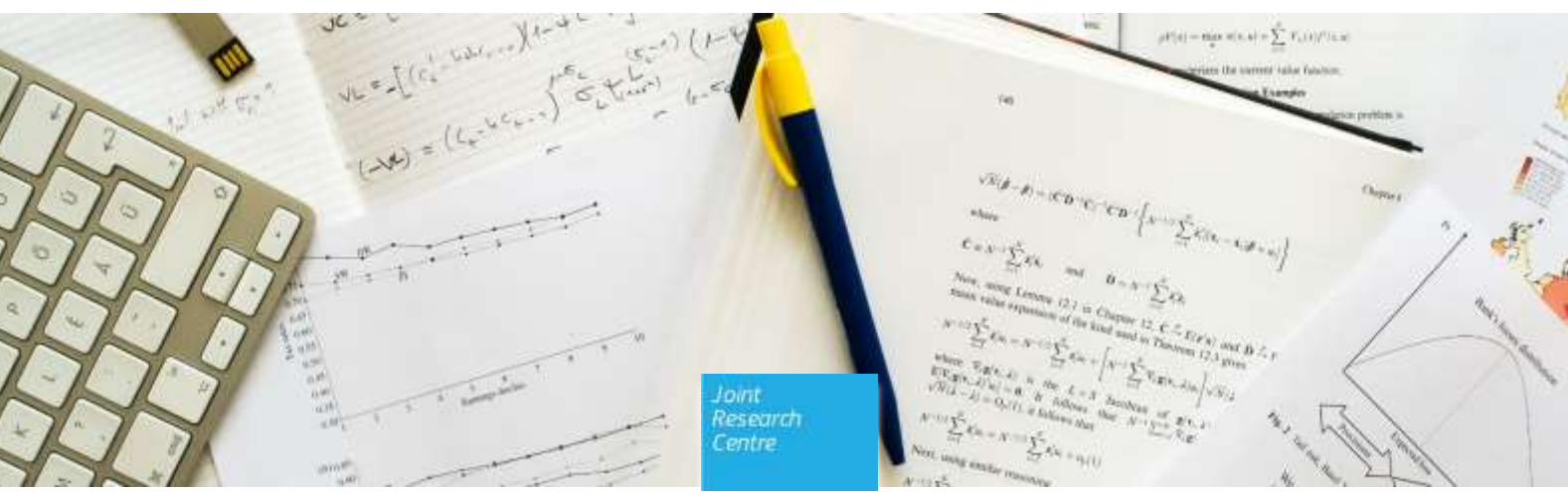European
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Long-term Social, Economic and Fiscal Effects of Immigration into the EU: The Role of the Integration Policy[☆]

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Abstract

The issues of the forced migration and integration of refugees in the EU society and labour markets are high on the policy agenda. Apart from humanitarian aspects, a sustainable integration of accepted refugees is important also for social, economic, budgetary and other reasons. Although, the potential consequences of the refugee acceptance are being often discussed, little scientific evidence has been provided for the policy debate so far in the context of the current refugee crisis. The present study attempts to shed light on the long-run social, economic and budgetary effects of the rapidly increasing forced immigration into the EU by performing a scenario analysis of alternative refugee integration scenarios. Our simulation results suggest that, although the refugee integration (e.g. by the providing language and professional training) is costly for the public budget, in the medium- to long-run, the social, economic and fiscal benefits may significantly outweigh the short-run refugee integration costs. Depending on the integration policy scenario and policy financing method, the annual long-run GDP effect would be 0.2% to 1.4% above the baseline growth, and the full repayment of the integration policy investment (positive net present value) would be achieved after 9 to 19 years.

Keywords: Migration, refugees, social inclusion, labour market, integration policy, modelling, scenario analysis, macroeconomic model.
JEL code: F22, J6, J11, J24.

1. Introduction

The increasing flows of forced migrants from civil war regions in the Middle East pose rising challenges to EU societies and economies. In 2015 and 2016 the number of asylum seekers in the EU exceeded one million per year - for the first time since the World War II. These numerous inflows of refugees pose raising challenges to receiving countries. The present study aims to assess the expected long-term social, economic and fiscal effects of the rapidly increasing forced civil-war refugee immigration into the EU and to access what role an active policy can play in the refugee integration into the labour market.

When thinking about refugees, the humanitarian aspect is the most often invoked rationale. At the same time, however, forced civil war migrants pose also important social and budgetary challenges, as well as may offer economic opportunities for EU economies. On the one hand, the social-beneficiary status quo of asylum applicants by providing them with welfare benefits and the necessary access to education, language and the social infrastructure may increase the budgetary costs of Member States in the short-run. On the other hand, by integrating accepted asylum seekers into the EU labour markets may result not only in social, but in the long-run also in economic and budgetary gains. In addition, integrated refugees can play an important role, for example, in filling vacancies with specific skill requirements, addressing Europe's alarming demographic challenges, improving the ratio of economically active to those who are inactive, a ratio that is decreasing in many Member States, and boost jobs and growth in the EU.

A number of recent studies have investigated potential impacts of the migrant integration into destination country labour markets. There is a general agreement in the literature that, when immigrants bring skills that are short in supply in receiving countries, there are good reasons to expect positive impacts on labour markets (Muenz et al. 2006). For example, Ottaviano and Peri (2012), show that general equilibrium effects of immigration on receiving country's labour markets depend strongly on the complementarity/substitutability between immigrants and foreign workers. Along the same lines, also Peri (2016) confirms that the complementarity and substitutability between immigrants and natives in employment, and the response of receiving economies in terms of specialisation and technological choices, are important when assessing the general equilibrium effects of immigration.

Most empirical studies, e.g. World Bank (2015), find that immigration can bring relatively rapidly benefits to receiving country economies, depending on how quickly the accepted refugees find jobs and to what extent their skills are complementary to the

existing workforce. Similarly, also Furlanetto and Robstad (2016) find that an exogenous positive immigration shock lowers unemployment (even among native workers) and has a measurable positive effect on public finances in the short-run. On the contrary, they do not find any support for those arguments recently used against immigration in terms of native employment displacement effects and burden on public finances. These results are consistent with finding of Jaumotte et al. (2016), according to which there are significant long-term benefits to immigration in terms of a higher GDP per capita for recipient countries. Moreover, both high- and low-skill migrants contribute to the GDP per capita increase.

In contrast, other studies, e.g. Borjas (2014), provide evidence that there might be also adverse effects on destination country labour markets in terms of employment, wages and productivity. In line with these arguments, Brucker and Jahn (2011) find that migration reduces average wages and increases unemployment of the incumbent workforce in the short-run, while it is neutral in the long-run. Further, OECD (2015) argues that integrating forced civil war migrants into receiving countries' labour markets is more costly than integrating economic migrants. According to OECD (2015), the integration success hinges crucially on integration policies, e.g. on providing the local language training, the school education and professional training, and access to the sociocultural infrastructure.

The existing literature, however, does not provide conclusive and robust answers to questions about the expected long-term effects of rapidly increasing asylum seeker inflows into the EU and the potential role of integration policies in the context of the current refugee crisis. Among others, also because the concept of the skill complementarity/substitutability is less applicable to asylum seekers than to economic migrants. This study attempts to fill this knowledge gap by assessing the costs and benefits of the refugee integration into receiving EU Member States' labour markets by identifying and accounting for all key socio-economic and fiscal costs and benefits. Short- and medium-term integration costs include, e.g. welfare benefits, the provision of the language training, the professional education to migrants and the school education to migrants' children, access to the sociocultural infrastructure, initial direct costs for the care, accommodation, and the costs of providing social benefits for non-working refugees. In the short-term, a higher government spending on refugees may also have a positive impact on growth. However, given that any additional public spending needs to be financed through additional taxes, likely, the demand effect of the increased government consumption will not be the only

source of growth. Long-term economic benefits include, among others, integrated refugee contributions to income taxes, payments to the welfare system (e.g. pension), as well as resolving labour market shortages in specific economic sectors and Member States.

In order to assess the impact of alternative refugee integration policies in the EU, we perform a scenario analysis with a Walrasian-type numerical general equilibrium model. The model, fully described in Mercenier et al. (2016), has a number of specificities that suit the purpose of the present study.[1] First, given that the immigration of refugees concerns all EU Member States, the model captures the whole EU. Second, both regional and sectoral dimensions are important for our questions, as refugee-related labour market shocks will be very different across EU regions and sectors. Therefore, the model is implemented at the regional level with a sectoral detail, regional and sectoral economies being linked through the trade of goods and services, income flows, the labour and capital mobility. Third, to capture the above-discussed skill complementarity/substitutability issue of migrants, the model distinguishes between three types of skills: low, medium and high. Finally, the labour supply shock (accepted and integrated refugees entering the labour market) and the demand shock (additional expenditures of government and immigrants) will affect both the supply and demand sides of the labour market. The model captures not only the labour demand and labour supply, but also all key interactions between them. Labour market shocks are absorbed through three channels of adjustment – (un)employment, wages and competitiveness – together with two exogenous labour market mechanisms – education and migration.

The main contribution of the present study is to estimate the expected long-term social, economic and fiscal effects of the recently increasing inflows of forced civil-war refugee migrants into the EU and to access what role an active policy can play in the refugee integration into the labour market. By complementing previous literature, our study offers more nuanced insights regarding the regional and temporal distribution of potential impacts of the recent refugee crisis, the role of alternative financing methods of government expenditure, and costs and consequences related to different policy engagement intensities in the integration of accepted refugees in EU labour markets. The present study abstracts from economically-driven migration to the EU, as socio-economic impacts of labour migration have been investigated considerably more and are relatively well established in the existing literature.

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[1]Previous version of the model has been used widely in several contexts. See, for example, Brandsma et al. (2014) and Brandsma et al. (2015).

The rest of the paper is structured as follows. Section 2 provides a brief background about the latest developments in terms of asylum seeker inflows into the EU, the refugee integration in the EU societies and labour markets, and presents an overview about the relevant institutional framework. Section 3 provides a short overview about the underlying simulation model, which will be used for simulating and assessing alternative refugee integration policy scenarios. Section 4 outlines the main assumptions of the three integration policy scenarios (policy status quo, advanced and full), and of the baseline scenario. Section 5 presents and explains key simulation results. Section 6 presents selected results from the sensitivity analysis. The final section concludes and draws a number of policy conclusions from the present study.

2. Forced immigration in the EU: recent developments

2.1. Asylum seeker flows into the EU

EU Member States have been open to asylum seekers since a long time. Although, there have been several increases in the number of asylum seeker applications in the EU in the past (for example, a rather high number of asylum applications (672 thousand) were received in 1992, mainly from the former Yugoslavia), 2015 was the first time when the number of asylum applications in the EU exceeded one million in one year (see Figure 1). Furthermore, according to IOM (2017), Europe might face high numbers of asylum seekers/refugees also in the coming years.

Size and distribution of the forced migration. According to Figure 1, the annual number of first time asylum applicants in the EU has historically been below half a million until 2013, with around 300 thousand per year on average between 2009 and 2016.[2] The number of first time asylum applicants has more than doubled in the EU from 563 thousand in 2014 to almost 1.26 million in 2015. Also in 2016 the total number of asylum applicants in the EU significantly exceeded one million (Figure 1).

As regards destination countries, the largest increases in the number of first time asylum applicants, expressed as a share of the total population, were recorded in Finland (around ten times higher in 2015 compared 2014), Hungary (around five times higher) and Austria (more than three times higher) (see Figure 2). In absolute numbers, the

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[2]A first time applicant for international protection is a person who lodged an application for asylum for the first time in a given EU Member State and therefore excludes repeat applicants in that Member State and so it reflects more accurately reflects the number of newly arrived persons applying for international protection in the given Member State (Eurostat, 2016).
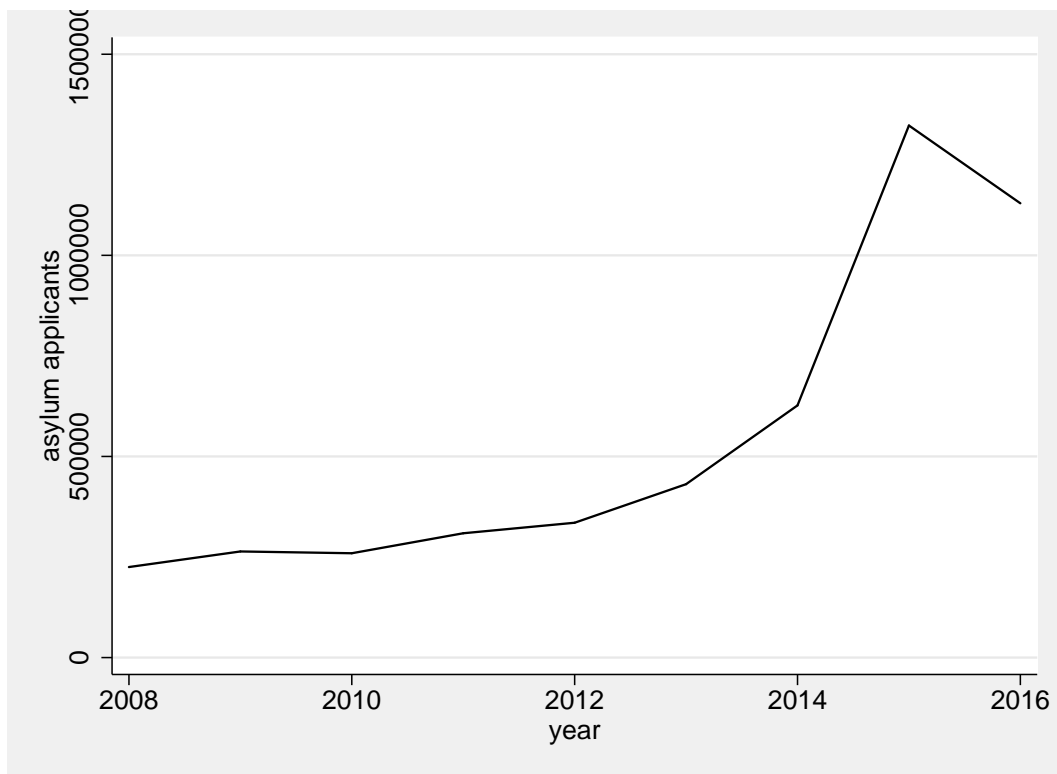
Figure 1: Dynamics of asylum applications in the EU-28 Member States during 2008-2016, thousands. Source: Eurostat (online data code: migr_asyappctza).

inflow of first time asylum applicants in Germany increased from 173 thousand in 2014 to 442 thousand in 2015 (Eurostat, 2016). Also Hungary, Sweden and Austria registered very large increases in first time asylum applications between 2014 and 2015. In contrast, most EU Member States in the Central and Eastern Europe, e.g. the Czech Republic, Croatia, Latvia, Lithuania, Slovenia and Romania, have registered rather few asylum applicants both in 2014 and 2015. For migration modelling this implies that, in terms of the population share and the number of first time asylum applicants, differences among EU Member States are significant and hence we take them into account in the computations of country-specific costs and increases in the labour supply (section 4.1).

Age distribution. In terms of the age distribution, the vast majority of the first time asylum seekers in the EU in 2015 were less than 35 years old (83%) (Eurostat, 2016); those in the age range 18-34 years accounted for slightly more than half (53%) of the total number of first time applicants, while almost one third (29%) were minors aged less than 18 years old. According to Eurostat (2016), more or less the same age distribution of asylum applicants was common across EU Member States, with the largest share
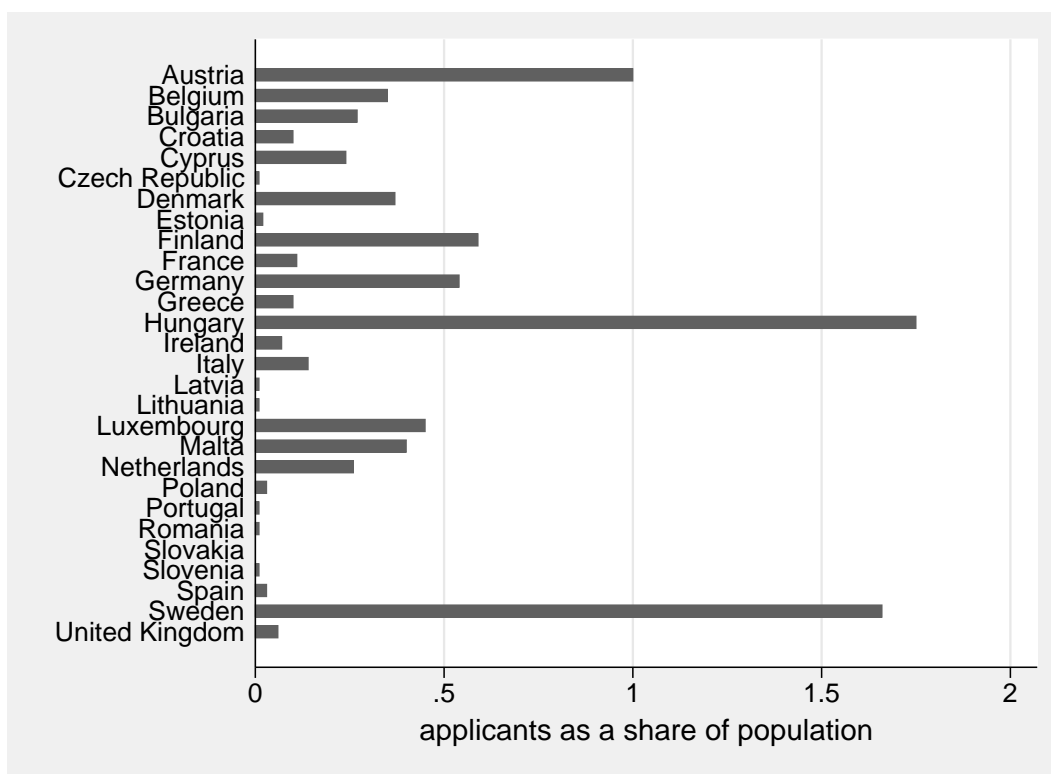
Figure 2: Asylum applications in EU Member States in 2015 as a share of the incumbent population in percent. Source: Eurostat (online data code: migr_asyappctza).

of applicants being those aged 18-34. The fact that, the majority of asylum seekers in the EU are in the working age, will have consequences for the labour market, fiscal and budgetary impacts, and hence we take them into account in the computations of country-specific costs and increases in the labour supply (section 4.1) Among others, they have the potential to strengthen the EU's labour market and contribute to the EU Member States budget.

Acceptance and rejection. In 2015, more than half of all first instance asylum decisions in the EU resulted in positive outcomes, granting a refugee or subsidiary protection status, or an authorisation to stay for humanitarian reasons (Eurostat, 2016).[3] For first instance decisions, around 75% of all positive decisions in the EU-28 resulted in grants of refugee status in 2015, while for final decisions the share was somewhat lower, at 69%. Also the share of successful applicants is important for the labour market, fiscal and budgetary impacts, and hence we take them into account, when calculating fiscal costs per Member State for asylum seekers and for successful applicants, as well as the

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[3]http://ec.europa.eu/eurostat/web/asylum-and-managed-migration/data/database

increase in the labour supply in receiving countries (section 4.1).

The main contributions to the rapid increase in asylum seekers were growing numbers of asylum applicants from civil war regions in Syria, Afghanistan and Iraq, 29%, 14% and 10%, respectively. Also Albania, Kosovo and Pakistan have significantly contributed to the increasing number of first time asylum applicants, 5%, 5% and 4%, respectively). Knowing the asylum seeker country of origin is important, as asylum seekers from different countries and world regions have systematic differences in language knowledge, education background and professional skills (Kielyte, 2016). Hence, there may be differences in integration costs depending on where asylum seekers originate from, and differences in labour market, fiscal and budgetary impacts depending on the substitutability/complementarity of refugee skills (Ottaviano and Peri, 2012). In the present study we follow Clemens and Pritchett (2016), and assume that migrants do not bring their economic productivity with them when moving to the destination country in the EU, and assume that during the training and learning process, accepted refugees assimilate skills and productivity of native-born.

2.2. Socio-economic situation of migrants in the EU

In virtually all EU Member States were accepted refugees reside, their standard of living is lower than that of the native-born population. According to OECD/European Union (2015), the socio-economic situation of the migrant population in EU Member States is worse in several respects than that of native-born, particularly, in education and employment. The European Agenda for the Integration of Third-Country Nationals (European Commission, 2011) summarises the most pressing challenges with respect to the immigrant integration in the EU:

- Gaps in the educational achievement;

- Low employment levels of migrants, especially for migrant women;

- 'Brain waste' and high levels of 'over-qualification';

- High risks of the social exclusion and poverty.

The existing evidence (e.g. OECD/European Union, 2015) suggests that third-country nationals continue to face higher barriers in the education system than native-born. In turn, low levels of education not only cause refugees' social exclusion and poverty, they also create significant potential costs for Member State economies. Often, the latter aspect

has been neglected in the political debate, as not sufficient scientific evidence is available. When policy makers are thinking about investing more into the education of migrants and their children, the social equity is the most often invoked rationale. At the same time, however, such investment may have a solid financial rationale as well. As noted by James Heckman, a Nobel laureate in economics:

> "It is a rare public policy initiative that promotes fairness and social justice and at the same time promotes productivity in the economy and in society at large. Investing in disadvantaged young children is such a policy." (Heckman, 2006)

According to OECD/European Union (2015), third-country nationals continue to face also higher entry barriers in the labour market than native-born. Although, employment is a core part of the integration process, migrants' employment rates (62% at the EU average) remain below the average of host-country population in all EU Member States (OECD/European Union, 2015). Immigrant women tend to have particularly low employment and activity rates in EU Member States. For the migration modelling, the relatively low participation and employment rates of third-country nationals imply that they need to be accounted for when constructing alternative integration policy scenarios, as they co-determine integration costs and labour market outcomes.

Further, immigrants with higher education degrees have greater difficulties of finding high-skill jobs than native-born. As a result, many immigrants are working in unskilled jobs despite having professional qualifications, they are overqualified for their jobs (which often are low-skill), or work in less favourable conditions in terms of wages and the employment protection compared to native-born workers.

Finally, the income inequality is higher among immigrants than among native-born. Differences in wealth between third-country nationals and host country nationals are greater than those between foreign-born and native-born. Also the poverty rate of immigrant households is considerably higher (around twice as high) than among host country native households. In addition, according to OECD/European Union (2015), immigrants are more at the risk of the poverty or social exclusion compared to host-country nationals, even when they are in employment, and migrant children are exposed to a particularly high risk of poverty.

2.3. Policy framework of the immigrant integration in the EU

The EU Common Basic Principles for Immigrant Integration Policy adopted in 2004 set out a common approach to immigrant integration in the EU.[4] In an integrated Union without internal borders, such as the Schengen area, the successful integration of third-country nationals should be a matter of a common interest to all EU Member States (European Commission, 2016). Therefore, the EU is increasingly supporting Member States in their immigrant integration policies. In 2011, the European Commission has set out a European Agenda for the Integration of Third-Country Nationals,[5] calling for a strengthened and coherent approach to integration across different policy areas and government levels. The Agenda also highlights integration challenges, which EU Member States are facing. To address these challenges, it provides concrete recommendations and areas for action to support the integration of third-country nationals.

In terms of the migration policy, political signals from the EU have become particularly clear and strong after the start of the refugee crisis at the end of 2014. Migration has become one of the 10 priorities of the Juncker's Commission. The European Agenda on Migration, which was proposed in May 2015,[6] recognises migration both as an opportunity and challenge for the EU. It sets out medium to long-term priorities that will help EU Member States to manage migration challenges and, looking beyond crises and emergencies, to capitalise opportunities. The Agenda has four pillars: 1) reducing the incentives for irregular migration; 2) saving lives and securing external borders; 3) strengthening the common asylum policy; 4) developing a new policy on the legal migration. In line with Agenda's priorities, actions and implementation packages have been discussed and proposed.

In November 2015, an Action Plan was signed at the Valletta Summit on Migration.[7] At the Tripartite Social Summit of 16 March 2016, EU cross-industry social partners presented a joint statement on the refugee crisis,[8] stressing the importance of the refugees' integration in training, employment and society in general. In its recent Communication on the reform of the Common European Asylum System of 6 April 2016, the European Commission reassured that it is fully committed to achieve the objective of shaping

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[4]Council conclusions of the Justice and Home Affairs Council of 5-6 June 2014.
[5]COM (2011) 455 final of 20.7.2011.
[6]COM(2015)240 final of 13.5.2012.
[7]http://www.consilium.europa.eu/en/meetings/international-summit/2015/11/action_plan_en_pdf/
[8]https://www.etuc.org/sites/www.etuc.org/files/press-release/files/14.03.16_final_eco_soc_partners_message_refugee_crisis.pdf

an integrated, sustainable and holistic EU migration policy.[9] On 12 April 2016, the European Parliament adopted a Resolution calling, among others, for an early integration and a full participation in the socio-economic life in host countries of all third-country nationals, including refugees.[10] In its recent Communication on the European Semester, the European Commission has clearly pointed out that:

> "Economic and social policies will need to cater for the recent inflow of migrants and refugees, in particular to provide for their immediate needs and integration in the labour market."[11]

Regarding funding, under the current Multi-annual Financial Framework 2014-2020, 765 million euro have been earmarked by EU Member States for the refugee integration under the Asylum, Migration and Integration Fund (AMIF) national programmes (European Parliament, 2016). Further, the European Social Fund (ESF) with 86.4 billion euro for 2014-2020 is gaining importance in the integration of refugees. For the initial phase of reception the Asylum, Migration and Integration Fund (AMIF) with 3.1 billion euro has the mission to promote the refugee integration from a short-term perspective. The Fund for European Aid to the Most Deprived (FEAD) with 3.8 billion euro has the mission to alleviate the refugee poverty and exclusion, it supports EU Member States in the integration of refugees within the scope of their budgets (European Parliament, 2016). In addition, as part of the European Agenda for Migration, the Commission is promoting a flexible and effective use of existing funds for refugees. As for the refugee integration into the vocational training, the European Commission is mobilising existing policy initiatives and programmes (European Alliance for Apprenticeships, European Pact for Youth, Erasmus+, etc.) to promote the peer learning and sharing of promising practices on the refugee integration in the area of the vocational education and training.

3. Modelling framework

In this section, we briefly describe the main model's features.[12] The domestic economy (which corresponds to the EU) consists of 267 endogenous regions, which are included into EU Member States. The rest of the world is introduced in the model as an exogenous

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[9]COM(2016) 197 final.
[10]European Parliament Resolution (2015/2095(INI)).
[11]COM(2016) 95 final.
[12]The underlying model is fully described in Mercenier et al. (2016).

external sector. The economy is composed of different sectors (also called industries) in which firms operate under perfect competition.[13] In each region-sector, a representative firm produces a single variety, which is considered an imperfect substitute for the variety produced in other regions. Final goods are consumed by households, governments and investors (the form of capital goods), whilst firms consume intermediate inputs.

Trade between and within regions is costly, implying that the shipping of goods entails transport costs assumed to be of the iceberg type. Transport costs are specific to sector and region pairs, they are based on the transport network model TRANSTOOLS, which considers different modes of transport and computes gneralised transportation costs. These costs are positive within regions and asymmetric between regions.

Regional goods are produced by combining the value added (labour and capital) with domestic and imported intermediates. Regional investments are determined by a simple adjustment rule, according to which the additional level of investments is generated in each region by the gap between the desired level of capital and the actual level of capital (Jorgenson and Stephenson, 1969, and Uzawa, 1969). Given the regional dimension of the model, the demand for investment can be satisfied by domestic and external markets, without constraints. The capital stock in each region is updated period by period through investments adjusted for depreciation.

To capture the above-discussed skill complementarity/substitutability issue of migrants, the model distinguishes between three skill levels of workers: low-skill, medium-skill and high-skill, which correspond to three levels of education: primary and lower-secondary education (ISCED 0-2), upper- secondary and post-secondary education (ISCED 3-4), and tertiary education (ISCED 5-6). The labour supply shock (accepted and integrated refugees entering the labour market) and the demand shock (additional expenditures of government and immigrants) will affect both the supply and demand sides of the labour market. The model captures not only the labour demand and labour supply, but also all key interactions between them. On the labour demand side, the relative price of labour together with the demand for final goods and services determine the labour demand. Companies (and the public sector) rent labour services from households, for what they receive a wage income. On the labour supply side, each region is populated by workers, who rent their differently skilled labour to firms.

For each skill level, the wage setting relationship is represented by a wage curve

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[13]The simulation model has three market competition frameworks that can be activated: monopolistic competition, Cournot or Bertrand. In this study, we simplify the analysis by neglecting alternative price setting behaviours in favour of perfectly competitive markets.
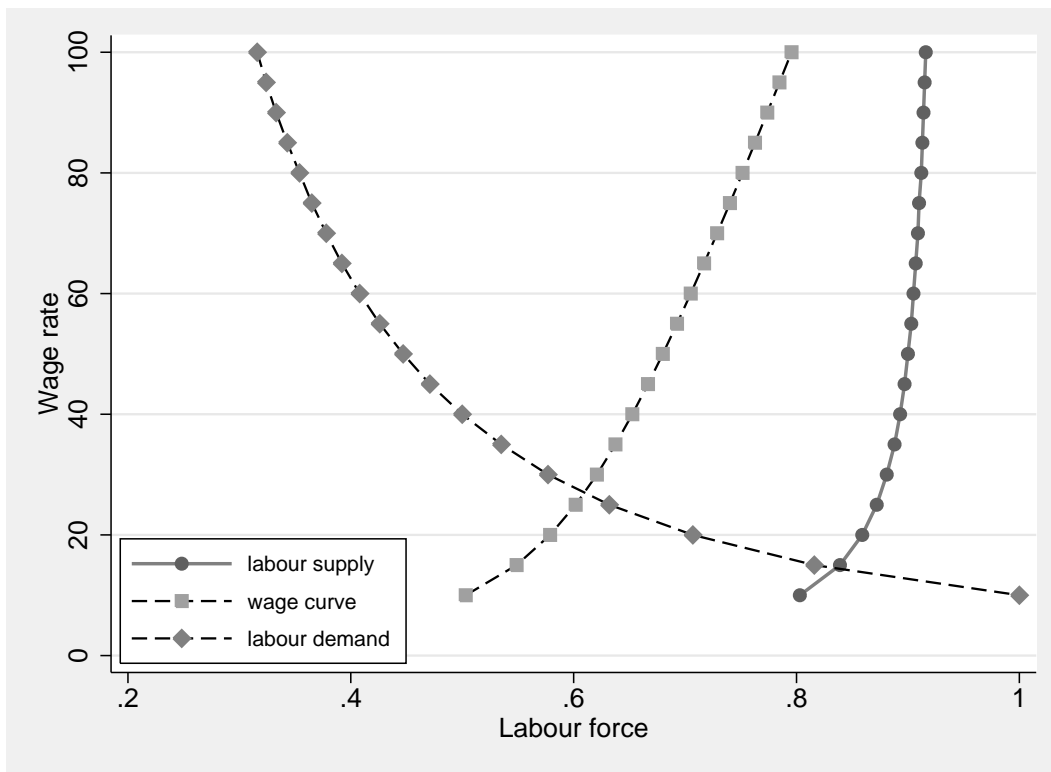
Figure 3: Labour market equilibrium for one selected region – wage curve, labour supply and labour demand curves

(Blanchower and Oswald, 1995), whose implication is that lower levels of unemployment increase the workers' bargaining power, thereby increasing real wages. A graphical representation of the labour market equilibrium is given in Figure 3 for one selected region and one representative skill, where an empirically estimated wage curve, the labour supply curve and the labour demand curve are plotted. The differences between the wage curve and labour supply determine the number of unemployed, therefore the wage rate is above the equilibrium market clearing wage rate. The relative position of all three curves will be affected by the increasing stock of asylum seekers in the EU. Typically we would expect the wage curve and supply curve to move downwards while the labour demand would shift upward.

All shift and share parameters are calibrated to reproduce the base year data set, represented by the inter-regional Social Accounting Matrix. The model calibration process assumes regional economies to be initially in a steady-state equilibrium. This means that the capital stock is calibrated to allow depreciation to be fully covered by investments. Parameters related to the elasticities of substitution both on the consumer and producer

side are based on similar models or derived from the econometric literature. Typically, we assume a rather low elasticity of substitution in production (0.3), a relatively higher elasticity of substitutions in consumption (1.5) and a fairly high for trade between regions (2.0). The elasticity of substitution between different types of skills equate to 2.0. The interest rate (faced by producers, consumers and investors) is set to 0.04, the rate of depreciation to 0.15.

In the context of the present study, an important advantage of the adopted model is that it is able to capture not only the direct effects of labour market adjustments, but also all induced inter-regional short- and long-run general equilibrium effects of exogenous shocks, such as, the refugee immigration or policy interventions, subsidies/taxes of wage for low-, medium- and high-skill labour or changes in the labour supply and/or demand. Further, in addition to those labour market mechanisms that are modelled explicitly in the model, many more peculiarities of regional labour markets are captured implicitly. For example, cross-regional differences in skills and hence productivity levels among people with the same level of education are captured by calibrating the model to base year Labour Force Survey (LFS) data that are region- and skill-specific. Productivity differences between workers located in different regions together with migration costs between regions capture sizeable inter-regional wage differences of workers with the same education level.

4. Scenario construction

In order to undertake a scenario analysis and assess the impact of alternative refugee integration policies in the EU, first, a baseline scenario is constructed and simulated (as we cannot observe it). In the context of the refugee immigration, the key assumption concerns the exogenous population growth. In the baseline scenario, we use Eurostat's regional population projections, which provide 'what-if' scenarios about the likely future size and structure of populations, based on assumptions for fertility, mortality and migration.[14] Second, alternative refugee integration (counterfactual) scenarios are constructed and simulated. All key assumptions behind the refugee integration scenario construction are detailed below.

Following the empirical evidence of Clemens and Pritchett (2016), we assume that migrants do not bring their economic productivity with them when moving to the

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[14]Note that IMF (2016) assumes that the inflow of first-time asylum seekers would grow at 5 percent annually starting from 2019, which is higher than the baseline population growth in our study. In order to see the impact of a higher baseline population growth, we perform sensitivity analysis.

destination country in the EU. Second, inspired by findings of Clemens and Pritchett (2016), we assume that during the training and learning process, accepted refugees assimilate the skills and productivity of native-born. In modelling terms, these two assumptions will imply that EU firms hiring/employing workers are blind with respect to native- / foreign-born, they cannot distinguish between integrated refugees and incumbent workers.

A further assumption that we make throughout this study is that we focus solely on the forced migration triggered by civil-wars in the Middle East, while abstracting from other forms of migration, such as the economic migration, politically or natural disaster-driven migration. This implies that all simulation results reported in this study refer solely to the recently observed and predicted forced immigrant inflows from civil war regions in the Middle East to the EU. This assumption also implies that the total number of both regular and irregular migrants to the EU is larger in reality, implying also that the true socio-economic effects to the EU society and economy may exceed those reported in the present study.

4.1. Assumptions about the forced migration to the EU[15]

Size and distribution of the forced migration. In line with Eurostat (2016), we assume that 1.26 million first-time asylum seekers have entered the EU in 2015 (see section 2) and, following IMF (2016), we assume that 1.3 million will enter the EU in 2016 and 2017. In line with the most recent empirical evidence (Eurostat 2106; and Kielyte 2016), we depart from IMF modelling choices by assuming that starting from 2018 the forced migration of refugees into the EU will each year decline by about one quarter, implying 0.98 million first-time asylum seekers will arrive into the EU in 2018. Also in following years the annual inflow of asylum seekers into the EU will decrease by around one quarter annually, implying 0.73 million in 2019, 0.55 million in 2020, 0.41 million in 2021, etc. In around 10 years, the current civil war and refugee crisis will have no more significant impact on the immigration of refugees into the EU, and the annual numbers of asylum seeker applications will have reached the long-run steady state, as assumed in the baseline scenario. Second, following IMF (2016), we assume that the geographic distribution of refugees across EU Member States in future years will be the same as it was in 2015.

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[15]In order to facilitate the comparability of our results, most of our scenario assumptions about the forced migration of asylum seekers into the EU follow the modelling choices of IMF (2016). We depart from IMF assumptions only when there is more recent/robust evidence available about refugee flows, distribution and/or characteristics in the EU, which we clearly indicate.

These two key assumptions about the size and distribution of forced immigrants are driven by the fact that there is not sufficiently robust empirical evidence available for more nuanced and precise predictions about the size, dynamics and distribution of future refugee flows into the EU. Note, however, that these two assumptions are consistent with the objective of the present study, which is to understand the impact of alternative refugee integration policies rather than to predict migration flows per se. In order to explore the impact of a higher/lower inflow of forced civil war migrants, we run extensive sensitivity analysis, selected results of which are presented in section 6.

Acceptance and rejection. Following Eurostat (2016), we assume that 60 percent of asylum seeker applications are accepted, which is also in line with IMF (2016). This implies that around 0.78 million additional refugees are annually accepted in the EU between 2016 and 2017. As in the IMF study, we assume that the rejected applicants receive financial support for one year and then they leave the EU. We further assume that, while staying in the EU, rejected applicants do not enter the EU labour market. Although, this assumption may not be entirely consistent with the real situation in some Member States, there is too little robust evidence available about the employment of rejected asylum applicants in the EU to construct more nuanced policy scenarios. As above, in order to ensure the robustness of this assumption, we run an extensive sensitivity analysis, e.g. by allowing the rejected asylum seekers to enter low-skill jobs.

Age distribution. Following IMF (2016) and Eurostat (2016),[16] we assume that the share of the working-age population (15–64 years old) among all accepted asylum seekers is 80 percent.[17] This assumption is based on the average share among all asylum applicants in 2015 (see section 2). According to Eurostat (2016), 19.4 percent are children in the age group 0-13, and 0.6 percent are 65 or older. Based on these age distribution statistics, we assume that in the following years the working age population of accepted applicants will increase by 0.92% annually (the job entry rate of young adults is higher than the retirement rate). Finally, we assume that the age distribution is equal between accepted and rejected applicants.

Labour market rights. Following IMF (2016), we assume that gradually the accepted applicants will become eligible to work in the EU. However, due to lengthy work permission procedures, labour market rights are not granted instantly. As in the IMF

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[16]Online data code: migr_asyappctza.

[17]Note that the IMF assumes that the share of the working-age population among all accepted asylum seekers is slightly higher at 81 percent. In the present study we adjust the working age population estimates of the IMF by latest EUROSTAT data.

study, we assume that accepted asylum applicants become eligible to work after one year, which is roughly in line with the Reception Conditions Directive.[18] While acknowledging that in some Member States, for example, in Belgium and Italy, the access to labour markets usually is granted faster, the underlying simulation model cannot account for monthly or quarterly adjustments, as its minimum temporal frequency is 1 year. Further, we assume that, while not eligible to work, accepted asylum seekers continue to receive welfare benefits.

4.2. Integration policy scenarios

Labour market integration. The labour market integration of accepted asylum seekers depends, among others, on implemented refugee integration policies in EU Member States (OECD/European Union, 2015). Together with international migration policy makers and refugee integration experts in the European Commission, we have designed three alternative refugee integration scenarios:

- Policy status quo scenario;

- Advanced integration scenario;

- Full integration scenario.

In order to simulate and assess the impact of alternative refugee integration policy options, first, integration costs and expected labour market outcomes are computed for each scenario. In the policy status quo scenario, we assume the current level of the government expenditure (per refugee) for the refugee integration into labour markets, and the resulting level of refugee participation and employment rates for low-, medium- and high-skill workers. In the advanced integration scenario, we assume an increase in the current integration expenditures by two times, which will result in higher than the current employment and participation rates of accepted refugees. In the full integration scenario, we assume a significant increase in refugee integration expenditures to achieve comparable professional and language skills to natives, and the same participation and employment rates as the native population. Hence, differences in participation and employment rates among the three scenarios are due to higher spending on the integration of accepted refugees. All three scenarios are compared with the baseline scenario.

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[18]Directive 2013/33/EU of the European Parliament and of the Council.

Generic costs of asylum seekers.[19] Part of fiscal costs to the public budget related to the asylum seeker acceptance in EU Member States does not depend on the integration policy. For example, during the application procedure, indispensable asylum seeker benefits include accommodation costs, basic health care costs, in-kind benefits, cash benefits, etc. In order to account for these costs, in all simulated policy scenarios we use country-specific estimates on the public expenditure for refugees.[20] For example, for Germany we use German Council of Economic Experts estimates on the public cost of refugees: 800 EUR per asylum applicant plus 6600 EUR welfare benefits per year for successful applicants. Note however that additional public administration costs e.g. for processing asylum seeker applications are not included in these calculations. In order to approximate these additional costs in our simulations, we assume a fixed country-specific public administration cost based on the 2015 inflow of refugees, these costs not change with the number of asylum seekers in the following years.

Scenario-specific costs of the refugee integration. Another part of fiscal costs to the public budget related to the refugee acceptance, education and integration into the labour market depends on integration policy efforts – achieving higher levels of refugee integration is more costly for the public budget. Two types of integration costs are simulated in the present study: (i) language training costs; and (ii) upper secondary, professional and/or tertiary education costs. As noted by the European Commission (2016), learning the destination country's language is an important precondition for migrants to successfully start their integration process into the host country's society. In order to maximise the learning effectiveness, language integration programmes should be provided at the earliest stage possible after the refugee arrival and the language learning should be combined with the learning of other skills and competencies or work experiences.

In order to account for differences in the investment in refugee integration between alternative policy scenarios, both language and professional education costs depend on the integration intensity. As scenario names suggests, the lowest integration costs are in the policy status quo scenario, the highest in the full integration scenario. Language training costs are collected from international language training institutions for each EU Member State, they range from 153 EUR/person in Bulgaria to 3616 EUR/person in Sweden per successful asylum applicant. Professional training and school education costs of accepted refugees are assumed to be the same as for natives. We acknowledge

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[19]Integration costs are calculated in real terms, 2015 being the base.

[20]Note that this assumption is different from IMF (2016), where authors assume that fiscal costs comprise an equal support for asylum applicants of 12000 EUR/person/year in all countries.

that, depending on the background of immigrants (skills, education, age, language and IT knowledge), in reality these costs may be either lower or higher compared to native-born. Moreover, as noted in section 2, there may be also important differences among refugees arriving from different migrant origin countries. However, there are not sufficient data available about migrant characteristics to differentiate education costs between refugees and native-born, this is a promising area for a future research. Education cost data are extracted from the Eurostat domain *educ_uoe_fine*. Also school education and professional training costs are Member State- and skill-specific, they range from 1120 EUR/person/year in Bulgaria to 26410 EUR/person/year in Denmark. Total education / training costs for each integration scenario and Member State are calculated based on the number of persons in education / training and the cost per person to achieve scenario-specific labour market outcomes (see below).

Scenario-specific labour market outcomes. In line with the empirical evidence (Eurostat 2106; and Kielyte 2016), we assume that the efforts (and expenditures) of the refugee integration policy determines labour market outcomes in terms of participation, employment and the wage rate of refugees (which are determined in the model). Higher integration costs are associated with a higher participation, more skilled jobs, a higher employment and wage rates. Following IMF (2016), we assume that, in the policy status quo scenario, the participation rate of accepted refugee seekers remains 10 percentage points lower than among natives, the unemployment rate remains 30 percentage points higher than among natives, and the majority of refugees enter low-skill jobs.[21] Non-participating and unemployed refugees receive welfare benefits without contributing to the government revenue.

In the advanced integration scenario, we assume that, after completing a language and professional training, the participation rate of accepted refugee seekers is 5 percentage points lower than among natives, and the unemployment rate is 15 percentage points higher than among natives. Also these labour market outcomes of the advanced integration scenario are consistent with IMF (2016) assumptions about the labour market integration of accepted refugee seekers. Finally, in the full integration scenario, we assume that, after completing the language and professional training, the labour market outcomes in terms of participation, skilled jobs and employment rates of accepted refugee seekers are comparable to those of natives in the host Member States.

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[21]In IMF (2016) this scenario is referred to as 'slow integration scenario'.

5. Simulation results

In this section, we describe simulations results of the three integration policy scenarios, as outlined in section 4.2. Policy shocks simulated in the model imply a combination of two demand-side shocks and one supply-side shock, shifting the three labour market curves (see section 3). On the demand side, we account for the increase in the current government expenditures related to the costs of the refugee integration into the labour market and the corresponding reduction in the disposable household income (due to lower transfers / higher taxes). In contrast to IMF (2016), who assumes that associated fiscal costs are not offset by any fiscal measures, we account for the fact that all integration policy costs are fully financed by EU Member States. In particular, they are funded by EU households in the form of a reduction in government transfers to the household income or an increase in the income tax rate. Although, the Stability and Growth Pact (SGP) has a built-in flexibility that allows EU Member States to respond to the refugee crisis,[22] e.g. through additional borrowing, we believe that assuming that integration policy costs can be financed through the government borrowing would bias the interpretation of simulation results. For example, more integration policy expenditures could be always better than less, if associated policy costs are not borne by anyone in the EU economy. A further demand-side shock is given by the private consumption increase stemming from refugees themselves.

On the supply-side, the inflow of refugees increases the labour supply in EU Member States. As detailed in section 4.2, the increase in the labour force is Member State-, skill- and year-specific, and differs between the three integration policy scenarios. Given that integration policy costs and the projected labour force increase vary according to the level of the refugee integration, it is likely to observe differences in the simulated economic impact between the three alternative refugee integration policy scenarios.

5.1. Main results

Aggregated simulation results are reported in Figure 4, where we plot for the whole EU the percentage change in the GDP from base line values for the three refugee integration scenarios (policy status quo, advanced integration scenario and full integration scenario) for the years 2016-2040. The results reported in Figure 4 suggest that there

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[22]According to the SGP, Member States can deviate from the adjustment path toward the Medium-Term Objective in case of an "unusual event outside the control of the member state which has a major impact on the financial position of the general government".
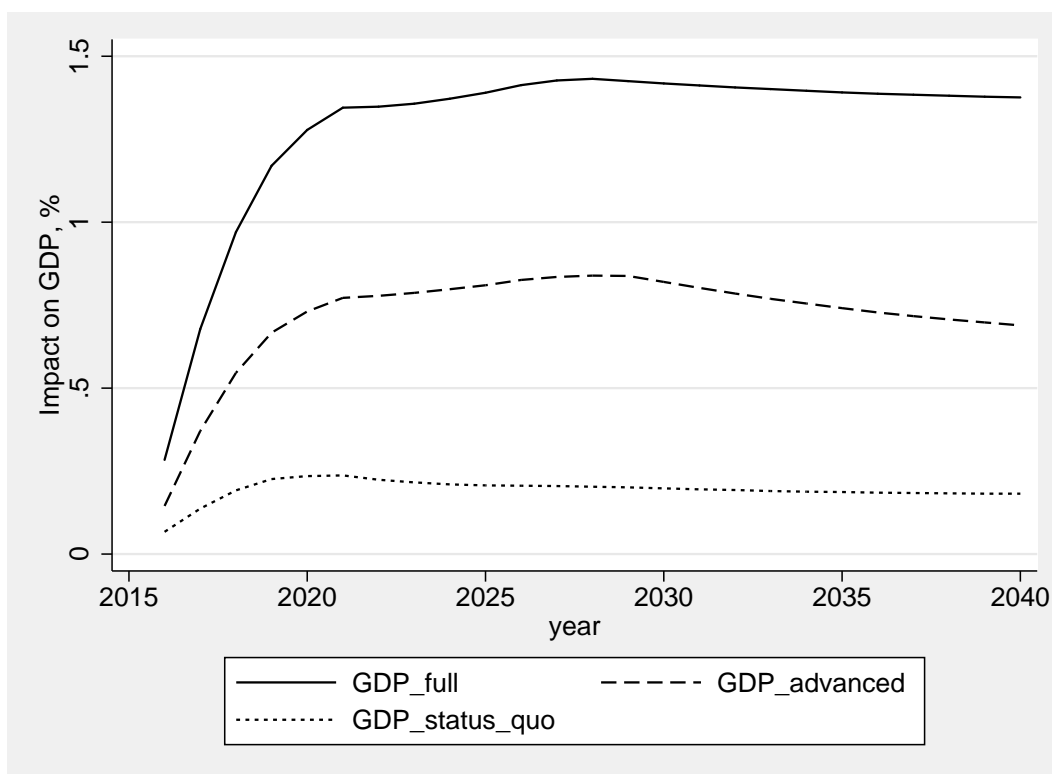
Figure 4: The simulated impact on the GDP under three alternative refugee integration scenarios, deviations from baseline in percent. Source: Authors' simulations. Notes: The bottom line represents the policy status quo. Advanced and full integration scenarios are hypothetical scenarios simulating a significant increase in the government expenditure on the refugee integration (see section 4.2 for scenario assumptions).

is a remarkable difference in terms of the economic impact between the three refugee integration scenarios. While all three scenarios share a similar dynamics over the time period considered, differences in the GDP impact between them increases as economies expand. As expected, for the entire period of the simulated integration policy shock, the full integration scenario records the highest boost in the GDP compared to the policy status quo and advanced integration scenarios.

In the short-run (2016), the GDP impact under all three scenarios is positive and equate to 0.05%, 0.12% and 0.23% for the policy status quo, advanced and full integration scenarios, respectively. As more integrated refugee workers enter the labour market, the EU economy expands continuously until 2040, when it reaches a new steady state above the baseline growth path of the GDP of 0.15%, 0.64% and 1.31% for the policy status quo, advanced and full integration scenarios, respectively. Figure 4 also suggests that the GDP impact is rather small in the short-term, as the multiplier associated to the increase in the government expenditure is partially or fully offset by the reduction in the disposable

household income. Furthermore, in few initial periods, the labour supply shock is too small to amplify effects on economic activities. However, as more workers enter the labour market as a result of the refugee integration, the augmented labour supply is able to fill vacancies, put a downward pressure on wages and therefore generate a fall in commodity prices. The ultimate effect is then an improved competitiveness which boosts the economies of refugees-integrating EU Member States even further.

As next, we investigate whether and to what extent the costs associated with refugee integration policies are offset by benefits generated from the increase in workforce. To identify relative benefits, Figure 5 compares the costs of the policy integration expressed in terms of the government expenditure as a share of the base year GDP (bars) and benefits expressed as percentage changes in the GDP (red line) off base year values. Notice that, in terms of units, in Figure 5 both refugee integration policy costs and benefits are directly comparable. Here the main focus of our analysis is on the overall GDP effect for the whole EU for the period 2016-2040 where, for the sake of comparability, all three integration policy scenarios are reported side-by-side.

The simulation results reported in Figure 5 suggest that, in the first years and for all integration levels, integration policy costs are higher than economic benefits. In particular, for the policy status quo integration scenario, only in the very long-run a break-even point of positive net benefits is achieved. However, we should remind that nevertheless multiplier effects are positive for all three refugee integration scenarios. For the other two integration policy scenarios, the difference between costs and benefits is negative until 2024. This implies that, depending on the integration policy scenario, in the first eight to nine years the fiscal costs of the refugee integration would be higher than economic benefits. Hereafter, economic benefits exceed fiscal costs. The positive difference is larger for the full integration scenario where, despite of higher integration costs, the augmented workforce generates even larger GDP expansionary effects.

By and large, from this analysis we can see that, if the EU economy would expand through the integration of refugees into the labour market, then economic benefits would be eventually greater than fiscal costs. This is confirmed also by Figure 6, where we show the net present value (NPV) associated to each integration scenario until 2040. The NPV is calculated as difference between the discounted present value of the GDP deviation from the base year values obtained from the results of simulations and the discounted present value of the government expenditure shock. The discount rate applied in these calculations is equal to 0.05.
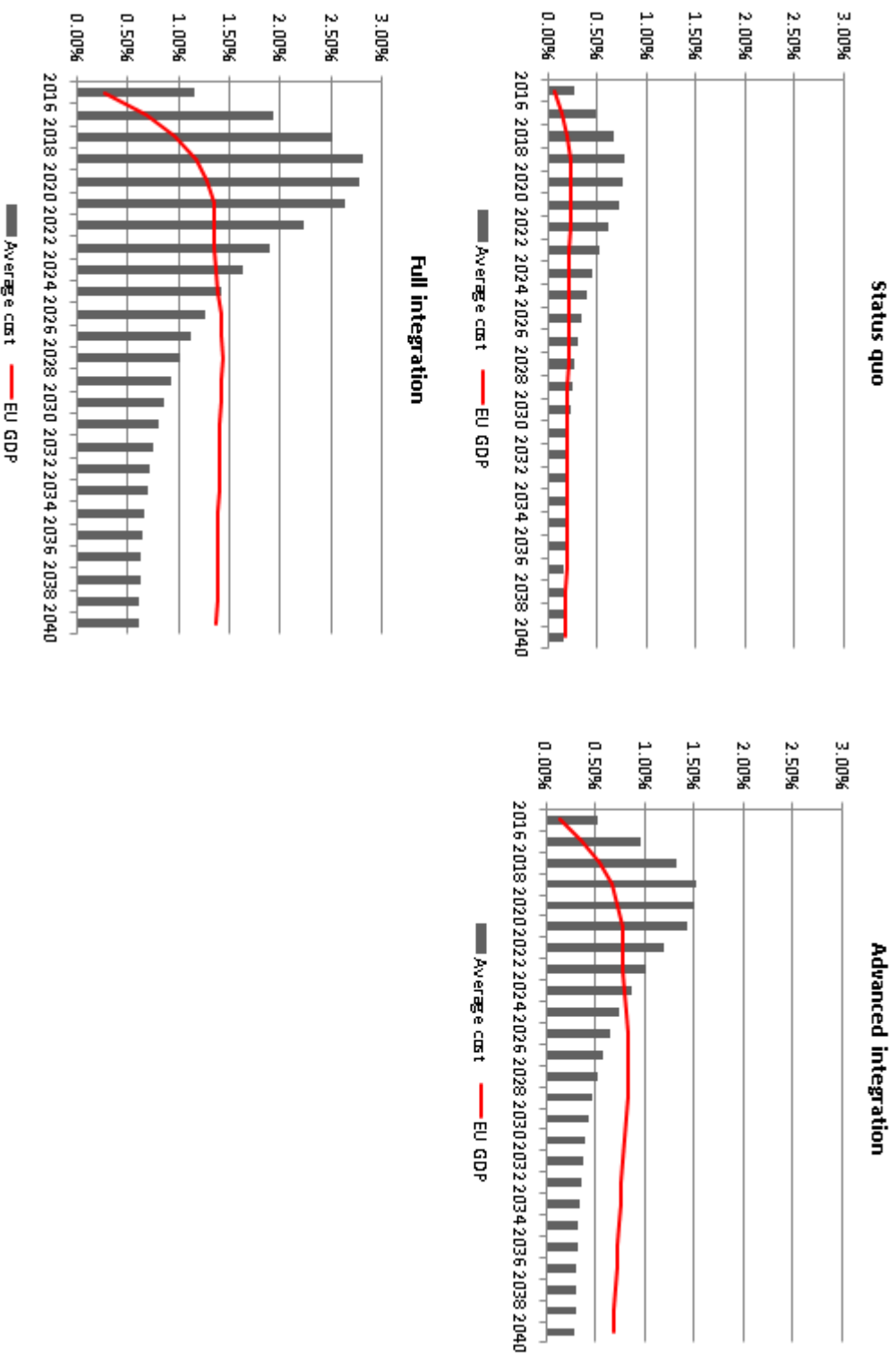
Figure 5: The cost of integration policies as a share of the GDP (bars) and the simulated impact on the GDP (red line) for the three integration scenarios. Source: Authors' simulations. Notes: The first integration scenario represents the policy status quo. Advanced and full integration scenarios are hypothetical scenarios simulating a significant increase in the government expenditure on refugee integration. See section 4.2 for scenario assumptions.
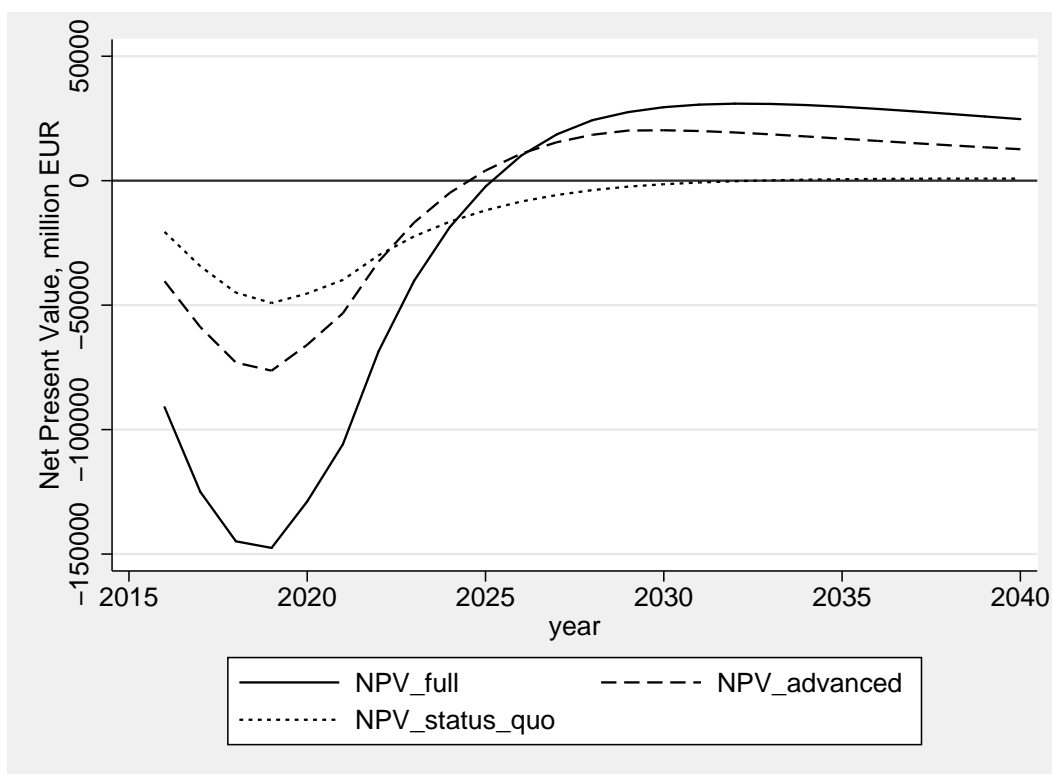
Figure 6: Net present value of the refugee integration in the EU under the three integration scenarios. Source: Authors' simulations. Notes: The first integration scenario represents the policy status quo. Advanced and full integration scenarios are hypothetical scenarios simulating a significant increase in the government expenditure on refugee integration. See section 4.2 for scenario assumptions.

The NPV in this context gives us the size of the (discounted) multiplier effect in each period. Note that, even if the NPV is negative, not necessarily the overall impact on the economy is negative. It could simply mean that the multiplier effect is less than 1. The NPV should give an idea of the time in which the economy is able to fully absorb the exogenous demand shock.

The results plotted in Figure 6 suggest that the NPV is negative in the initial years but then eventually becomes positive for all three refugee integration scenarios. It is also interesting to see that, under the full integration scenario, the NPV is the lowest during the period 2016-2025 but it becomes the largest after around ten years (2026). Hence, our results suggest that, in order to be able to gain from the full potential of the refugee integration in the EU labour markets, receiving countries should be prepared to accept certain costs in the short-run. Moreover, even these short-term disadvantages are associated with positive growth effects for the whole EU.

5.2. *Alternative policy financing methods*

Until now, we have assumed that the additional government revenue required for financing the integration of refugees was fully financed through imposing a lump sum transfer of the household income. Economically, this is the most efficient way to create additional government revenues, as it does not affect the marginal tax rate. However, this might not be necessarily true in reality in EU Member States. Therefore, we perform a further set of simulations in which the additional government revenue required to finance the cost of refugee integration policies is collected through an increase in the labour income tax rate. In these simulations, we treat government expenditures as exogenous and vary tax rates so as to generate a corresponding increase in the government revenue. Therefore, the labour income tax rate has to increase until the additional tax revenue is raised to cover the additional migration policy expenditure, while taking into account endogenous changes in prices.

These simulations allow us to compare the case of financing the necessary additional government expenditures through a simple reduction of transfers from governments to households (as the case analysed above) with the case in which the costs of the refugee integration are fully financed by a corresponding increase in the labour income tax. The two types of policy-financing options are rather different, as economic agents will adjust to the policy shock differently. A reduction in transfers simply affects the demand-side of the economy by reducing the household consumption accordingly, while an increase in the labour income tax rate has an adverse supply-side effect. Therefore, it is likely to partially or fully offset the effects of the increase in the government expenditure, if the augmented labour supply resulting from more refugee immigrants entering the labour market is not sufficient to counteract the adverse effects of the labour taxation.

Under default model assumptions, a long-run wage curve determines the real wage after tax, therefore, an increase in the government expenditure fully financed through taxes in the absence of offsetting effects coming from the increasing labour supply will lead to a negative overall impact in the short- and long-run.[23] However, with a continuous integration of refugees into the EU labour market, we would expect a downward pressure on wages and, if the labour supply shock is large enough, we are likely to observe a fall in real wages and therefore in commodity prices that should in turn raise competitiveness and boost the EU economy. In order to better illustrate the

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[23]Results could change if for instance we impose fixed nominal wages. In these circumstances it is likely to expect conventional Keynesian multiplier effects.

potential effects of a distortionary taxation, in this experiment we only focus on the full integration scenario, where the increase in the labour force is significantly larger than in the other two scenarios.
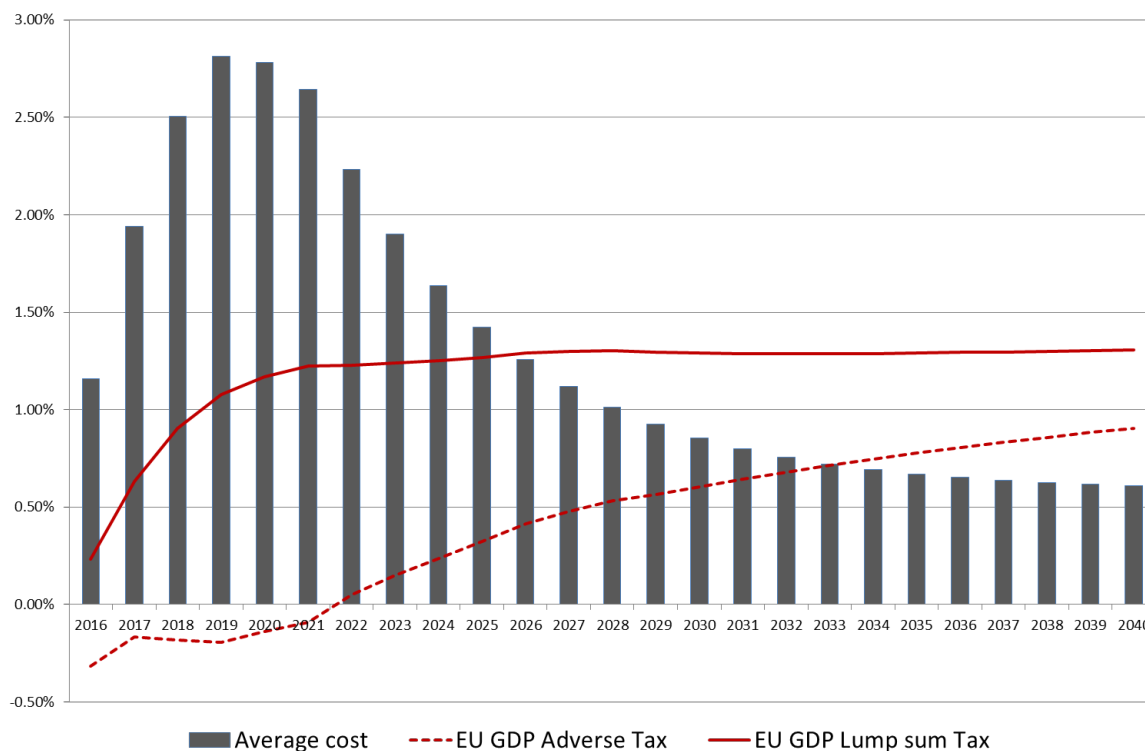

Figure 7: The cost of integration policies as a share of the GDP (bars) and the simulated impact on the GDP (red lines) for the full integration scenario under two alternative financing methods. Source: Authors' simulations.

The simulations results for the two policy financing methods are reported in Figure 7. As in the preceding section, we report the required overall increase in the government expenditure as a share of the EU GDP (grey bars) and simulated GDP effects (as a share of the EU GDP) obtained by financing the integration policy via a lump sum transfer (red solid line) and via changes in the income tax (red dashed line). The simulation results reported in Figure 7 suggest that under the non-distortionary tax, the economic impact on the EU is positive since the beginning of the implementation of the integration policy, whilst for the distortionary taxation the change in the GDP is negative in first years until 2021. Hereafter, as more refugee workers are integrated into the labour force, the positive effect of an increase in the labour supply comes fully into play by boosting the growth of the EU economy. In the first 7 periods, the labour supply shock is still not sufficient to fully counteract the negative impact of the increase in taxes.

This is not a surprising result. In this time frame, the net labour income tax increases significantly in order to cover the significant expenditures necessary to operationalise the integration of immigrants, whereas the number of immigrants integrating into the labour market is still not large enough to contrast the negative impact of taxation. However, as soon as the government expenditure declines (still increasing but at a decreasing rate), distortionary effects on wages are reduced, while we have a continuous and increasing inflow of refugees integrating into the labour force, in turn generating positive effects in the economy.
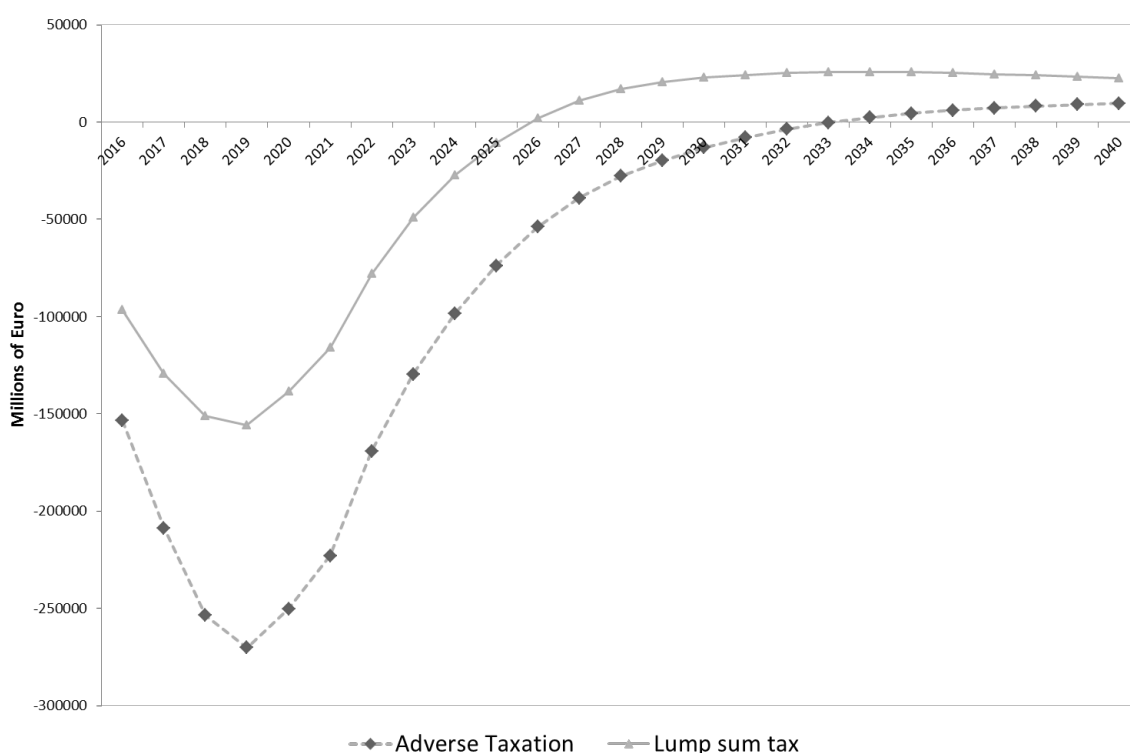
Figure 8: Net present value under two alternative financing methods, full integration scenario. Source: Authors' simulations.

Next, in Figure 8 we report the net present value for the two alternative policy financing methods. In both cases, the short- and medium-run NPV is negative. In the long-run, however, a full repayment of the integration policy investment is achieved under both policy financing methods. The simulation results reported in Figure 8 suggest that, to achieve a full repayment of integration policy investments, it would be necessary to wait until 2034, which implies 8 more years than under the lump sum policy financing. Moreover, it is interesting to see that, while the gap between the two alternative policy

financing methods is wider at the beginning of the policy shock, as the level of the refugee integration increases period by period, differences become smaller. Generally, we expect the case of non-distortionary taxation to generate a larger expansion of the EU economy.

5.3. Regional impacts

Next, we look at the regional distribution of the simulated impacts of the refugee immigration to the EU, as given the uneven acceptance and integration of refugees across EU Member States (see Figure 2), we expect important heterogeneities also in the regional distribution of social, economic and fiscal impacts. In order to understand how different EU regions might be affected by the recently recorded and projected refugee inflow, in Figure 9 we map the simulated long-run GDP effects for the policy status quo, (left panel), the advanced integration scenario (middle panel) and the full integration scenario (right panel).

In line with our expectation hypothesis, those countries and regions that accept and integrate more refugees (measured by the share of the incumbent population) are expected to benefit most from refugee immigrants: Finland, Sweden, Denmark, Austria. Germany. Second, Figure 9 confirms findings reported in Figure 5, according to which the full integration scenario is associated with higher GDP growth effects than the policy status quo and the advanced integration scenarios.

Next, we explore the impact of alternative financing methods on the relative competitiveness of EU regions. As shown in section 5.2, the underlying mechanisms resulting from the application of a non-neutral financing policy are substantially different from a neutral financing option, where integration policy costs are fully financed through a lump sum tax on the household income. When the model is framed to account for adverse supply side effects coming from taxation, in the short-run, a low level of the migrant integration into labour markets is not enough to lower wages, therefore, workers become costlier and all prices in the economy rise, generating significant negative impacts on the economic activity exacerbated by a loss in competitiveness. On the other hand, in the long-run, a full integration of accepted asylum seekers occurs, implying that the increased pool of available workers is large enough to put a downward pressure on wages stimulating in such a way the labour demand in all sectors. The positive impact of a raise in active workers entering the labour market is then able to counteract the negative supply side effects of taxation increasing competitiveness in all EU regions thus boosting the economy even further.
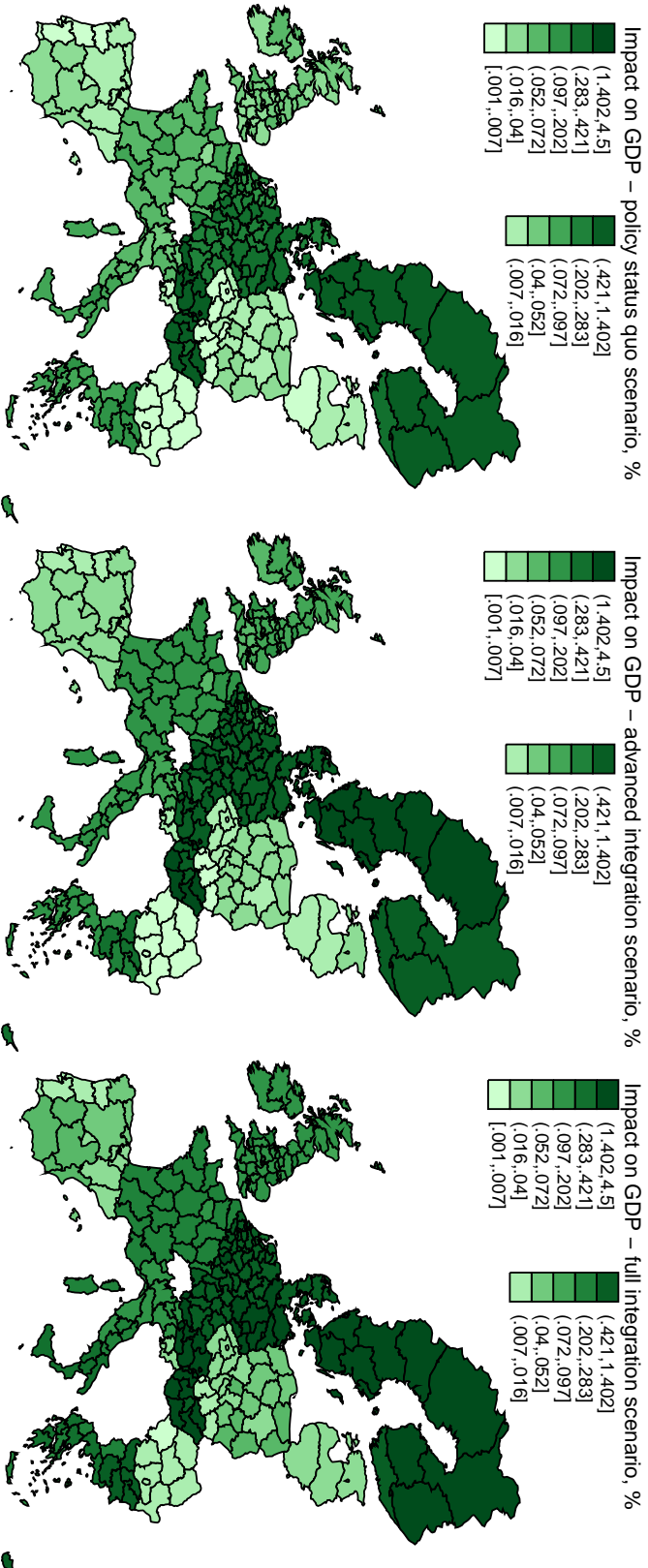
Figure 9: Simulated long-run impact on the GDP under the policy status quo (left panel), the advanced integration scenario (middle panel) and the full integration scenario (right panel). Source: Authors' simulations.

In order to identify sources of competitiveness effects at the regional level, we plot changes in the regional GDP against changes in exports and compare both policy financing methods for the short- and long-run, respectively. Red dots denote regional changes in the GDP (horizontal axes) and exports (vertical axes) under the distortionary financing, while grey dots denote regional variations for the same set of output variables under the lump-sum taxation for financing the integration policy. In both methods of financing, we are referring to the full integration scenario.
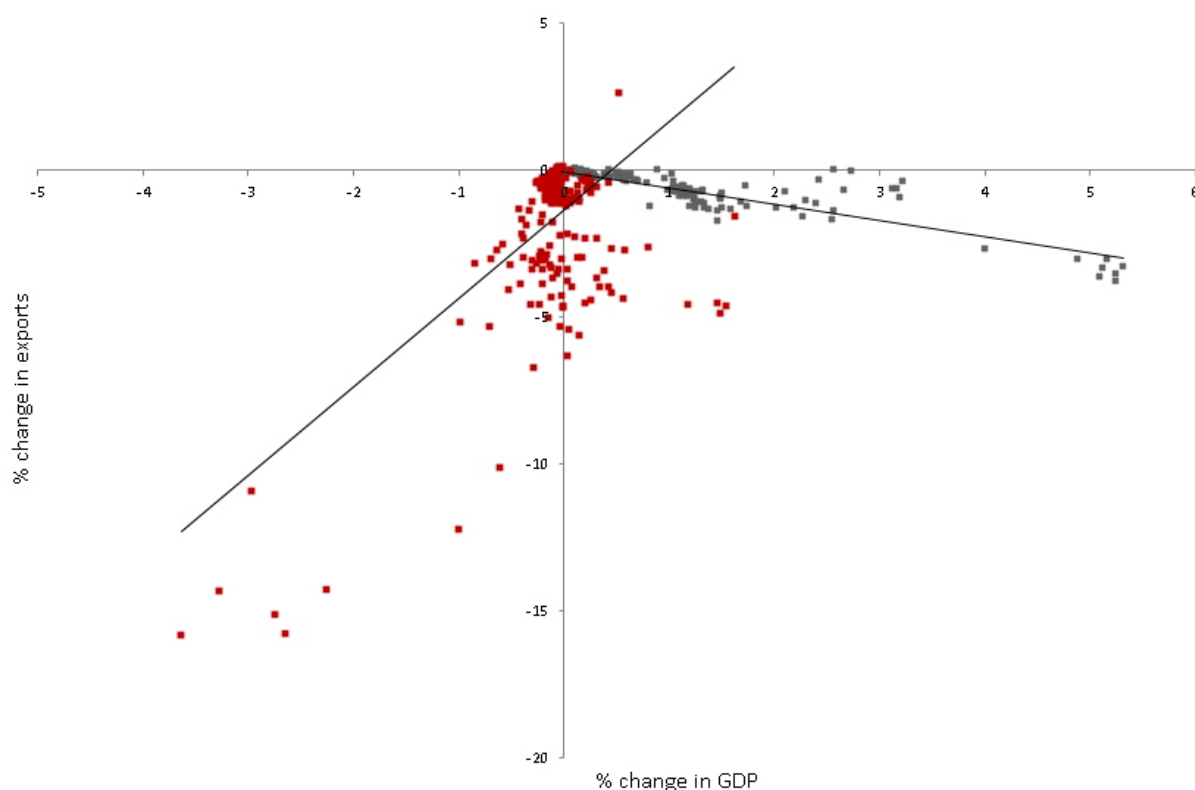
Figure 10: Impact on the relative competitiveness of regions: short-run. Notes: Red dots: distortionary financing; grey dots: lump-sum taxation. Source: Authors' simulations.

In the short-run (Figure 10), we observe a high negative correlation between the GDP and exports for the case of a non-distortionary taxation. In almost all regions positive changes in the GDP are related to negative changes in exports (Figure 10), as the government expenditure shock creates an upward pressure on prices resulting, in a reduction in exports. The counteracting effect of the increase in active workers entering the labour market is still too small to revert the direction of the policy crowding out effect. On the contrary, a positive correlation, although not as pronounced, is observed where the recycling method implies changes in the rate of the labour income tax. In

this case, negative changes in the regional GDP are associated to losses in the regional competitiveness.
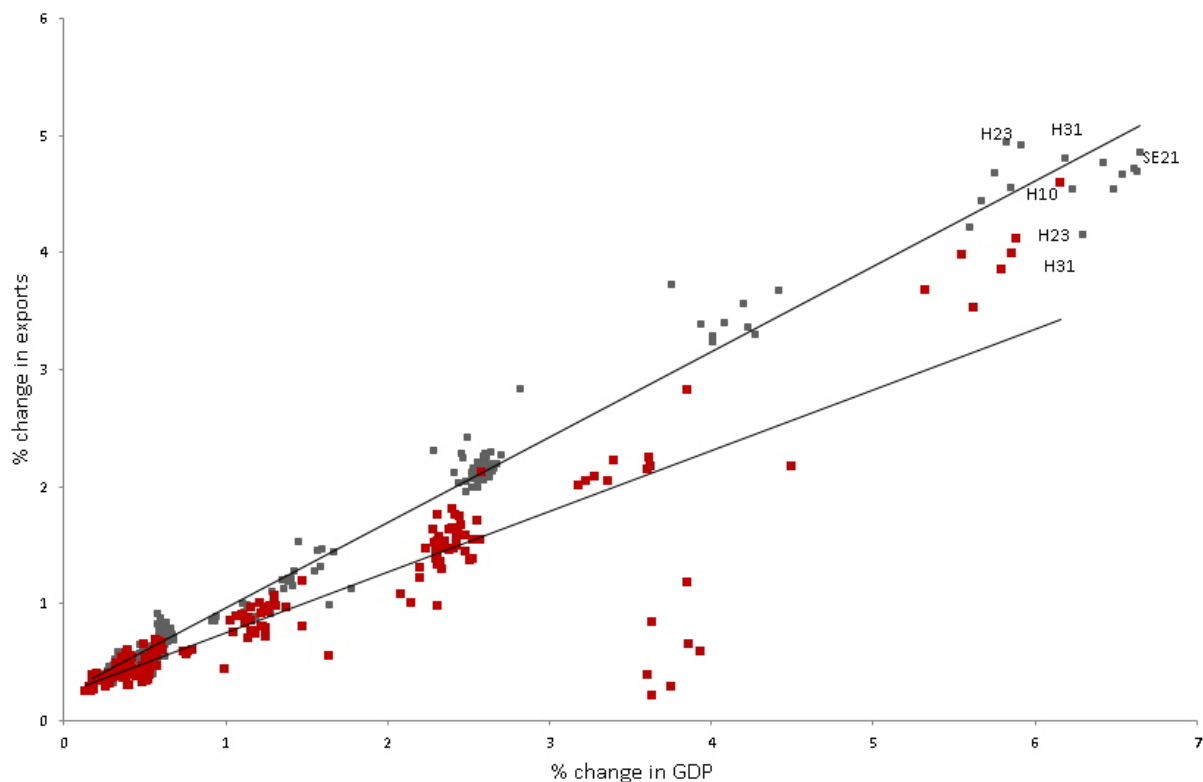

Figure 11: Impact on the relative competitiveness of regions: long-run. Notes: Red dots: distortionary financing; grey dots: lump-sum taxation. Source: Authors' simulations.

In the long-run, we observe a rather different situation (Figure 11). Under both methods of financing, positive changes in the GDP are related to positive competitiveness effects (Figure 11). As explained above, the labour supply shock dominates over other effects. It is worth noticing that regions above the fitting lines are those benefiting particularly strongly from improved competitiveness effects, as for example several regions in Hungary, Sweden and Austria, while other regions experience less than expected changes in export as those below the fitting line.

As expected, under the non-distortionary taxation, the effects on the GDP and exports are lower than under the neutral financing, while both variables show the same correlation effects in both types of simulations. We can identify a group of regions with comparable GDP effects, while the same group of regions experiencing heterogeneous competitiveness effects. In order to identify competitiveness adjustment channels, we regress changes in exports on changes in the regional GDP and plot residuals in Figure 12. Residuals, that
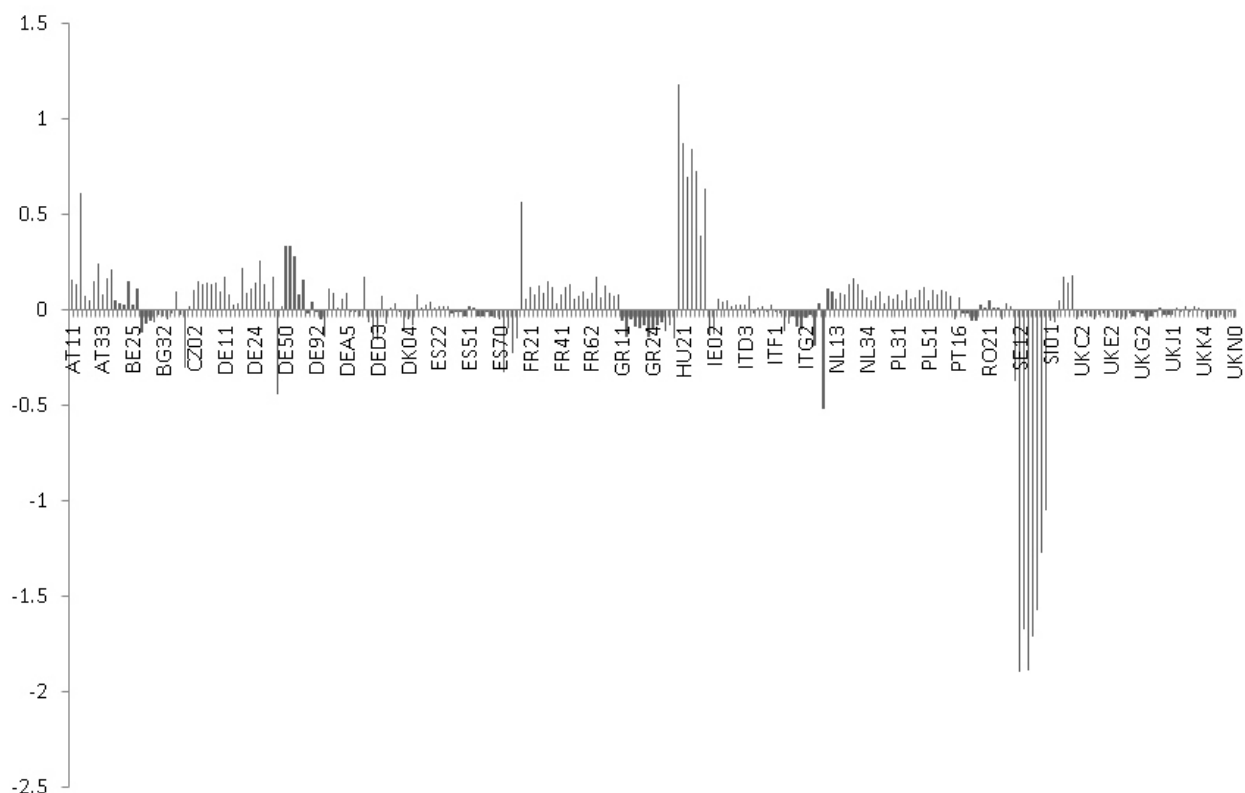
Figure 12: Expected versus realised gains in the relative competitiveness of regions. Positive values - more than expected; negative values - less than expected. Source: Authors' simulations.

is, differences between the actual changes and the predicted changes in exports, provide a measure of the relative competitiveness that regions achieve as result of the integration of accepted refugee migrants into their labour markets. In Figure 12 we report results for the distortionary taxation, which are considerably more interesting than for the neutral taxation. When residuals are negative, gains in the relative competitiveness resulting from the integration of migrants in a particular region are smaller than what we have expected. In the opposite case, that is when residuals are positive, the gains in the relative competitiveness are larger than expected. This analysis is useful, because it neutralises the direct effect related to the labour supply shock.

According to simulation results reported in Figure 12, Swedish regions receive a significant increase in the numbers of active workers joining the labour market, however, resulting relative competitiveness gains are smaller than we would have expected, given the long-run impacts on the GDP. This is not the case regions of Hungary and Austria that receive a comparably large labour supply shock. Deviations between the expected and

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realised gains in the relative competitiveness are due to heterogeneities across regions in labour markets, the structure of economies, trade patterns, etc., as observed in the base year data.

Finally, to further facilitate the understanding of mechanisms operating in the model at the regional level, as next we plot and discuss in detail the percentage changes in the GDP, exports and household consumption for one representative region – the Paris region of France (FR10, NUTS2) – for the advanced integration scenario, which is shown in Figure 13.
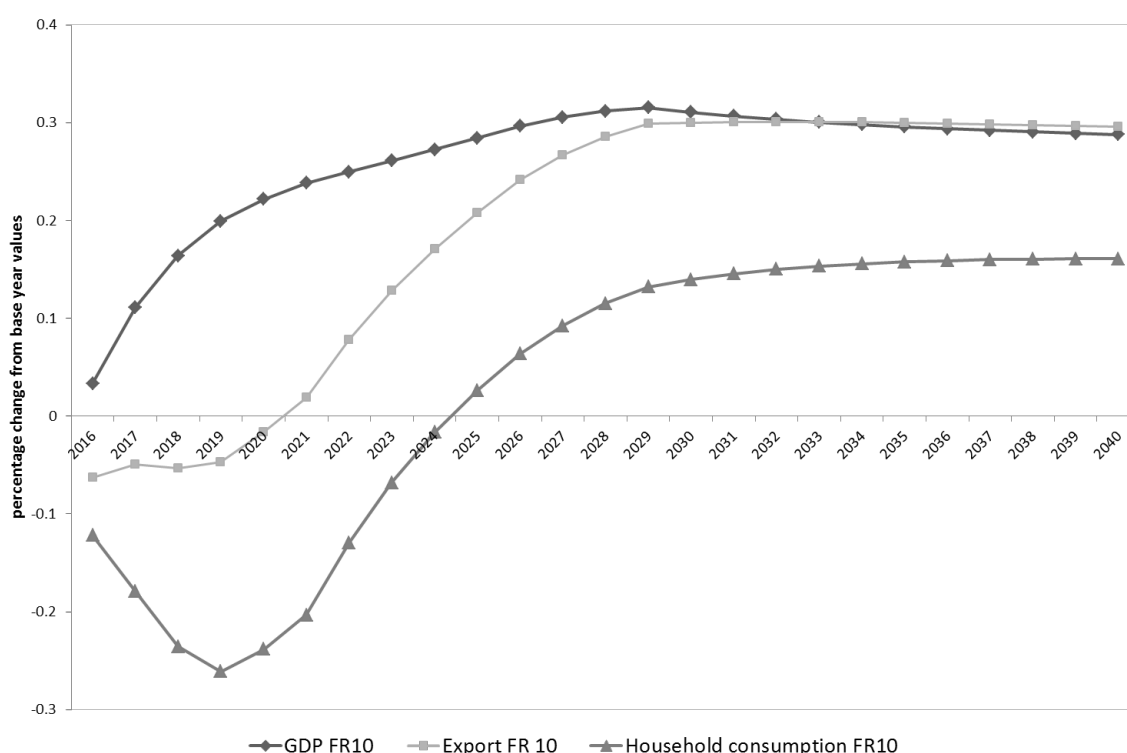

Figure 13: The simulated impact on the GDP, exports and the household consumption for the Paris region in France, deviations from the baseline in percent. Source: Authors' simulations.

In the very short-run, which corresponds to the first period of simulations (2016), the household consumption is constrained to fall in order to finance the integration policy cost, while exports (interregional and international) are slightly below the base year value (-0.06%). In this time frame, GDP multiplier effects are still positive, since the GDP is above base year values, though the magnitude of the impact is negligible. This occurs because the positive supply-side shocks, coming from the additional supply of integrated refugee workers entering into the labour market, are not strong enough to

fill all vacancies in the economy and generate a sufficient fall in prices to improve the competitiveness of refugees-integrating EU Member States' economies. However, as the labour supply rises through the increased level of the refugee integration, competitiveness effects come fully into operation and the household consumption starts to increase. This occurs after around 9 years, after which the household consumption keeps continuously rising until settling at around 0.16% off base line values.

5.4. Comparison with previous studies

Comparing our results with previous studies, we note that the range of the estimated GDP effects of immigration on receiving countries is rather wide in the migration literature, implying that many factors, such as migrant skill complementarity/substitutability to the incumbent workforce skills, integration policies, local labour market conditions, likely will determine the net effect of immigration in the medium- to long-run.

Our simulation results are consistent with findings of Jaumotte et al. (2016), according to which there might be significant long-term benefits to immigration in terms of a higher GDP per capita for receiving countries. Their estimates suggest that an increase in the migration share by 1 percentage point can raise the destination country per capita GDP by up to 2 percent in the long-run. Moreover, both high- and low-skill migrants contribute to the GDP per capita increase in receiving countries. Their estimates of a sizeable and positive impact of immigration on the GDP per capita also suggest that the true fiscal benefits from immigration could be larger than typically estimated, since static estimates of net fiscal gains, which calculate the difference between immigrants' taxes and social security contributions and their receipt of social security benefits and government services, typically do not take into consideration the indirect effects of immigration on the aggregate productivity of the receiving country economy. Jaumotte et al. (2016) conclude that the labour market integration of migrants is critical to secure GDP per capita gains and benefits for public finances, and a number of policies can increase the benefits of migrant worker integration, including language training and active labour market policies targeted to the needs of migrants. Hence, the policy conclusions of the present study are fully supported by those of Jaumotte et al. (2016).

The results of the IMF (2016) study, analysing the economic impact of the recent refugee inflow in the EU, suggest that in the short-run, the macroeconomic effect from the refugee inflow in the EU is likely to be modest in terms of the GDP growth, reflecting the fiscal expansion associated with the support to asylum seekers, as well as the expansion in the labour supply, as integrated refugees begin to enter the EU labour market. IMF

(2016) concludes that the impact of accepted refugees on medium and long-term growth depends on how they will be integrated in the EU labour market. Policies can help open up the refugee' path to the EU labour market: restrictions on taking up work during the asylum application phase should be minimised, and active labour market policies specifically targeted to the refugees strengthened in the EU. Again, the policy conclusions of the present study seem to be in line with those of IMF (2016).

Similarly, also Furlanetto and Robstad (2016) find that an exogenous positive immigration shock lowers unemployment (even among native workers) and has a positive effect on public finances even in the short-run. The positive long-run effects are likely to be even larger. On the contrary, they do not find any support for those arguments recently used against immigration in terms of native employment displacement effects and burden on public finances.

Our simulation results are also broadly comparable to the results reported in a study examining the economic effects of administrative action on immigration on the US economy by the U.S. President's Council of Economic Advisors (CEA, 2014). The CEA estimates are based on a bottom-up approach relying on the literature's estimates of the effects of high-skill immigration on TFP, hours supplied per workers, skill composition of the workforce, and capital intensity. According to (CEA, 2014) results, the semi-elasticity of output per worker to immigration is of a similar magnitude to the one we have found in the present study for the policy status quo scenario.

Further, in a cross-sectional setting, Ortega and Peri (2014) find that a country with a migration share of 10 percentage points higher than another country would have twice as high level of income in the long-run. These estimates are comparable to our results for the full integration scenario reported in the present study.

As a general conclusion, our results seem to be broadly in line with those of previous studies investigating possible impacts of immigration on destination country society and economy. By complementing previous findings, our study offers more nuanced insights regarding the regional and temporal distribution of potential impacts, the role of alternative financing methods of the government expenditure, and the consequences of the policy engagement and costs regarding the integration of accepted refugees in EU labour markets.

6. Robustness checks and sensitivity analysis

6.1. Robustness checks

The success of the refugee integration policy will largely depend on the level of the labour market integration, which the EU will be able to achieve. For this reason, we have constructed three alternative integration scenarios by altering critical assumptions about integration policy costs and expected labour market outcomes. As the process of acceptance, training and all other tasks related to the integration of refugees improves due to the exchange of best practices between Member States, learning by integrating and information sharing, the level of refugee integration policy effectiveness and efficiency is likely to improve over time. Hence, we can expect certain policy *learning effects* to arise, if all procedures linked to the integration of refugees become a common and regular practice in the EU.

In order to provide an indicative measure of the likely impact of the efficiency improvement of the investment associated to the integration of refugees into the labour market and the extent to which a *learning effect* can generate a faster increase in the economic growth, we make a hypothetical assumption of increasing the efficiency of the refugee integration into the EU labour market in the three integration scenarios. The initial assumptions on participation, skilled jobs and the employment rate are preserved. However, in this robustness check we assume that the number of integrated refugees entering the labour market increases by 20%, while keeping the government expenditure invariant.

The improvement in the public spending not only boosts the GDP growth in the long-run but, as shown in Figure 14, in addition, it is also expected to reduce the short-run crowding out effects of financing the cost of integrating refugees through a distortionary taxation. These findings suggest that the simulation results reported in previous sections may represent a lower bound of real refugee integration benefits. The true benefits may be even higher, depending on the policy efficiency and spillover effects.

6.2. Sensitivity analysis

Given that the objective of the present study is to simulate, assess and compare impacts of alternative refugee integration policies, those assumptions that differ among scenarios are particularly critical for the robustness of our simulation results. Therefore, all these assumptions are scrutinised extensively in the sensitivity analysis. In contrast, as we do not attempt to forecast migration flows as such – they are taken as given (and
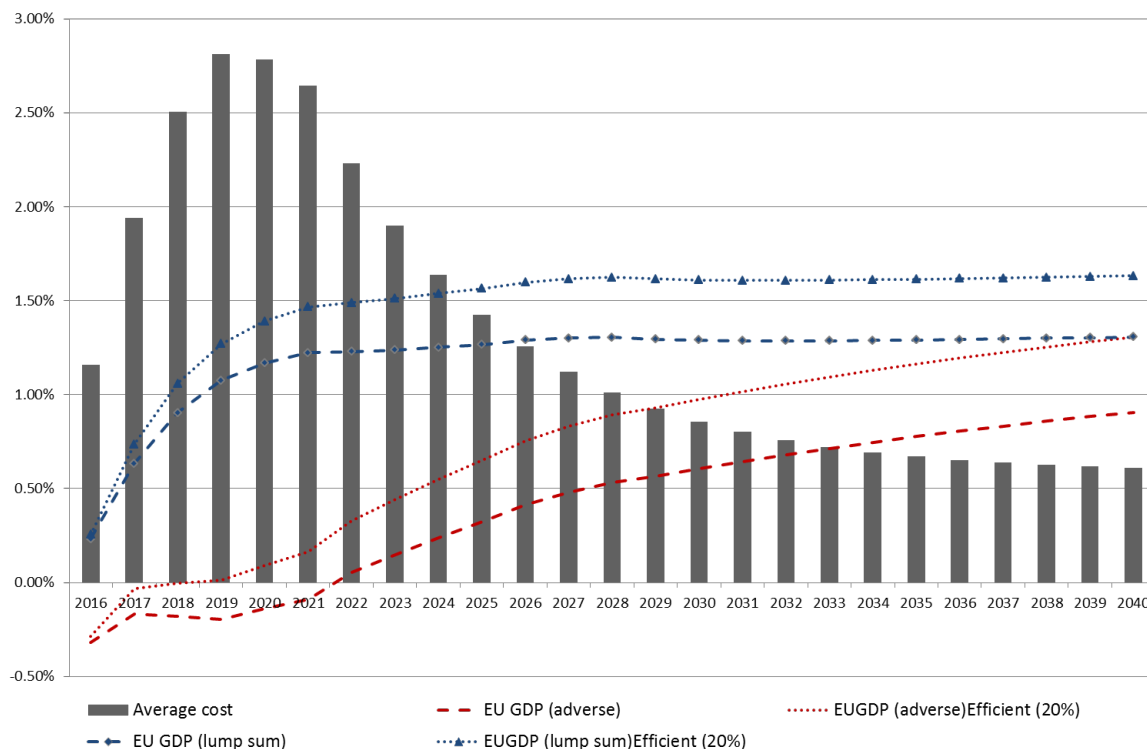
Figure 14: The EU GDP impact of the improved efficiency of the full integration scenario under two alternative financing methods. Source: Authors' simulations.

hence constant across all scenarios) in the present study – assumptions, for example, about the causes and determinants of the forced migration of refugees into the EU are less critical for simulation results of the present study.

In this section, we present selected results of the sensitivity analysis for the three integration scenarios. In particular, as an example, we report the results of the sensitivity analysis obtained by altering the values of behaviour parameters in the underlying simulation model, as they are among key determinants driving simulation results.

In this exercise, we decrease and increase model default elasticities of substitution by 20%, respectively, and compare with the effects under our default assumptions. The main purpose of this exercise is to evaluate the extent to which changes in the elasticity of substitution would alter the magnitude of the simulated impact reported in preceding sections. The sensitivity analysis results are reported in Figure 15, where percentage deviations in the GDP for all three refugee integration scenarios are reported. For each scenario we show the case where elasticities are reduced (lower), augmented (upper) and kept at their default (central) values.
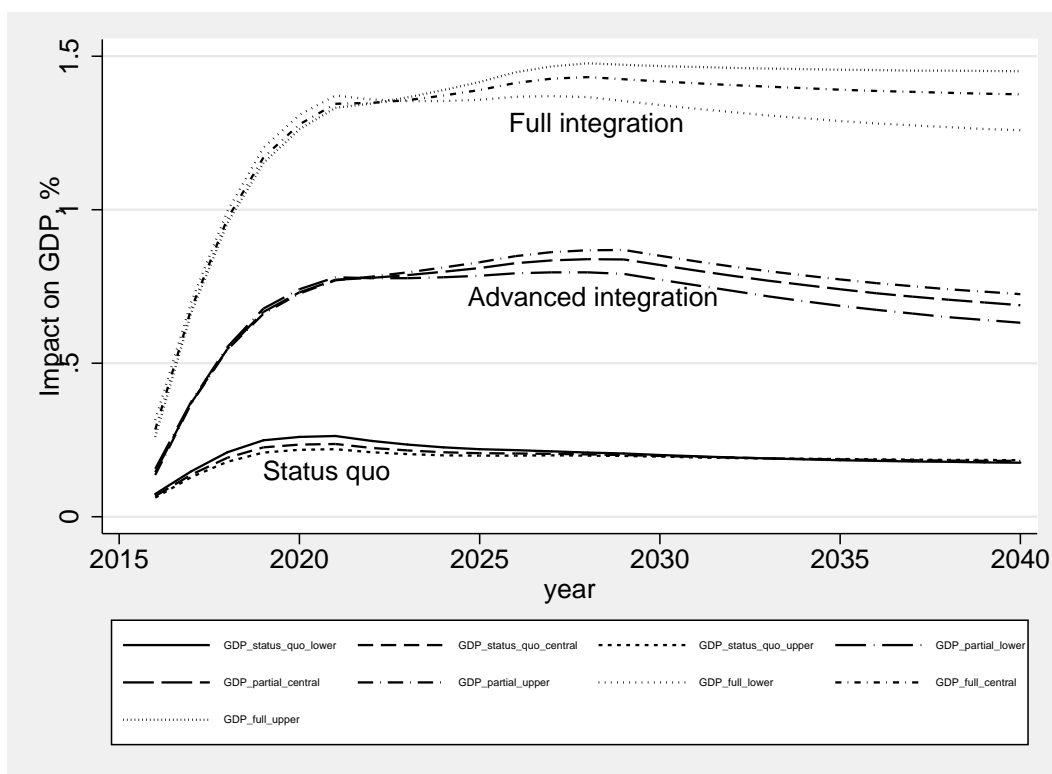
Figure 15: Sensitivity analysis under the three refugee integration scenarios, deviations from the baseline in percent. Source: Authors' simulations. Notes: The first integration scenario represents the policy status quo. Advanced and full integration scenarios are hypothetical scenarios simulating a significant increase in the government expenditure on refugee integration. See section 4.2 for scenario assumptions.

The sensitivity analysis results reported in Figure 15 suggest that in all three refugee integration scenarios the short-run impact of altering the values of the elasticities of substitution do not generate important and significant variations in simulation results. However, as the labour force and economies grow, the elasticities of substitutions come in more prominently to play a role. It is interesting to see that, by lowering the values of the elasticities of substitution, the impact is lower on the contrary by increasing all elasticities the GDP impact becomes larger. The main channel in this analysis is surely represented by the trade elasticity. As the EU economy becomes more competitive, when more refugee workers are integrated into the labour force, a rise in the trade elasticity allows economies to better exploit comparative advantages of the improved competitiveness.

In addition to presented sensitivity analysis results, we have also performed a number of other sensitivity analyses with respect to the size, dynamics and distribution of the forced immigration (not reported). Our sensitivity analysis results suggest that indeed these assumptions are among the key factors driving simulation results. Hence, an

updated set of simulation results may be produced in future, when more recent data about the size, dynamics and distribution of the forced immigration in the EU become available.

7. Conclusions

The rising numbers of forced civil war migrants pose important social and fiscal challenges as well as offer economic opportunities for EU Member State societies and economies. In the short-run, the social-beneficiary status quo of asylum applicants, by providing welfare benefits and the necessary access to education, language and the sociocultural infrastructure, increase the budgetary costs of EU Member States. In the medium- to long-run, by integrating migrants into EU labour markets offer not only in social, but also in economic and budgetary gains. In order to assess how different refugee integration policies can affect labour market outcomes, the economic growth and the government budget of EU Member States in the medium- to long-run, the present study undertakes a scenario analysis with a general equilibrium model for the whole EU implemented at the regional level.

Our simulation results suggest that, although the refugee integration (e.g. by providing welfare benefits, language and professional training) is costly for the government budget, in the medium- to long-run, socio-economic and fiscal benefits may significantly outweigh the associated refugee integration costs. Most importantly, in the medium- to long-run, the net benefits of investment into refugee integration are higher, the higher are investments into refugee integration at the time of their arrival. Depending on the integration policy scenario and policy financing method, the annual long-run GDP effect would be 0.2% to 1.4% above the baseline growth, and the full repayment of the integration policy investment (positive the net present value) would be achieved after 9 to 19 years. Hence, our study confirms that sustainably integrated refugees have the potential to play an important role in addressing Europe's alarming demographic trends, filling vacancies with specific skill requirements, improving the ratio of economically active to those who are inactive, a ratio that is falling in many Member States, and boosting jobs and growth in the EU.

Based on our simulation results, we can draw a number of policy recommendations. First, an effective and sustainable integration policy is costly, it requires sufficient political, social, and financial resources and investments which, according to our simulation results, will pay off for receiving countries in the medium- to long-run (after 9 years). Second, the

integration of refugees may serve as an important channel of turning challenges associated with hosting refugees into job and growth opportunities for the EU, as investing resources into integration policies today may contribute to making Europe a more prosperous, cohesive, and inclusive society and economy in future. Third, according to our simulation results for the policy status quo integration scenario, the long-run cost of non-integration is likely to be considerably higher than the short-run investment costs of the refugee integration, as shown in the full integration scenario.

Our results seem to be in line with those reported in previous studies investigating possible impacts of immigration on destination country society and economy. By complementing previous literature, our study offers more nuanced insights regarding the regional and temporal distribution of potential impacts, the role of alternative financing methods of government expenditure, and costs and consequences related to different policy engagement intensities in the integration of accepted refugees in EU labour markets.

Turning to the limitations of our study, we recognise that in the presented analysis we have focused solely on the socio-economic impacts (both costs and benefits) of the refugee integration. In reality, however, there are many more aspects, such as humanitarian, security, equality and social inclusion, etc., which need to be taken into account by policy makers, when designing migration and refugee integration policies. This comprises a promising avenue for the future research. Second, our simulation results depend on a large number of assumptions, both in the scenario construction and in the underlying simulation model. For example, the size, dynamics and distribution of the forced immigration – key assumptions on which our simulation results rest – are unknown and inherently difficult to forecast. While, we have been using the best data available do date and have attempted to be as transparent as possible about all key assumptions underlying our simulations, and have been running extensive sensitivity analysis to test the simulation result sensitivity with respect to them, the robustness of presented findings would benefit significantly from complementary studies, which invites for a follow-up research on forced migration in future.

Finally, previous migration studies suggest that refugee-specific characteristics, such as skills, are important and hence should be accounted for, when assessing labour market effects of immigration, as the migrant skill complementarity/substitutability to incumbent workforce skills determines labour market outcomes. Unfortunately, such data are not available for the recent inflows of recent civil-war asylum seekers in the EU

at a representative level yet. In future, by carrying out a comprehensive survey about refugee characteristics would allow to assess much more precisely the integrated refugee skill complementarity/substitutability and hence refugee integration costs and long-run benefits, and improve the evidence base for policy making.

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