie (2006), Pre-school, day care, and after-school care: Who's minding the kids? In: E. A. Hanushek and F. Welch (eds.), *Handbook of the economics of education*, Amsterdam: North-Holland, 1163-1278.
- Bleakley, H. and A. Aimee Chin (2004). Language skills and earnings: evidence from childhood immigrants, *Review of Economics and Statistics*, 86, 481-496.
- Böhlmark, A. (2008), Age at immigration and school performance: a siblings analysis using Swedish register data, *Labour Economics* 15, 1366-1387.
- Bonin, H. (2001), *Generational Accounting – Theory and Application*, Springer, Berlin.
- Bonin, H. (2014), The contribution of foreign residents and future immigration to German government finances, Bertelsmann Foundation: Gütersloh. (In German.)
- Bonin, H. (2016), Humanitarian Migration and Sustainability of German government finances, *List Forum für Wirtschaftspolitik*, forthcoming. (In German.)
- Borghans, L., A. L. Duckworth, J. J. Heckman and B. ter Weel (2008), The economics and psychology of personality traits, *Journal of Human Resources* 43, 972-1059.
- Borjas, G. (1987), Self-selection and the earnings of immigrants, *American Economic Review* 77, 531-553.
- Borjas, G. J. (1992), Ethnic capital and intergenerational mobility, *Quarterly Journal of Economics* 107, 123-150.
- Borjas, G. J. (1993), The intergenerational mobility of immigrants, *Journal of Labor Economics* 11, 113-135.



- Borjas, G. J. (1994), Economics of immigration, *Journal of Economic Literature* 32, 1667-1717.
- Borjas, G. J. (1995a), Ethnicity, Neighborhoods, and Human-Capital Externalities, *American Economic Review* 85, 365-390.
- Borjas, G. J. (1995b), The economic benefits from immigration, *Journal of Economic Perspectives* 9, 3-22.
- Borjas, G. J. (1999a), The economic analysis of immigration, in: O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, Volume 3A, Amsterdam: North-Holland, 1697-1760.
- Borjas G. J. (1999b) Immigration and welfare magnets, *Journal of Labor Economics* 17, 607-637.
- Borjas, G. J. (2003), The labor demand curve is downward sloping: Reexamining the impact of immigration on the labor market, *The Quarterly Journal of Economics* 118, 1335-1374.
- Borjas, G. J. (2005), The labor-market impact of high-skill immigration, *American Economic Review Papers and Proceedings* 95, 56-60.
- Borjas, G. J., R. B. Freeman, and L. F. Katz (1992), On the labor market effects of immigration and trade, in: G. J. Borjas and R. B. Freeman (eds.), *Immigration and the work force: Economic consequences for the United States and source areas*, Chicago: University of Chicago Press, 213-244.
- Borjas, G. J., R. B. Freeman and L. F. Katz (1997), How much do immigration and trade affect labor market outcomes?, *Brookings Papers on Economic Activity* 1997(1), 1-90.
- Bowen, W., M. Chingos and M. McPherson (2009), *Crossing the finish line: Completing college at America's public universities*, Princeton: University Press.
- Bratsberg, B. and J. Ragan (2000), The impact of host-country schooling on earnings: a study of male immigrants in the United States, *Journal of Human Resources* 37, 63-105.
- Bratsberg, B., O. Raaum and K. Røed. (2011), Educating children of immigrants: closing the gap in Norwegian schools, *Nordic Economic Policy Review* 3, 211-251.
- Brewer, D. J. and P. J. McEwan, eds. (2010), *Economics of education*. Amsterdam: Elsevier.
- Brücker H. and E. Jahn E. (2010) Migration and wage-setting: Reassessing the labor market effects of migration, *Scandinavian Journal of Economics* 113, 286-317.
- Brücker, H., N. Rother and J. Schupp (eds.) (2016), *IAB-BAMF-SOEP-Survey of Refugees: Overview and First Results*, IAB-Forschungsbericht 16/2016, Nuremberg: IAB. (In German)
- Bruhin, A., Fehr-Duda, H. and T. Epper, T. (2010), Risk and rationality: uncovering heterogeneity in probability distortion, *Econometrica* 78, 1375-1412.

- Brunello, G. and L. Rocco (2013), The effect of immigration on the school performance of natives: cross-country evidence using PISA test scores, *Economics of Education Review* 32, 234-246.
- Budra, S. and P. Swedberg, P., (2012) The impact of language proficiency on immigrants earnings in Spain. IZA Discussion Paper No. 6957.
- Büschel, U., V. Daumann, V., M. Dietz, E. Dony, B. Knapp and K. Strien (2015), Final report on pilot study Early Intervention, Results of qualitative evaluation by IAB, IAB Research Report 10/2015: Nuremberg. (In German.)
- Butschek, S. and T. Walter (2014), What active labour market policies work for immigrants in Europe? A meta-analysis of the evaluation literature, *IZA Journal of Migration* 3.2014, 1-18.
- Card, D. (1999), The causal effect of education on earnings, in: O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, Vol. 3A, Rotterdam: Elsevier, 1801-1863.
- Card, D. (2001), Immigrant inflows, native outflows, and the local labor market impacts of higher immigration, *Journal of Labor Economics* 19, 22-64.
- Card, D., J. Kluve and A. Weber (2010), Active labour market policy evaluations: A meta-analysis, *Economic Journal* 120, F452-F477.
- Carrell, S. and B. Sacerdote (2013), Late interventions matter too: The case of college coaching New Hampshire, NBER Working Paper No. 19031, Cambridge MA.
- Cestau, D., D. Epple and H. Sieg (2015), Admitting students to selective education programs: Merit, profiling, and affirmative action, NBER Discussion Paper No. 21232. Cambridge MA.
- Chapman, B. (2006). Income contingent loans for higher education: International reforms, in: E. Hanushek and F. Welch (Eds.), *Handbook of the economics of education*, Vol. 2, Amsterdam: Elsevier, 1435-1503.
- Checchi, D. (2006), *The economics of education: Human capital, family background and inequality*. Cambridge: Cambridge University Press.
- Chiswick, B. (2005), High skilled immigration in the international arena, IZA Discussion Paper No. 1782, Bonn.
- Chiswick, B. R. and P. W. Miller, P.W. (2014), International migration and the economics of language, in: B. R. Chiswick and P. W. Miller (Eds.), *Handbook of the Economics of Immigration*, Elsevier: Amsterdam, 211–269.
- Ciccone, A. and R. E. Hall (1996), Productivity and the density of economic activity, *American Economic Review* 86, 54-70.
- Ciccone, A. and G. Peri (2006), Identifying human capital externalities: Theory with applications, *Review of Economic Studies* 73, 381-412.

- Clark, X., Hatton, T. J. and J. G. Williamson (2002), Where do U.S. immigrants come from, and why? National Bureau of Economic Research Working Paper No. 8998.
- Cobb-Clark, D., M. Sinning and S. Stillman (2012), Migrant youths' educational achievement: The role of institutions, *The ANNALS of the American Academy of Political and Social Sciences* 643, 18–45.
- Coelli, M. (2009), Tuition fees and equality of university enrolment, *Canadian Journal of Economics* 42, 1072-1099.
- Constant, A. and K. F. Zimmermann (2005), Immigrant performance and selective immigration policies: a European perspective, *National Economic Review* 94, 94-105.
- Contini D. (2013), Immigrant background peer effects in Italian schools, *Social science research* 43, 1122–1142.
- Crul, M., Schneider, J. and F. Lelie, (Eds.) (2012), *The European second generation compared. Does the Integration Context Matter?* Amsterdam: Amsterdam University Press.
- Cunha, F. and J. J. Heckman (2007), The technology of skill formation, *American Economic Review* 97, 31-47.
- Cunha, F., J. J. Heckman, L. Lochner and D. V. Masterov (2006), Interpreting the evidence on life cycle skill formation, in E. A. Hanushek and F. Welch (eds.), *Handbook of the economics of education*, Amsterdam: Elsevier, 697-812.
- Cunha, F., J. J. Heckman and S. M. Schennach (2010), Estimating the technology of cognitive and noncognitive skill formation, *Econometrica* 78, 883-931.
- Delgado, M. S., D. J. Henderson and C. F. Parmeter (2014), Does education matter for economic growth? *Oxford Bulletin of Economics and Statistics* 76, 334-359.
- De la Fuente, A. and J. F. Jimeno (2009), The private and fiscal returns to schooling in the European Union, *Journal of the European Economic Association* 7, 1319-1360.
- Deming, D. (2011), Better schools, less crime? *The Quarterly Journal of Economics* 126, 2063-2115.
- De la Rica, S., A. Glitz and F. Ortega (2013), *Immigration in Europe: Trends, policies and empirical evidence*, IZA Discussion Paper No. 7778, Bonn.
- De Paolo, M. and G. Brunello (2016), Education as a tool for the economic integration of migrants, EENEE Analytical Report No. 27, Luxemburg: Publications Office of the European Union.
- Di Paolo, A., and J. L. Raymond, J.L. (2012), Language knowledge and earnings in Catalonia. *Journal of Applied Economics*, 15, 89–118.
- Docquier, F. and E. Lodigiani (2010), Skilled migration and business Networks, *Open Economies Review* 21, 565-588.
- Docquier, F. and H. Rapoport (2012), Globalization, drain Drain, and development, *Journal of Economic Literature* 50, 681-730.

- Dohmen, T., A. Falk, D. Huffman and U. Sunde (2010), Are Risk Aversion and Impatience Related to Cognitive Ability? *American Economic Review* 100, 1238-1260.
- Dowd, A. and T. Coury (2006), The effect of loans on the persistence and attainment of community college students, *Research in Higher Education* 47, 33–62.
- D'Amuri F., G. Ottaviano G. and G. Peri G. (2010), The labor market impact of immigration in Western Germany in the 1990's, *European Economic Review*, 54, 550-570.
- DeNew J. and K. F. Zimmermann (1994) Native wage impacts of foreign labor: A random effects panel analysis, *Journal of Population Economics* 7, 177-192.
- Desiderio, M. V. (2016), Integrating refugees into host country labor markets: Challenges and policy options, Migration Policy Institute: Washington D.C.
- Dolado J., R. Duce R. and J. Jimeno (1996), The effects of migration on the relative demand of skilled versus unskilled labour: Evidence from Spain, CEPR Discussion Paper No. 1476, London.
- Drori, I., B. Honig, et al. (2009). "Transnational Entrepreneurship: An Emergent Field of Study." *Entrepreneurship Theory and Practice* 33(5): 1001–1022.
- Duleep, H. O., D. Jaeger and M. Regets (2012), How immigration may affect U.S. native entrepreneurship: Theoretical building blocks and preliminary results. IZA Discussion Paper No. 6677, Bonn.
- Dustmann, C. (2008), Return migration, investment in children, and intergenerational mobility: comparing sons and foreign-born fathers, *Journal of Human Resources* 43, 299-324.
- Dustmann, C. and F. Fabbri (2003), Language proficiency and labour market performance of immigrants in the UK, *Economic Journal* 113, 695–717.
- Dustmann, C., F. Fabbri and I. Preston (2005), The impact of immigration on the British Labour Market, *The Economic Journal* 115, F324-F341.
- Dustmann, C. and T. Frattini (2010), Can a framework for the economic cost- benefit analysis of various immigration policies be developed to inform decision making and, if so, what data are required? Report prepared for the Migration Advisory Committee, London.
- Dustmann C. and T. Frattini (2012), Immigration: The European Experience, NORFACE MIGRATION Discussion Paper No. 2012.
- Dustmann C., Frattini T., and G. Lanzara (2012), Educational achievement of second generation immigrants: an international comparison, *Economic Policy* 27, 143–185.
- Dustmann, C. and A. Glitz (2011), Migration and education, in E.A. Hanushek, S. Machin and L. Woessmann (eds.), *Handbook of the Economics of Education* (vol. 4, ch. 4), Amsterdam: North-Holland.
- Dustmann, C., A. Glitz and T. Frattini (2008), The labour market impact of immigration, *Oxford Review of Economic Policy* 24, 477-494.

- Dustmann, C. and J.-S. Görlach (2015), *The Economics of Temporary Migrants*, CREAM Discussion Paper Series 03/15, London.
- Dustmann, C. and I. P. Preston (2006), Is immigration good or bad for the economy? Analysis of attitudinal responses, *Research in Labor Economics* 24, 3-34.
- Dustmann, C. and A. van Soest (2001), Language fluency and earnings: estimations with misspecified indicators, *Review of Economics and Statistics* 83, 663–674.
- Dustmann, C. and A. van Soest (2002), Language and the earnings of immigrants, *Industrial and Labor Relations Review* 55, 473–492.
- Dustmann, C. and N. Theodoropoulos (2010), Ethnic minority immigrants and their children in Britain, *Oxford Economic Papers* 62, 209–33.
- Dustmann, C. and Y. Weiss (2007), Return Migration: Theory and Empirical Evidence for the UK, *British Journal of Industrial Relations* 45, 236-256.
- Dynarski, S. (2003), Does aid matter? Measuring the effect of student aid on college attendance and completion, *American Economic Review* 93, 279-288.
- Edmark, K., M. Frölich und V. Wondratschek (2014), Sweden's school choice reform and equality of opportunity, ZEW Discussion Paper No. 14-041, Mannheim.
- Entorf, H., and N. Minoiu (2005), What a difference immigration policy makes: A comparison of PISA scores in Europe and traditional countries of immigration, *German Economic Review* 6, 355–376.
- Epple, D. and R. E. Romano (2011). Peer effects in education: A survey of the theory and evidence, in: J. Benhabib, A. Bisin and M. O. Jackson (eds.), *Handbook of social economics*, Vol. 1B, Amsterdam: North-Holland, 1053-1163.
- European Commission (2011), *Communication on Migration*, 248 final, Brussels.
- European Commission (2016), *Fiscal Sustainability Report 2015*, European Economy Institutional Paper 018, Brussels.
- Fack, G. and J. Grenet (2015), Improving college access and success for low-income students: Evidence from a large need-based program, *American Economic Journal: Applied Economics* 7(2), 1-34.
- Fairlie, R. and M. Lofstrom (2015), *Immigration and Entrepreneurship*, CESifo Working Paper No. 5298, Munich.
- Friedberg, R. (2000), You can't take it with you? Immigrant assimilation and the portability of human capital, *Journal of Labor Economics* 18, 221-251.
- Friedberg, R. M. and J. Hunt (1995), The impact of immigration on host country wages, employment and growth, *Journal of Economic Perspectives* 9, 23-44.
- Gaston, N. and D. Nelson (2000), Immigration and labour-market outcomes in the United States: A political-economy puzzle, *Oxford Review of Economic Policy* 16, 104-114.

- Geay, C., S. McNally and S. Telhaj (2013), Non-native speakers of English in the classroom: What are the effects on pupil performance?, *The Economic Journal* 123, F281-F307.
- Gibson, J. and D. McKenzie (2011), Eight questions about Brain Drain, *Journal of Economic Perspectives* 25, 107-128.
- Gross D. (2002) Three million foreigners, three million unemployed? Immigration flows and the labor market in France, *Applied Economics* 34, 1969-1983.
- Hammarstedt, M. and M. Palme (2012), Human capital transmission and the earnings of second-generation immigrants in Sweden, *IZA Journal of Migration*, 1.2012, 1-23.
- Hanson, G. H. (2012). Immigration, productivity and competitiveness in American industry, in: K. A. Hassett (ed.), *Rethinking competitiveness*, Washington DC: AEI Press, 95-131.
- Hanushek, E. A. (2003), The failure of input-based schooling policies." *Economic Journal* 113, F64-F98.
- Hanushek, E. A., S. Machin and L. Woessmann, eds. (2011), *Handbook of the economics of education*, Vols. 3 and 4. Amsterdam: North Holland.
- Hanushek, E. A. and L. Woessmann (2006), Does educational tracking affect performance and inequality? Differences-in-differences evidence across countries, *The Economic Journal* 116, C63-C76.
- Hanushek, E. A. and L. Woessmann (2011a), How much do educational outcomes matter in OECD countries? *Economic Policy* 26, 427-491.
- Hanushek, E. A. and L. Woessmann (2011b), The economics of international differences in educational achievement, in E. A. Hanushek, S. Machin and L. Woessmann (eds.), *Handbook of the economics of education*, Vol. 3, Amsterdam: North Holland, 89-200.
- Hanushek E. and L. Woessmann (2012), Do better schools lead to more growth? Cognitive skills, economic outcomes, and causation, *Journal of Economic Growth* 17, 267-321.
- Hanushek, E. A. and L. Woessmann (2015), *The knowledge capital of nations: Education and the economics of growth*. Cambridge MA: MIT Press.
- Harmon, C. (2012), Economic returns to education: What we know, what we don't know, and where we are going – some brief pointers, *IZA Policy Paper No. 29*, Bonn.
- Harmon, C., H. Oosterbeek and I. Walker (2002), The returns to education: A review of evidence, issues and deficiencies in the literature, *ISSC Discussion Paper*, Dublin.
- Hastings, J. S, T. K. Kane, and D. O. Staiger (2006), Heterogeneous preferences and the efficacy of public school choice, *NBER Working Paper No. 12145*, Cambridge MA.
- Heckman, J J. (2006), Skill formation and the economics of investing in disadvantaged children, *Science* 312, No. 5782, 1900-1902.
- Heckman, J. J. (2008), Schools, skills, and synapses, *Economic Inquiry* 46. 289-324.

- Heckman, J. J., R. LaLonde and J. Smith (1999), The economics and econometrics of active labor market programs, in: O. Ashenfelter and D. Card (eds.), *Handbook of labor economics*, Vol. 3, Amsterdam: North Holland, 1865-2097.
- Heckman, J. J., J. Stixrud, and S. Urzua (2006), The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior, *Journal of Labor Economics* 24, 411-482.
- Heckmann, F (2008), Education and the integration of migrants: Challenges for European education systems arising from immigration and strategies for the successful integration of migrant children in European schools and societies, NESSE Analytical Report 1 for EU Commission DG Education and Culture. Bamberg, Germany: European Forum for Migration Studies, 2008.
- Holzer, H. J. and D. Neumark (2004) (eds.), *The economics of affirmative action*, Cheltenham: Edward Elgar.
- Honig, B., I. Drori, et al., Eds. (2010). *Transnational and Immigrant Entrepreneurship in a Globalized World*. Toronto, University of Toronto Press.
- Hoogendoorn, S. M. and M. van Praag (2012), Ethnic diversity and team performance: A field experiment. IZA Discussion Paper No. 6731, Bonn.
- Hoxby, C. M. (2000), Peer effects in the classroom: learning from gender and race variation, NBER Working Paper No. 7867, Cambridge MA.
- Hoxby, C. M. (2000b), Does competition among public schools benefit students and taxpayers? *American Economic Review* 90, 1209-1238.
- Huber, P., M. Landesmann, C. Robinson, R. Stehrer, Hierländer, R., Iara, A., O'Mahony, M., Nowotny, K. and F. Peng (2010), *Mirgration, skills and productivity*, Vienna Institute for International Economic Studies Research Report No. 365, Vienna.
- Hunt, J. (2011), Which immigrants are most innovative and entrepreneurial? Distinctions by entry visa, *Journal of Labor Economics* 29, 417-457.
- Hunt, J. and M. Gauthier-Loiselle (2010), How much does immigration boost innovation? *American Economic Journal: Macroeconomics* 2: 31-56.
- Hurwitz, M. and J. S. Howell (2014), Estimating causal impacts of school counselors using regression discontinuity designs, *Journal of Counseling and Development* 92, 316-327.
- Iranzo, S. and G. Peri (2009), Schooling externalities, technology, and productivity: Theory and evidence from U.S. states, *Review of Economics and Statistics* 91, 420-431.
- Jaeger, D. A., T. Dohmen, A. Falk, D. Huffman, U. Sunde and H. Bonin (2010), Direct evidence on risk attitudes and migration, *Review of Economics and Statistics* 92, 684-689.
- Jansen, P. and A. W. Rasmussen (2008), Immigrant and native children's cognitive outcomes and the effect of ethnic concentration in Danish Schools, The Rockwool Foundation Research Unit, Study Paper No. 20, University Press of Southern Denmark: Odense.

- Javorcik, B. S., Ç. Özden, M. Spatareanu and C. Neagu (2011), Migrant networks and foreign direct investment, *Journal of Development Economics* 94, 231-241.
- Jensen, P. and A. Würtz-Rasmussen (2011), The effect of immigrant concentration in schools on native and immigrant children's reading and math skills, *Economics of Education Review* 30, 1503-1515.
- Kahn, S., La Mattina, G., MacGarvie, M. and D. K. Ginther (2013). "Hobos", "Stars" and immigrant entrepreneurship, Discussion Paper, Boston University School of Management, Boston.
- Kane, T. J. (2006), Public intervention in post-secondary education, in: E. Hanushek and F. Welch (eds.), *Handbook of the economics of education*, Vol. 2, Amsterdam: Elsevier, 1369-1401.
- Kapur, D. and J. McHale (2005) *Give Us Your Best and Brightest*. Brookings Institution Press: Baltimore.
- Kerr, W. R. (2008), Ethnic scientific communities and international technology diffusion, *Review of Economics and Statistics* 90, 518-537.
- Kerr, W. R. (2010), Breakthrough inventions and migrating clusters of innovation, *Journal of Urban Economics* 67, 46-60.
- Kerr, W. R. (2013), U.S. high-skilled Immigration, innovation, and entrepreneurship: empirical approaches and evidence, NBER Working Paper No. 19377, Cambridge MA.
- Kerr, S. P. and W. Kerr (2011), Economic impacts of immigration: a Survey NBER Working Paper 16736. Cambridge, MA.
- Kloosterman, R. and J. Rath (2001), Immigrant entrepreneurs in advanced economies: mixed embeddedness further explored, *Journal of Ethnic and Migration Studies* 27, 189-202.
- Konle-Seidl, R. and G. Bolitz (2016), Labour market integration of refugees: Strategies and good practices, Study for the EMPL Committee, Directorate-General for Internal Affairs, Policy Department A: Economic and Scientific Policy: Brussels.
- Kogan, I. (2015), The role of immigration policies for immigrants' selection and economic success, ImPROvE Working Paper No. 15/05. Antwerp: Herman Deleeck Centre for Social Policy – University of Antwerp.
- Kossoudji, S. (1989), Immigrant worker assimilation: is it a labor market phenomenon? *Journal of Human Resources* 24, 494-527.
- Larsen, K. and S. Vincent-Lancrin (2002), International trade in educational services: Good or bad? *Journal of Higher Education Policy and Management* 14(3):18-18, DOI: 10.1787/hemp-v14-art18-en.
- Lee, J.-S. and N. K. Bowen (2006), Parent involvement, cultural capital, and the achievement gap among elementary school children, *American Educational Research Journal* 43, 193-218.



- Lindqvist, E. and R. Roine Vestman (2011), The labor market returns to cognitive and noncognitive ability: evidence from the Swedish enlistment, *American Economic Journal: Applied Economics* 3, 101-128.
- Lee, S. M. and B. Edmonston (2011), Age-at-arrival's effects on Asian immigrants' socioeconomic outcomes in Canada and the U.S., *International Migration Review* 45, 527-561.
- Lewis, E. G. (2011), Immigration, skill mix, and capital skill complementarity, *The Quarterly Journal of Economics* 126: 1029-1069.
- Lewis, E. G. (2012), Immigration and production technology, NBER Working Paper No. 18310, Cambridge MA.
- Li, M. (2006), High school completion and future youth unemployment: New evidence from high school and beyond, *Journal of Applied Econometrics* 21, 23-53.
- Link, S. (2012), Developing key skills: What can we learn from various national approaches? EENEE Analytical Report No. 14, Munich.
- Link, S. and L. Woessmann (2012), Institutional setups that promote student achievement. EENEE Policy Brief 5/2012, Munich.
- Lochner, L. and A. Monge-Naranjo (2016), Student loans and repayment: theory, evidence and policy, *Handbook of the economics of education*, Vol. 5, Amsterdam: Elsevier, 397-478.
- Longhi S., P. Nijkamp and J. Poot (2005), A meta-analytic assessment of the effects of immigration on wages, *Journal of Economic Surveys* 19, 451-477.
- Longhi S., P. Nijkamp and J. Poot (2006), The impact of immigration on the employment of natives in regional labour markets: A meta-analysis, *IZA Discussion Paper No. 2044*, Bonn.
- Longhi S., P. Nijkamp and J. Poot (2008), Meta-analysis of empirical evidence on the labor market impacts of immigration, *Region et Developpement* 27, 161-190.
- Lucas, R. E. (1988), On the mechanics of economic development, *Journal of Monetary Economics* 22, 3-42.
- Maani, S. A. (2016), Ethnic networks and location choice of immigrants: ethnic capital produced by local concentration of immigrants generates greater economic activity, *IZA World of Labor*, 284. DOI: 10.15185/izawol.284.
- Majda, A. M. (2005), International Migration: A Panel Data Analysis of Economic and Non-Economic Determinants, *IZA Discussion Paper 1590*, Bonn.
- Malchow-Møller, N., J. R. Munch and J. R. Skaksen (2011), Do foreign experts increase the productivity of domestic firms? *IZA Discussion Paper No. 6001*, Bonn.
- Markusen, J. R. and N. Trofimenko (2009), Teaching locals new tricks: Foreign experts as a channel of knowledge transfers, *Journal of Development Economics* 88, 120-131.

- Mincer, J. (1974), *Schooling, experience, and earnings*, New York: National Bureau of Economic Research.
- Mincer, J. (1999), *Education and Unemployment*, NBER Working Paper No. 3838, Cambridge MA.
- Miranda, A. and Y. Zhu (2013), English deficiency and the native immigrant wage gap. *Economic Letters*, 118, 38–41.
- Moretti, E. (2004), Workers' education, spillovers, and productivity: Evidence from plant level production functions, *American Economic Review* 94, 656-690.
- Muffat, M. (2012), Do Immigrant Students Succeed? Evidence from Italy and France, *Global Economy Journal* 12. DOI: 10.1515/1524-5861.1872.
- Nathan, M. (2014), The wider economic impacts of high-skilled migrants: a survey of the literature, *IZA Journal of Migration* 2014, 3:4.
- Niebuhr, A. (2010), Migration and innovation: Does cultural diversity matter for regional R&D activity? *Papers in Regional Science* 89, 563-585.
- OECD (2010), *Closing the Gap for Immigrant Students: Policies, Practice and Performance*, OECD Reviews of Migrant Education. OECD Publishing Paris.
- OECD (2012), *Untapped skills: Realizing the potential of immigrant students*. OECD Publishing Paris.
- OECD (2013), *International Migration Outlook 2013*, OECD Publishing: Paris.
- OECD (2016), *International Migration Outlook 2016*, OECD Publishing: Paris.
- Ohinata, A. and J. C. van Ours (2012), How immigrant children affect the academic achievement of native Dutch children, *Norface Migration Discussion Paper No. 2012-12*, London: University College.
- Okkerse L. (2008), How to measure labour market effects of immigration: A review, *Journal of Economic Surveys*, 22, 1, 1-30.
- Oosterbeek, H. (2013), *The financing of adult learning*, EENEE Analytical Report 15, Munich.
- Ozgen, C., P. Nijkamp and J. Poot (2012), Immigration and innovation in European Regions, in: P. Nijkamp, J. Poot and M. Sahin (eds.), *Migration Impact Assessment: New Horizons*, Cheltenham: Edward Elgar, 261-298.
- Ozgen, C., P. Nijkamp and J. Poot (2013), The impact of cultural diversity on innovation: Evidence from Dutch firm-level data, *IZA Journal of Migration* 2013, 2:18.
- Page, S. (2007). *The difference: How the power of diversity creates better groups, firms, schools and societies*. Princeton: Princeton University Press.
- Parrotta, P., Pozzoli, D. and M. Pytlikova (2013), The nexus between labor diversity and firm's innovation, *Journal of Population Economics* 27, 303-364.

- Paserman, D. (2008), Do high-skill immigrants raise productivity? Evidence from Israeli manufacturing firms, 1990-1999, *IZA Journal of Migration*, 2.2013, 1-31.
- Paulsen, M. B. and E. P. St. John (2002), Social class and college costs: Examining the financial nexus between college choice and persistence, *Journal of Higher Education* 73, 189-236.
- Peri, G. (2007), Higher education, innovation and growth, in: G. Brunello, P. Garibaldi and E. Wasmer (eds.), *Education and training in Europe*, Oxford: Oxford University Press, 56-70.
- Peri, G. (2012). The effect of immigration on productivity: Evidence from U.S. states, *Review of Economics and Statistics* 94, 348-358.
- Peri, G. and F. Requena (2010), The trade creation effect of migrants: Testing the theory on the remarkable case of Spain, *Canadian Journal of Economics* 43, 1433-1459.
- Peri, G. and C. Sparber (2011), Highly educated immigrants and native occupational choice, *Industrial Relations* 50, 385-411.
- Pfeiffer, F. and K. Reuss (2007), Age-dependent skill formation and returns to education: simulation based evidence, *IZA Discussion Paper No. 2882*, Bonn.
- Pritchett, L. (2006), Does learning to add up add up? The returns to schooling in aggregate data, in: E. A. Hanushek and F. Welch (eds.), *Handbook of the Economics of Education*, Amsterdam: North Holland, 635-695.
- Rapoport, H. and F. Docquier (2006), The economics of migrants' remittances, in: S. Kolm and J. M. Ythier (eds.), *Handbook of the economics of giving, altruism and reciprocity*, Vol. 2, Amsterdam: North Holland, 1135-1198.
- Rauch, J. E. and A. Casella (2003), Overcoming informational barriers to international resource allocation: Prices and ties, *The Economic Journal* 113, 21-42.
- Rauch, J. E. and V. Trindade (2002), Ethnic Chinese networks in international trade, *Review of Economics and Statistics* 84, 116-130.
- sRietig, V. (2016), *Moving beyond crisis: Germany's new approaches to integrating refugees into the labor market*, Migration Policy Institute: Washington, D.C.
- Riddell, W. C. and X. Song (2011), The impact of education on unemployment incidence and re-employment success: Evidence from the U.S. labour market, *Labour Economics* 18, 453-463.
- Riley, J. G (2001), Silver signals: twenty-five years of screening and signaling, *Journal of Economic Literature* 39, 432-478.
- Romer, P. (1990), Endogenous technological change, *Journal of Political Economy* 99(5), S71-S102.
- Roodenburg, H., R. Euwals and H. ter Reeke (2003), *Immigration and the Dutch Economy*, CPB, The Hague.

- Sanbonmatsu, L., J. R. Kling, G. J. Duncan and J. Brooks-Gunn (2006), Neighborhoods and academic achievement: Results from the Moving to Opportunity experiment, *Journal of Human Resources* 41, 649–691.
- San Roma, E., Ramos R. and H. Simon (2008), The portability of human capital immigrant assimilation: evidence for Spain, IZA Discussion Paper No. 2649, Bonn.
- Scellato, G., C. Franzoni and P. E. Stephan (2012). *Mobile Scientists and International Networks*. NBER Working Paper No. 18613, Cambridge MA.
- Schaafsma, J. and A. Sweetman (2001), Immigrant earnings: age at immigration matters, *The Canadian Journal of Economics*, 34, 1066-1099.
- Schneeweis, N. (2011), Educational institutions and the integration of migrants, *Journal of Population Economics* 24, 1281–1308.
- Schneeweis, N. (2015), Immigrant concentration in schools: consequences for native and migrant students, *Labour Economics* 35, 63-76.
- Schoeni, R. (1997), New evidence on the economic progress of foreign-born men in the 1970s and 1980s, *Journal of Human Resources* 32, 683-740.
- Sepulveda, L., S. Syrett and F. Lyon (2011), Population superdiversity and new migrant enterprise: The case of London, *Entrepreneurship and Regional Development* 23, 469-497.
- Sianesi, B. and J. van Reenen (2003), The returns to education: Macroeconomics, *Journal of Economic Surveys* 17, 157-200.
- Spence, A. M. (1973), Job market signaling, *Quarterly Journal of Economics* 87, 355-374.
- Sprietsma, M. and L. Pfeil (2015), Peer effects in language training for migrants, ZEW Discussion Paper No. 15-033, Mannheim.
- Stephan, P. and S. Levin (2001), Exceptional contributions to US science by the foreign born and foreign-educated, *Population Research and Policy Review* 20, 59-79.
- Storesletten, K. (2000), Sustaining fiscal policy through immigration, *Journal of Political Economy* 23, 472-485.
- Storesletten K. (2003), Fiscal implications of immigration: A net present value approach, *Scandinavian Journal of Economics* 105, 487-506.
- Sweetman A. and J. van Ours J. (2014), Immigration: What About the Children and Grandchildren? CentER Discussion Paper Series No. 2014-009.
- Temple, J. (2001), Growth effects of education and social capital in the OECD countries, *OECD Economic Studies* 33, 57-101.
- Van Ours, J. and J. Veenman (2006), Age at immigration and educational attainment of young immigrants, *Economics Letters* 90, 310–316.
- Vieider, F. M., T. Chmura, T. Fisher, T. Kusakawa, P. Martinsson, F. Mattison Thompson and A. Sunday (2015), Within- versus between-country differences in risk attitudes:

- implications for cultural comparisons, *Theory and Decision* (2015) 78:209, doi:10.1007/s11238-014-9418-3.
- Weiss, A. (1995), Human capital vs. signalling explanations of wages, *Journal of Economic Perspectives* 9(4), 133-154.
- Winter-Ebmer R. and J. Zweimüller (1996), Immigration and the earnings of young native workers, *Oxford Economic Papers* 48, 473-491.
- Woessmann, L. (2009), International evidence on school tracking: A review, *CESifo DICE Report* 7, 26-34.
- Woessmann, L. (2014), The economic case for education, *EENEE Analytical Report No. 20*, Munich
- Woessmann, L. (2016), The importance of school systems: Evidence from international differences in student achievement, *IZA Discussion Paper No. 10001*, Bonn.
- Yao Y. and J. van Ours (2015), Language skills and labor market performance of immigrants in the Netherlands, *Labour Economics* 34, 76–85.
- Zepke, N., L. Leach and T. Prebble, Tom (2006), Being learner centred: One way to improve student retention? *Studies in Higher Education* 31, 587–600.

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