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"MIGRATION POLICY AS AN INCENTIVE MECHANISM: A THEORETICAL ANALYSIS"

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Firma dello studente

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INTRODUCTION

Human migrations are an imperishable phenomenon: the reasons to migrate are, and will be in the future, numerous and variegated.

Over the past two decades, migration has increased rapidly (Frattini, 2017) and in 2019, the number of international migrants reached 272 million of people, up from 153 million in 1990 (UN DESA, 2019).

Avoiding or completely preventing human flows is impossible and migrants' integration and inclusion is a key police objective, even if challenging (OECD, 2020). From one side, the need of integrating migrants comes from states' commitments in taking care of people migrating out of desperation (UNGA, 2017). From the other, policy intervention is necessary to avoid economic and social costs connected with a failed integration. Moreover, a proper social and economic inclusion of migrants could bring positive returns to the country that will host them.

Despite these reasons, the long history of migrations, and the surge in migrant inflows in recent years, countries still struggle in managing the phenomenon. All over the world, movements of people are often considered as an emergency and legislation and policy lack a structured framework. From an overview of the main integration measures adopted in the countries involved by migration flows, emerges a scattered patchwork of actions undertaken at the local, national or international level, without proper planning, coordination and collaboration. Moreover, there is also a lack of data and information to evaluate the measures adopted and their casual effects on policy outcomes (Martin et al., 2016; OECD, 2019).

These problematics appear even more urgent considering that governments worldwide, even if unaware of the effectiveness of their integration policy, are already destining public resources to integration. An inefficient use of resources is detrimental both for migrants and residents people and aggravates the already high level of public concern for the effects in the short and long run of migrations (OECD, 2020).

In this work, we will try to address the problems that governments face in allocating resource to migrants. Our focus will be on the design of measures responding to specific migrants' needs and according to individual characteristics. The literature on migration seems to agree that

tailored approaches can be the key to efficiency: governments could save important resources if migrants were helped in reaching their full potential.

The main problem of individual's characteristics-policy based, is that usually many of them are unobservable to the public planner. As the literature show, trying to detect migrants' abilities based on their reasons to migrate or their geographical origin is not easy neither completely possible. Consequently, a problem of adverse selection arise that could be addressed through the creation of an incentive mechanism of revelation. In the final part of this work, we will try to design such mechanism in the context of migrants' integration and to derive some conclusions.

The following work is structured as follow: in the first chapter, we will present an overview of the main integration problems and measures experienced in western countries. The second chapter is dedicated to a literature review on migrants' self-selection. In the third and last chapter, a tentative model of migration policy as an incentive mechanism is presented. Finally conclusions are drawn.

CHAPTER ONE: INTEGRATION POLICY MEASURES

1.1. Some Definitions

Before understanding if, why, and how governments deal with migrants' integration, it is important to have clear in mind who migrants are.

According to the IOM, "migrant" is an umbrella term, which is not defined under international law and of which no universally accepted definition exists. As a generic term it reflects "the common lay understanding of a person who moves away from his or her place of usual residence, whether within a country or across an international border, temporarily or permanently, and for a variety of reasons" (IOM, 2019, p.132-133).

For the purpose of our analysis, the focus is on international migrants: individuals willing or forced to leave their country of origin. More specifically, we will concentrate on international migrants headed to western, industrialized countries. We will often refer interchangeably to the latter as 'destination' or 'host' or 'receiving' countries, while the countries from which migrants are leaving are named as 'source' or 'origin' countries.

The term 'international migrant' comprehends in itself a number of well-defined legal categories of people, or 'types' of migrants.

The main three categories analysed in the literature and based on migrants' reasons to leave are: humanitarian migrants, economic (or labour) migrants and family migrants.

The first category refers to people who have successfully applied for asylum in a country and consequently have been granted some sort of protection. Refugee, for example, belong to this categories; but different form or status of protection exist. At the same time, the term "humanitarian migrants" includes also migrants resettled through humanitarian programmes with UNCHR or other private sponsorship (OECD, 2016).

Economic migrants, instead, are "persons who leave their countries of origin purely for economic reasons not in any way related to the refugee definition, or in order to seek material improvements in their livelihood" (UNHCR, 2006, p.10).

Finally, with the term family migrants the literature refers to migrants admitted in a foreign country thanks to a family reunification process. Family reunification is "the right of non-nationals to enter into and reside in a country where their family members reside lawfully or of which they have the nationality in order to preserve the family unit" (IOM, 2019, p.72).

Clearly, in reality it is often difficult to understand the ultimate reason why a person decided to leave his/her own country and the categories defined above are not so tight and often they mixed up together. This leads to a series of problems both in everyday life when managing the integration processes, and in the literature when conducting an accurate theoretical or empirical analysis.

1.2. Why integration?

Despite the type, migration has been and, we can say with almost certainty, will be a phenomenon connatural of human activity. Migrant flows are hard to die. Over the past two decades migration has increased rapidly (Frattini, 2017), and according to OECD projections, flows from developing countries to the developed ones will increase, or at least remain constant, in the future. It is important to analyse migrants' pull and push factors and to forecast possible global migration scenarios if not to stop flows, to be better prepared in dealing with them (OECD, 2009).

Governments of western countries have alternated their effort between preventing migration and managing migrants' integration because for what the first policies cannot reach, the second need to be addressed. Even if preventing and mitigating the forces that drive large movements of people is useful, governments have also to recognize their duty to assist those who migrate out of desperation (UNGA, 2017).

Above all, migrants' integration is a moral imperative: not all migrants are refugees, but all refugees are migrants. In 1951, 196 states entered the *Geneva Convention*, recognizing their duty to admit all the individuals that enter their borders "unable or unwilling to return to their country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion" (UNGA, 1951). In that occasion was also defined the principle of non-refoulement such that no country could expel or return a refugee against his or her will to a territory where he or she fears threats to life or freedom (ibid).

States' commitment in taking care of humanitarian migrants does not end with the Geneva Convention. Multiple declarations and agreements have been signed to protect and assist humanitarian migrants (UNGA, 2017).[1]

Moreover, the question of integration has recently appeared on the international policy agenda as never before. To make some example: in 2016 was held in Istanbul the World Humanitarian Summit, organised by the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA); at the European Union level, many coordinated actions have been undertaken to respond to the increase in international migration; integration appeared more prominently also in the work of the G20 (OECD, 2019).

Nonetheless, in recent years states have gradually drift away from their commitments, making it more difficult for migrants to successfully apply as refugees.

The reason of such trend has to be found in the constant increase of another type of migration, the economic one. Since 1951, due to the growth of welfare states, the increase in inequality worldwide and the reduction of migration costs, people willing to migrate in search of better economic prospects have increased. As mentioned above, unfortunately is not always easy to understand who migrate in search of better opportunity and who migrate out of desperation. This gives economic migrants an opportunity to mimic asylum seekers and it presents governments with a serious screening problem. The easiest solution to it is to reinforce border policies and to augment the burden of proof to obtain refugee status, at the expenses of the most vulnerable. The failure of industrialized countries in assisting refugees resides in the very nature of international protection. Hospitality is a public good: everyone is better off with a refugee protection scheme in place, but the burden of cost is beard only by the host state (Bubb, Kremer, Levine, 2011).

The desire to curb migrations comes from the fear of its negative impact on the economy and the society of receiving countries. Migration is certainly a challenge and represents a substantial financial cost for governments. However, managing migrants' integration is not only a costly

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[1] See for example: "the report of the United Nations High Commissioner for Human Rights to the Human Rights Council on the compendium of principles, good practices and policies on safe, orderly and regular migration in line with international human rights law (A/HRC/36/42); the 2013 High-level dialogue on International Migration and Development; the United Nations Framework Convention on Climate Change; the Sendai Framework for Disaster Risk Reduction 2015–2030; the New Urban Agenda; the 2030 Agenda for Sustainable Development; the New York Declaration for Refugees and Migrants; and the Sustainable Development Goals" (UNGA, 2017, pg.2).

activity, but host states are more hesitant about its possible positive contribution to the local economy (Backman, Lopez, Rowe, 2020).

Beyond international obligations, migration could be an asset for western states. A rich body of literature in economics (micro and macro) investigates theoretically and empirically the impact of migration on the host country's economy (especially for what concern the labour market) and society. There is no unanimous consensus on the effects, however, many works stress the beneficial impact of migration in the long-run. In particular, immigration can be a key component of human capital to address labour and skills shortages, especially for those states facing ageing process and falls in the fertility rate (Backman, Lopez, Rowe, 2020).

Also Storesletten (see Bratsber, Raaum and Røed, 2017, p.3) suggests how migration could be a solution to the demographic and fiscal challenges faced by European countries due to ageing populations.

Migrants are mainly in their working age, meaning that they usually contribute the host state' finances more than the cost of services they receive. They inject around 85% of their earnings into the economies of host societies (UNGA, 2017).

In many OECD countries actually there is a demand "to replace the declining numbers of young workers, replenish retirement funds and raise productivity, as well as demand for caregivers to look after the elderly" (OECD, 2009, p.10). For this reason, many countries are actually attempting to attract more foreign students in order to successively integrate them into the workforce (ibidem).

Not to mention that migrants can fill jobs that natives do not want to do, boosting economic activity, and they could also offer expertise and entrepreneurship benefiting the host country innovation process (ONU, 2017).

More in general, since in the world there are countries with large productivity differences, unrestricted migrations of people could bring economic gains (Clemens, 2011).

However, as we will explain, for migration to have positive effects on the receiving countries' economies, a successful integration is crucial, especially in the labour market. Depressing effects on the natives' wages in low-skilled jobs and in the short run, represent one of the principal objections to immigration. However, to have a complete evaluation of migrants' performance and contribution, all the potentially productive years spent in the host country should be considered. "Simple cross-sectional comparisons of, say, employment rates between

immigrants and natives may not be informative about the ultimate economic consequences of immigration" (Bratsber, Raaum and Røed, 2017, p.3).

As mentioned, the debate on migration's impact in the short and long run is rich and complex. It is far from the purpose of this analysis to investigate it. We are more interested in the integration challenge that governments has to face, more or less willingly.

Before providing a general overview of the main integration measures and policies implemented nowadays, it is important to reflect on the nature and meaning of integration.

1.3. What is integration?

What does integration mean? What is the objective governments should tend to, and how can we measure the progresses or regressions of governments' policies in reaching it?

Unfortunately, there is no easy and unique answers to these questions, because "the concept of integration with respect to immigrants can take on a number of meanings" (Lemaître, 2007, p.10).

Lemaître (2007) explains how from one side we can think at integration simply in terms of socio-economic convergence between immigrant and native population. In this case, we are interested in the efficacy and efficiency of policies in eliminating or at least reducing the gap between the two groups, and the evaluation concerns some key statistical measures such as the employment rate, the earnings, the education level, the poverty rate, etc.

Otherwise, we can think at integration in a broader way as assimilation: "acceptance of, and behaviour in accordance with, host countries values and beliefs, including similarity of economic and social outcomes" (Lemaître, 2007, p.10).

In this sense, integration is even more complex since it should arrive to the complete cultural adaptation, meaning that the migrant has to abandon its own culture and beliefs. Between these two visions of integration, a wide spectrum of interpretations are possible.

The works of Robinson and Castles et al. (see Ager and Strang, 2008, p. 167) also stress how integration is a very chaotic concept, which varies by context and of which no commonly accepted definition exists.

Not only the definition of integration is contextual, but also the idea of who are the actors involved in the integration process has changed over time. At the beginning of integration studies, classical theories defined settlement as a linear process: immigrants had to change in order to fit with the mainstream culture and society. The process was though as an individual one, in which the only actor involved was the migrant. The length of the integration depended then on the individual characteristics of the migrant, like for example cultural distance (Garcés-Mascareñas and Penninx, 2016).

Successively this view was broadly criticised moving towards a "two-way process of integration" in which also the receiving society had to play a major role. The process of integration was now an active one, with two distinct actors involved: the migrant and the country of his/her destination (Unterreiner, Weinar, 2014).

This shift is clear also in the empirical research. Before the 1980s, the focus was only at the micro-level of individual migrants. It was after the 1990s that research switched also to the macro-level analysis of organizations and structural factors. In particular, cross-country comparisons of the same immigrant group gave the possibility to examine the contextual factors of destination countries (Pennix, 2013; Garcés-Mascareñas and Penninx, 2016).

Finally, even more recently, the approach to integration has changed to the transnationalism and development framework. Both theories have brought into the picture a third paramount actor: the sending country, even if they have not been able to research its role in the integration process (Garcés-Mascareñas and Penninx, 2016).

Even if now the there is a more comprehensive picture of all the actors involved in integration, still a unique definition of the concept lacks. The problem is that integration is more than a concept, is a policy goal and a target. For this reason, it is important to develop at least an operational definition of it, such that is possible to evaluate and range the measures of integration adopted by governments (Ager and Strang, 2008).

1.4. Integration measures worldwide

Shifting from the theoretical debate to the practise, policy makers usually struggle to design effective and efficient policy guidelines and strategies for integration. The existing literature laments the lack of benchmark integration models and stress the need for further research and evaluation of existing measures.

This lack of benchmark models becomes clear when looking at an overview of the integration measures developed in different host countries. For example, Martin et al. (2016) maps the different types of labour market integration support measures for refugees in nine EU countries (Austria, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden and the United Kingdom). Although differences across countries, the first problem they highlight, common to every state, is the absence of data and information. The solution should be surveys that follow migrants over time in order to proper evaluate the integration measures implemented and to reflect on impacts and causality. It would mean switching from simply descriptive studies, to quantitative ones. The need of quantitative studies investigating causal relationships between integration measures and their effects is compelling: governments already spend resources for integration; if they operate without the necessary planning or knowledge of the measures' effectiveness, it is detrimental for everyone, migrants and native citizens (Martin et al., 2016; OECD, 2019).

Another gap in the literature, is the absence of a proper analysis of the programmes implemented. Even if integration measures are designed after a proper evaluation of goals, means, benefits and costs, once implemented there is no explanation of "the mechanisms through which the designed activities lead to better labour market integration" (Martin et. al, 2016, p.19). To add complexity, migrants are usually part of "multi-component programmes" (ibidem) and it is difficult to evaluate the impact of a single measure. Finally, the optimal mechanism design is challenging because of a lack of external validity of the measures already undertaken: single policies or experimental measures are often implemented with a very low number of beneficiaries, leaving out any possibility of further analysis.

Absent any benchmark model and taking into account that immigration has always been considered by many European countries has an emergency, there is not a clear and unique policy of integration, and also countries' legislation lacks a structured framework.
The problem is that in receiving countries we assist at many different actions undertaken at the local, regional or national level, without any coordination. This leads to a patchwork of measures missing any strategy or coherence (Martin et al., 2016).
For this reason there is an urgent need of coordination across government levels and between the various actors involved, such that common minimum standards, at least in the same country, are granted (OECD, 2020).

1.5. Integration in and through the labour market

Despite the debate on the nature of integration, surely the success in the labour market is one of the most important and investigated aspect of migrants' inclusion. It is possible to affirm that without integration in the labour market, it is extremely difficult for migrants to blend in any other aspect of the host country's society. The literature stresses how the sooner is the access to the labour market, the easier the process of integration (see for example Lemaitre 2007; Ayer et al, 2016; OECD, 2016).

Moreover, labour market integration can be the key to unleash migrants' full potential, to make them self-reliant and productive citizens, with positive effects on the local economic productivity. This success in the labour market cannot happen and it is not beneficial if not coordinated with a serious investment in migrant's education and human capital formation (Backman, Lopez, Rowe, 2020).

However, the labour market participation in itself can be an optimal way to prevent the depreciation of the human capital migrants are already in possess of. Not to mention that through the labour market success, migrants become less reliant on the welfare state (Fasani, Frattini, Minale, 2018).

In this sense, an early entry in the labour market, upon arriving in the country, is beneficial also for the host country: migrants lower their welfare dependency and are not forced to join the informal labour market, incrementing a vicious circle of exploitation and criminality (Aiyar et al. 2016).

Finally, integration into the labour market is also crucial for the host country citizens' predisposition to accept immigrants since it seems to depend on migrants' potential economic contribution (Bansak et al. 2016).

Naturally, migrants' success in the labour market bring along also perverse effects on the native population, especially in the short run. As we mentioned, if large numbers of migrants rapidly enter a labour market, they can have a destabilizing impact on jobs and wages (UNGA, 2017). In particular, the competitive pressure is on low-earning workers.

However, it is not the purpose of this analysis to investigate these effects since they belong to the issue of whether migration should be contrasted. We are interested in finding an efficient way to manage migrants' integration, given that they already are in a country and governments need to deal with them, if not with the hope of profitable gains, at least to avoid the costs of uncontrolled migration.

Given the importance assigned to the labour market, among the first policies to be inquired in order to find an efficient model of integration there are labour market ones. How to build a system of incentives for migrants to integrate in the host country's labour market and for natives to help that process?

Before analysing the most common policies that have been enforced in western countries to facilitate the economic assimilation of migrants, it is important to understand the legal framework with whom immigrants have to confront and its implication for the integration process. Do migrants have full access to the labour market of the host country? At which conditions? How they can operate in it? How all these affect their incentives to integrate?

Not to all types of migrants is granted full access to the labour market (often there are legal barriers that make them turn into informal jobs). The situation is particularly critical for migrants who require asylum. In almost all OECD countries they cannot access immediately the labour market during the pendency of their asylum procedure (OECD, 2016). The times for processing a request of asylum vary from country to country, but it can arrive to last even an entire year. The European Union with Directive 2013/33/EU on Reception Condition of humanitarian migrants has fixed the limit of nine months, after which, even if the application is still ongoing, the asylum seeker can enter the labour market.

Beyond waiting periods, it is also common that the right to work is granted only after having met certain conditions (e.g. labour market tests, restriction to certain sectors, wage and priority check, no self-employment). It is quite clear the reason behind these restrictions: granting an unconditional access to labour market for asylum seekers would "leave the asylum channel prone to abuse by those seeking a job rather than international protection" (OECD, 2016, p.18). The consequences on the employment of the domestic workforce could be too negative.

Contrary to its major purpose, in some countries the labour market access is used as an incentive for asylum seekers to co-operate in their application procedure. In Norway and Sweden for example, labour market access is granted if asylum seekers actively assist in the procedure for obtaining valid documents (OECD, 2016).

More in general the legal framework for accessing the labour market is crucial for all the categories of migrants: not only it influence the incentives to integrate, but also determine the level of uncertainty with whom migrants have to cope. The idea behind temporary protection

is that it may facilitate returns to the origin country once the conditions improve. However, "it conveys the message that migrants are not expected to stay" (OECD, 2016, p.8).

It creates a situation of uncertainty, detrimental for taking on any activity: the incentives to invest in host country-specific human capital and to socially integrate are reduced (Adda, Dustmann, Gorlach, 2014). The uncertainty itself can be psychological distracting (Brell, Dustmann, Preston 2020). Most importantly, uncertainty deters also employers from hiring and training migrants.

Despite the legal framework, what are the labour market integration policy measures implemented by industrialized countries?

For what concerns European policies, despite differences across countries (social contexts, labour market structures, support measures), a sort of standard package of measures is often implemented. The four key elements of this package are: early skills assessment; introduction programmes including general cultural orientation, socio-professional one and even some training; language courses; access to job intermediation services (Martin et al., 2016).

1.5.1. Early skills assessment

This measure is often implemented and analysed also in countries outside of Europe. It is one of the main challenges and good policy practises to support the lasting integration of immigrants in all OECD countries: it is essential for a better integration to assess promptly foreign qualifications and individual skills and to take stock of them (OECD, 2016).

As one can imagine, assessing foreign qualification is a phenomenon involving the majority of immigrants: OECD-wide, almost two out of three immigrants have obtained their qualifications abroad (OECD, 2020).

The latter are broadly discounted in the labour market because of informational asymmetries. Since local employers' unfamiliarity with foreign education systems and skills assessments, foreign credentials do not send the same positive signal as domestic qualification. The consequences of this problem of adverse selection for immigrants are a higher risk of unemployment, of lower wages and of over-qualification (OECD, 2019). Over-qualification occurs when individuals work in occupations that do not match their skill levels. Since the main measure of skills is usually education, the literature recognizes as measure of over-qualification a measure of over-education that compare the worker's educational attainment to his/her occupation. In particular, migrants' educational level is compared with the mean or median one in the native population for a given occupation (Damas de Matos, 2014).

For these reasons, skills assessment is a key measure of interest if governments want to support the economic assimilation of migrants. However, the assessments should regard not only the formal recognition of foreign qualification (to reduce the risk of over-qualification), but also all the informal skills and previous job experiences. An instrument adopted in many OECD countries is the recognition of prior learning which can be a signal used to reduce uncertainties among employers in valuing qualifications. This method can vary by country, but usually involve interviews or aptitude tests and practical demonstrations in the workplace or in simulated scenarios. It is fundamental for grasping migrants' professional skills and experiences and present them to employers (OECD, 2016).

The recognition of prior learning helps migrant to enter the labour market and it is also a "quick, cost-effective mean to identify needs for further training and to prevent the duplication of training content for migrants whose foreign qualifications are not found to be equivalent to domestic ones" (OECD, 2016, p.31).

The duplication of training content is a major problem in migrants' integration. Courses and workshop are almost never designed according to individual needs and stock of abilities. In this way it is quite common that the immigrant spends time and resources on developing competencies (s)he already has and (s)he should only translate in order to better fit the peculiarity of the host country labour market. A cost-effective solution to this problem is bridging courses that enable immigrants to fill their specific gaps (OECD, 2016).

Offering tailored courses is difficult and expensive, but divide them in modules and exploit distance-learning programmes could be a solution. The latter in particular may help labour migrants to prepare for the receiving country' s labour market even before the departure, so that they could be immediately active at the arrival. It is crucial if recruitment of foreign workers is to play a role in responding to skills shortages needs of domestic employers (OECD, 2020).

More than migrants themselves, crucial stakeholders to consider when designing early skills assessments measures are employers. Employers know the skills they need and the specific pieces of information they are looking for when assessing credentials and they can provide valuable feedback for improving the procedures. If employers are consulted during this process, the risks of designing inefficient or unnecessary measures is reduced and it is easier to meet everyone's needs. Alongside OECD countries, there are good examples of engagement of employers in the process of recognition. For example, in Austria the Chamber of Commerce is involved in skills assessments and mentorship programs. In Sweden, both employers and unions contributed to the design of schemes to fast track refugees into a number of shortage occupations.

Important is also sharing information: create platforms with publicly available information concerning foreign qualifications and how to value them, can help employers in the decision of hiring migrants (OECD, 2016; OECD 2019).

Unfortunately, it is not always the case that the recognition of qualifications speeds up the labour market integration. Correa-Velez et al. (2013) states that (see Martin et al., p. 18) per se it could not help employers to overcome their doubts on foreign education. Moreover, migrants with recognised qualification might delay their entrance in the labour market because they are focused on finding a job in line with their qualifications and home country experiences. Employers on the other side reward host country work experience and this postpones migrants employment at least in the short run.

1.5.2. Introduction Programmes and Language Courses

All migrants should acquire the basic knowledge and skills necessary to find and maintain a job in the long run in the host country. Introduction programmes consisting of language courses, civic orientation courses and general overview of the host country labour market's rules and practises are one of the main instruments used by countries to help the process of integration (OECD, 2016).

According to the literature, the knowledge of the host country's language is crucial: it is associated with higher attainments in the labour market and so it may be important to support the process of economic assimilation (Dustmann and Fabbri, 2003).

The same consideration has emerged during an online survey conducted by the OECD, the German Ministry of Labour and Social Affairs and the association of German Chambers of Commerce and Industry concerning the labour market integration of migrants. Over 2000 German employers participated to the survey in 2017 whose main finding was that, regardless the company size and the type of work, employers consider a good knowledge of German language a fundamental competence, also for low-skilled jobs (OECD, 2017a). It seems to be the most important skill migrants need to acquire as soon as possible. From the same survey, insufficient language skills were shown to be the most frequently stated reason for not hiring refugees and asylum seekers (OECD, 2017a).
At the same time, also from the side of migrants, language difficulties are cited as the principal obstacle to employability (Fasani, Frattini, Minale, 2018).

In Europe, publicly financed language programmes are common practise and there is consensus on their benefits. However, they are not free from some downturns. The heart of the debate concern the slowness of theoretical studies and the benefits of learning by doing. If it is true that employment is in itself a way to acquire the language, all the formal requirements of a certain level of language, simply prevent migrants from getting a job. The question is then "if integration is powered by language acquisition or if it is the language acquisition a consequence of integration" (Martin et al., p.46). The same reasoning can be applied to introduction programmes: "as a kind of waiting period, they might contribute to delaying the integration of beneficiaries into the labour market rather than facilitating it" (ibid). Lemaitre in his work (2007) points out the same concern: since a long absence from work is associated with human capital depreciation, language instruction completed over a relatively short period of time has to be preferred.

Another solution to this problem could be language programmes alternated to workplace experience (see Lemaitre, 2007; OECD, 2016). The advantage of this type of programs is that migrants can have real-life language practise becoming familiar with work-related terms, while building relationships useful for finding a job. It is also a way to acquire the missing skills to obtain full recognition of job qualifications, as we have seen before (Martin et al, 2016). From this example is once again clear that co-operation with employer is crucial for developing highly effective measures.

New technologies can be a fundamental tool to increase the cost-effectiveness of courses for migrants. First of all, they have the advantage, with respect to face-to-face learning, of reaching everyone, even if in the most remote place. Moreover, they can be used pre-departure, anticipating the acquisition of the additional skills specific to the host-country human capital and they ease the design of more targeted contents.

Most importantly, technologies allow continuous learning, helping migrants to maintain skills in the long-run. This is crucial, because to equip migrants with the basic skills necessary in the host country labour market and society, multi-years investment in training and education are needed. The latter are costly, and they pay off only in the long-run. For this reason, learning should be continuous, but immigrants are usually underrepresented in adult education and training (OECD, 2020).

1.5.3. Job intermediation services

Job intermediation services can be helpful in alleviating labour market frictions typical of migrants' experience: lack of information of the host country labour market, limited social networks, uncertainty about residence status, legal barriers, etc (Battisti, Giesing, Laurentsyeva, 2019).

In European countries, there is a clear tendency to extend to migrants those job services offered to the general population, instead of setting up specific services (Martin et al., 2016).
There is no doubt that a customised approach is beneficial for an effective labour market integration and not only (Hagelund, 2005). Government policies should go in the direction of specific, individually tailored integration pathways (OECD, 2016).

However, it is often difficult for the public employment services, often already overwhelmed by high level of unemployment, to provide customised services for the specific needs of immigrants (Martin et al., 2016).

1.5.4. The role of employers

Of course, a key figure in the process of integration are employers. As mentioned, they are in a better position with respect to the government to value which foreign qualifications and work experiences are more useful. They are precious in designing what content should go into bridging programmes or vocational training (OECD, 2016).

Simultaneously they are key actors in the social-cultural integration of migrants and in their life beyond the labour market. For this reason, it is important to try to align their incentives with the ones of the integration policies and reduce the perceived higher costs that discourage them from hiring migrants (OECD, 20016; OECD, 2019).

According with certain studies, subsidise private sector employment with wage subsidy increase the employment probability. At the same time, other studies look at the effectiveness of wage subsidies as a signal that high entry wages are a significant barrier to immigrant integration: targeted and temporal exemptions from minimum wages may help at the beginning to reduce the disadvantages migrants face in the labour market (Ayer et al., 2016).

1.5.5. The role of labour market demand

No need to say that the basis for labour market integration is the labour demand in the host country. This can explain why labour market integration seems more difficult in Southern

European countries with respect to the Nordic ones, where actually also native workers emigrate in search of better employment opportunities. Already in 2014, an OECD study on labour market integration in Italy showed how unemployment rate for immigrants were quite high, but at the same time in line with the ones of native-born. This condition questions integration policy, if also natives are facing difficulties in integrating in the labour market. It may be useful to investigate transversal policies: think at solutions for both categories or design measures in which integration is not only a goal, but becomes a tool to solve long lasting problems of the host country (OECD, 2014).

The reflection on labour market demand opens up considerations on the geographical distribution of migrants across countries and within the same country. If labour market conditions influence the process of integration, the distribution of migrants along the country should reflect the distribution of the labour demand. It would be helpful granting them freedom of movement, not only within the country, but even in the European Union (Martin et al., 2016). According to Ayer et al. (2016), geographical mobility by migrants is useful to balance eventual asymmetric shocks in the labour market and by so contributing to the growth of the host country. Reducing restrictions on their geographical mobility would allow them to move to where labour demand is high.

The problem gets even more complicated when considering refugees. As already mention, hosting refugees can be considered as having the characteristics of a public good since the humanitarian benefit is non-rival and non-excludable (Hatton, 2016). Refugees in fact are admitted to satisfy basic humanitarian motives. Consequently, when a country hosts a refugee it is the only to bear the economic and social costs of this action, but also residents of another country benefit since refugees have been hosted. For this reason European countries struggle in distributing evenly refugees. Hatton (2016) suggest to create a market for tradable refugee quotas so that the costs of each state are taken into account.

The same happens also within a single country. Many governments want to distribute refugees and asylum seekers evenly across the country in order to share costs and avoid segregation (OECD, 2016). If these dispersal policies do not take into account labour market conditions and the so called "secondary migration" is not allowed, it can be quite detrimental on migrants' outcome.

At the same time, freedom of movement has some downturns. There can be concentration of migrants where housing is cheaper or where other migrants of the same nationality are already

located. This aggravated the problems of segregation, of uneven conditions of centres and peripheries and of anti-migration views (Darling, 2016; OECD, 2018; OECD, 2019).

1.6. Integration in and through social networks

"Without civil society organizations, a welcoming business environment and the support of local communities, integration policies are likely to be ineffective" (OECD, 2016, p.49).

The host society must be involved in the process of integration, or the latter is never going to happen and despite the effort, policies would be ineffective. From the mapping of good practises alongside OECD countries, it seems that a cost-effective way of promoting integration and together increasing interactions between immigrants and citizens could be mentorship programmes. They bring closer locals and migrants while helping the latter preparing for the labour market (OECD, 2016).

More in general all the activities that bring together locals and migrants are beneficial in the integration process. Galera, Giannetto, Noya (2018) analyse four different integration pathways developed by third sector organisations in four European countries, that had beneficial impact not only on the recipients, but also on the host community.

In all four cases, it has been crucial the creation of meetings and opportunity of cooperation between migrants and locals. Thanks to this collaboration, often locals change their mind-set towards immigrants. Moreover, since their local nature, these models of integration are often able to benefit the host territory with profits redistribution and to revitalise activities and places that were dying. The key to succeed is to engage the community in the design and management of the integration process, so that the integration policy is incorporated with the others territorial, educational, social, housing policies. This is helpful because allows to respond simultaneously to multiple challenges and migrants are usually empowered thanks to the fact that are not segregated with their problems (Galera, Giannetto, Noya, 2018).

Furthermore, volunteer initiatives help migrants entering the labour market because they are a boost for learning the host country language and strengthening social networks' formation (OECD, 2019).

Moreover, these organizations are usually able to find new approaches or innovative tools in the integration process: they are not mere implementer of public policies, but they are also able to identify the specific needs of migrants and local communities (Galera, Giannetto, Noya, 2018). Sometimes their ideas contribute to shape future policy measures: they are in the perfect

position to valuate whether policies work and they can give precious feedbacks on how integration measures should be adapted to better address migrants' needs. Migrants association should be a key interlocutor for policy makers so that policies would be designed not only for migrants, but also with them (OECD, 2019).

These experiences are not free from problematic issues. Third sector organizations and volunteers can play a positive role in a community. However, at the same time, they aggravate the already huge problem of coordination and fragmentation in managing migrants' integration. For this reason, they should be a precious instrument for governments to provide welfare, but should not be independent organizers. Governments should ex ante design the policy objective function, and then in it consider the role that NGOs can play locally. There is a need of tailored regulations and a deeper exploration and study of public-private partnership: they can have a big potential, but also become ineffective tools (Martin et al., 2016).

Moreover, it has to be considered that often these experiences born because of the inability of the State to quickly respond to pressing problems in local communities. "Expecting volunteers to take over tasks that are the responsibility of the state is not going to be viable in the medium or long run. [...] Investing in the capacity of volunteers is therefore important, but the right balance must be found between supporting volunteers and continuing to offer professional, high-quality public services" (OECD, 2019, p.65).

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

Migrant integration is a complex subject: too many factors and variables take a role and too little is known about policies' effectiveness. In the literature, many studies have tried to analyse the phenomenon of integration from each possible angle. Governments and non-governmental organisations (NGOs) deal with this challenge and have to face and manage migration flows often unpredictable.

Even if no golden rules or perfect schemes have been found to tackle the question, the literature seems to agree that the key to a successful integration is to personalize the path of integration. It is vital to implement policy measures designed in accordance with individual characteristics and abilities (see for example Aiyar et al., 2016; Brell et al., 2020; OECD 2019; OECD 2020).

The first thing governments have to do is to understand the characteristics of the migrants knocking at the doors of their countries. Knowing migrants' skills and motivations gives the possibility to assign them to the more adapted integration programme, allowing a more efficient use of resources and a more successful process of integration.

Moreover, understanding how to detect migrants' abilities and motivations is crucial for governments wanting to attract, through their immigration policies, high-skill individuals. The reasoning behind such a consideration is quite simple: the higher the individual's skills, the higher the probability of employment, the larger migrants' net fiscal contribution and so the less negative is the sentiment of natives towards immigration (Boeri, 2010).

Also Cobb-Clark (2004) stresses the role of selection policy in influencing the formation of attitudes towards immigrants, and she also notes that by altering the skills of the migration flows, these policy can affect macroeconomic variables such as employment and wages (because they change the complementarity/substitutability of immigrants and natives).

Finally investigating migrant selection is fundamental in the discussion on brain drain. Increase in migration has given rise to concerns about countries with high emigration rates, especially developing ones: if only the more skilled and able individuals leaves for a better life, then their home country will face greater difficulties in developing and growing (Belot, Hatton, 2012). The same argument stands for countries generating high numbers of refugees: if the latter have better skills, once the country enters the reconstruction stage, it will be harder for it to regain prosperity and stability (Aksoy and Poutvaara, 2019).

These considerations lead the literature to argue in terms of determinants of migration, individual choices and human capital theory. What economic considerations affect the individual's decision to move? Are there personal characteristics that influence differently the costs and benefits of leaving a country?

If it is true that individual characteristics affect the migrating decision, then migrants are not a random sample of the population in their origin country, but they are systematically self-selected along certain characteristics, some observables and others not. Western countries are particularly interested in the analysis of migrant self-selection along the dimension of ability: are they high or low skilled? In other words, countries receiving migrants witness a phenomenon of positive or negative selection? Positive selectivity occurs when migrants entering a host state come from the upper skills distribution in their country of origin's population. The reverse is true for negative selectivity.

Despite the relevance of the subject, unfortunately "migrants' self-selection has been one of the most controversial topics in the migration literature" (Fernandez-Huertas, 2011, p.73).

2.2. Asymmetry of information and patterns of selectivity

At the very beginning of this stream of literature, Kwok and Leland (1982) introduced the debate on selectivity developing a model of asymmetric information to investigate the problem of brain drain in less developed countries (in particular, they looked at high-skilled colleges graduates who left their country for advanced studies in the Western countries).
Their focus is Taiwan's situation, where "more than 50,000 college graduates left the country for advanced studies overseas during the period from 1960 to 1979, but only 6,000 of them returned" (Kwow and Leland, 1982, p. 91). Since the economic conditions in Taiwan are far from justify this exodus, neither individual preferences can explain such high flows, Kwok and Leland (1982) suggests that the cause of these high numbers of migrants who do not return, is the presence of asymmetric information in the labour market.

In particular, in order to explain migration, they place the asymmetry in Taiwan. How to justify such a phenomenon? They imagine employers in the destination country (USA) are familiar with their national education system (where Taiwanese high skilled individuals are studying) and they already have experiences with foreign workers. These facts translate in a better knowledge of potential employees' abilities (which instead are not so clear for Taiwanese employers, mainly because its young trained abroad). Consequently, only foreign employers are able to offer a wage in line with the true productivity of the individual, while in the home

country employers have to base their wages on average productivity, meaning that their wage offers will be higher than true productivity for someone and lower for others. In particular, best workers who could aspire at higher wages, they would prefer not to come back. That is how the brain drain problem is generated and how western countries experience positive selectivity among migrants.

Interestingly Kwok and Leland (1982) underline the fact that market imperfection may drive individuals to leave their country even if originally they did not want to. This happens even when individuals face competitive wages in the two countries and have preferences for working home rather than abroad.

Few years later the publication of this paper, Katz and Stark (1984) commented it, underlining the fact that this positive selectivity is one of the possible equilibria with asymmetric of information. It could also happen that low skills individual migrate abroad. Crucial in determining the type of selectivity experienced is the location of the asymmetry of information: there is no reason why only Taiwanese employers should not be able to detect individuals' true productivity. They clarify their argument by the following graphs.
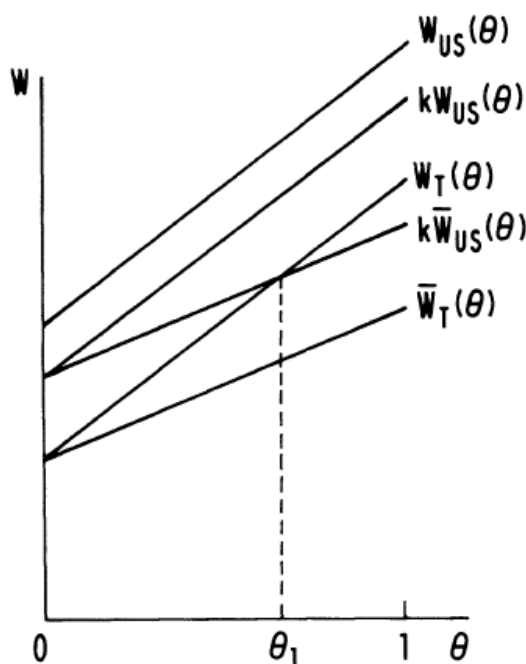

Figure 2.1. Source: Katz and Stark (1984), p. 534.

In this figure it is represented the productivity (θ) of the individual on the horizontal axis, while in the vertical axis it is pictured the wage (W) they can gain. Productivity is distributed on the

interval [0, 1] with distribution functions $F_{US}(\theta)$ and $F_T(\theta)$. $W_{US}(\theta)$ and $W_T(\theta)$ are wages paid to workers of productivity θ respectively in the Unites States and in Taiwan. However, these two are not the wages the individual compare when deciding where to live. Katz and Stark (1984), as in Kwow and Leland (1982), assume individuals have a preference for their home country, meaning that they discount US wages by a parameter $k<1$. When making migration decision, they compare $kW_{US}(\theta)$ to $W_T(\theta)$. Furthermore, they assume that in a given occupation the wage differential between the two states does not vary with the productivity. Two cases can be distinguished.

Looking at the graph it is clear that if the difference between the U.S. and Taiwanese wage is sufficiently large, so that the $kW_{US}(\theta)$ line lies above the $W_T(\theta)$ line, with perfect information all individuals will move to the USA. The situation, however, could change considering the effect of information asymmetry. If USA employers cannot perfectly detect θ, they could only offer wages equal to the average productivity: $\overline{W_{US}}(\theta)$. Then, comparing $W_T(\theta)$ to $\overline{W_{US}}(\theta)$, only the less skilled individuals with $\theta<\theta_1$ migrate. If however, also in Taiwan the true productivity is not observable, Taiwan employers are forced to offer an average wage $\overline{W_T}(\theta)$ and the situation would come back to a complete exodus.

A different scenario is depicted when the difference between the U.S. and Taiwanese wage is small so that the $kW_{US}(\theta)$ line lies below the $W_T(\theta)$ line, as it can be seen in this second figure.
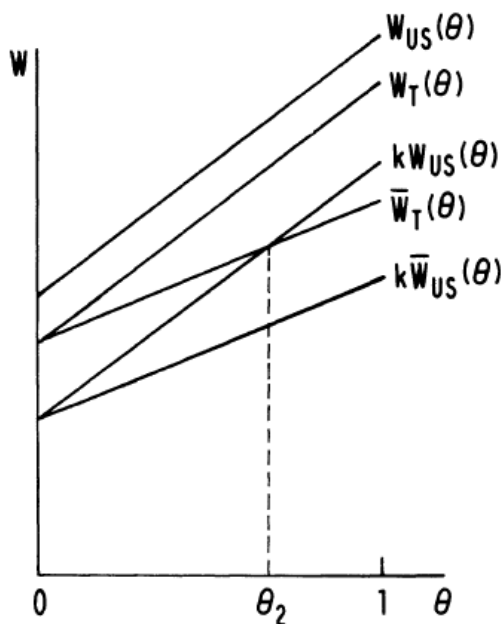

Figure 1.2. Source: Katz and Stark (1984), p. 534.

The notation is the same as Figure 1, and it is possible to observe that now, in the scenario with perfect information $W_T(\theta)$ is always higher than $kW_{US}(\theta)$, meaning that migration does not occur. The same it is true if we compare $k\overline{W_{US}}(\theta)$ to $W_T(\theta)$ when there is asymmetry of information in the USA. When instead also Taiwanese employers offer the average wage $\overline{W_T}(\theta)$, there is migration for the high skilled individuals, the one with $\theta > \theta_2$. This is actually the case described by Kwow and Leland (1982), but it is only one of the possible scenarios.

The concept that Katz and Stark (1984) want to stress is that several situations can verify, and the critical point is to understand if and especially where asymmetries of information are present. They claim that the pattern of labour migration with asymmetries differs substantially from the perfect information and interesting paths can rise.

After this first short analysis, born as a comment on Kwow and Leland (1982), Katz and Stark (1987) developed their own model of international migration under asymmetric information, maintaining Kwok and Leland (1982)'s framework. The main results of the model are that several scenarios of migrant selection are possible and asymmetric information tends to reduce the skill level of migrants. However, they introduce also the possibility for workers to signal their ability. In this case, a U shaped pattern of migration can be an equilibrium: individuals both from the top and the bottom of the skill distribution may migrate, while individuals from the middle part of the distribution stay in the home country.

Finally, Katz and Stark (1987) underline how risk aversion of employers or of employees could also be a critical factor in determining the migration equilibria. It is a topic that should be further explored, together with the role of government in migration policy, which could be crucial for the different equilibrium patterns and should be incorporated in the model.

2.3. Migration as investment decision

Another strand of literature models migration as an investment decision, following the seminal contribution of Sjaasstad (1962) who introduced the human capital approach in the migration framework. Income-maximizing individuals compare the expected utilities they can reach worldwide and decide to move wherever their utility is higher. Since earnings and costs expectations depend on individual characteristics, the latter play a key role in migration choice and consequently in migrant selectivity: only individuals with higher returns to migration will migrate, considering their observable and unobservable characteristics. Therefore, in order to understand selectivity, the central issue are the individual differences between migrants and non-migrants.

A milestone in this strand of literature is Borjas (1987)'s model, developed looking at Roy (1951)'s model on occupational decisions.

His analysis starts from the weakness of what he defines the "first generation" studies of the literature on migrant selection (Chiswick, 1978; Carliner, 1980; De- Freitas, 1980).

These papers concentrated their reasoning on the fact that the age-earnings profile of immigrants is steeper than the one of natives, so that after an initial period of adaptation, immigrant earnings overtake the earnings of comparable natives. The explanation behind these results, according to them, can be discovered looking at the human capital theory: earnings of immigrant grow faster because migrants have stronger investment incentives. Chiswick (1978) states that migrants are actually a self-selected group and so immigrants may be more able and highly motivated.

Borjas (1987) challenges these results: they come from the use of a single cross-section dataset, which cannot allow for the distinctive identification of aging effects and cohort effects. Consequently, a series of questions remains unsolved: are cohort quality and immigrants self-selection related? Is there positive or negative selection among migrants? If the selection mechanism changes over time, what is the reason behind it?

Borjas (1987) tries to answer these questions through the construction of a theoretical model in which individuals decide if to migrate looking at income differential in alternative countries, net of the migration costs. The characteristics of income distribution determine the type of selection that arises when individuals maximize their utility.

In the model citizens of country 0 choose whether to migrate to country 1 on the basis of the wages they can earn in each respective country. Earnings are distributed as $\ln w_0 = \mu_0 + \varepsilon_0$ in country 0 and as $\ln w_1 = \mu_1 + \varepsilon_1$ in country 1. So individual earnings are in both cases decomposed in a part of observables socioeconomic variables ($\mu_0\ and\ \mu_1$) and a part of unobserved characteristics ($\varepsilon_0\ and\ \varepsilon_1$). The latter variables are distributed as a normal with zero mean and variance σ_0^2 and σ_1^2 respectively.

The individual decides to migrate when the index function $I = \ln \frac{w_1}{(w_0+C)}$ is positive (C stands for the mobility costs). The latter can be rewritten as: $(\mu_1 - \mu_0 - \pi) + (\varepsilon_1 - \varepsilon_0)$, where π represents the "time-equivalent" measure of migration costs, defined as $\pi = C/w_0$. π is constant across all individuals in the country of origin, since it express a fraction of the home forgone earnings, and it represents the cost of the time spent migrating.

From this simple model, Borjas (1987) draws the conclusion that the selection of migrants depends entirely on the ratio of variances in the income distributions of the country of origin

and destinations, while differences in mean incomes, or migration costs do not affect it. Particularly:

- If income is more dispersed in the country of origin ($\sigma_0^2 > \sigma_1^2$), it is as if the destination country "insures low-income workers against poor labour market outcomes while taxing high-income workers (relative to the country of origin)" (Borjas 1987, p. 534). This leads to negative selectivity, since the low-income workers have greater incentives to migrate;

- On the contrary, if income distribution is more unequal in the destination country, positive selectivity happens.

Since, according to Borjas (1987), income is more unequally distributed in the large number of Third World countries, income-maximizing behaviour is inconsistent with the positive selection of migrants.

Borjas (1987) is a seminal contribution of the literature on migrant selectivity and has been questioned and tested from both a theoretical and an empirical point of view by several subsequent papers.

Chiswick (1999), for example, harshly criticize Borjas (1987). His model amends Borjas' and reaches the exactly opposite conclusion on selectivity.

He assumes that the return on migration are written as:

$$r = \frac{W_b - W_a}{C_f + C_d}$$

where W_b represents earnings in the destination and W_a in the origin. C_d are the direct costs of migration, which include not only the cost of the journey, but also the cost of relocating once arrived (cost of adjusting consumption and work to the new destination). C_f represents the cost of foregone earnings, a sort of opportunity cost of migration: it is the money the individual could have gained remaining in his/her country during the period of migration. It is composed of the value of time in the origin country (the wage) multiplied by the time units necessary for the migration (which includes also the adjustment period).

The individual migrates "if the rate of return from the investment in migration (r) is greater than the interest cost of funds for investment in human capital. The interest cost of fund is lower, the greater the person's wealth and access to the capital market" (Chiswick, 1999, p. 181).

In the first place, Chiswick (1999) assumes that there are two categories of individuals: high skilled (h) and low skilled (l), and that both the individuals and the employers know these abilities; hence, there is no asymmetric information. He also assumes that wages in the origin and destination countries for the high skilled workers are a fixed multiple of wages of low-skilled workers:

$$W_{b,h} = (1 + k)W_{b,l}$$

$$W_{a,h} = (1 + k)W_{a,l}$$

It follows that the gain/loss of wages when moving to the destination country is always *(1+k)* and is independent of the level of ability. Contrary to Borjas (1987), there are no differences between low and high skilled in income dispersion between origin and destination country.

For what concerns costs, Chiswick (1999) first assumes that the direct ones do not varies with ability. He also assumes that there are no differences in managing the costs between high and low skilled individuals, meaning that abilities do not affect in efficiency the whole migration and adaptation processes. However, even if ability does not directly affect the costs, the latter variate among the two types of individuals. The reason is that the costs of foregone earnings (C_f) are higher for the high skilled individuals. Since wages of high skilled are higher than the wages of low skilled, and C_f is computed as the individual's wage multiplied by the time units of the migration period, it follows that $C_{f,h}$ is higher than $C_{f,l}$. More specifically, $C_{f,h} = (1 + k)C_{f,l}$.

The rates of return are:

$$r_h = \frac{(1 + k)W_{b,l} - (1 + k)W_{a,l}}{(1 + k)C_{f,l} + C_d} = \frac{W_{b,l} - W_{a,l}}{C_{f,l} + \frac{C_d}{(1 + k)}}$$

$$r_l = \frac{W_{b,l} - W_{a,l}}{C_{f,l} + C_d}$$

Thus, $r_h > r_l$ (implying positive self-selection), as long as earnings increase with ability (k>0) and there are positive direct costs of migration ($C_d > 0$). If there are no direct costs or there is no labour market premium for higher abilities, there would not be selectivity in migration, since return would be equal for high and low skilled. High direct costs reduce the overall incentive to migrate, but they increase the probability of positive selection: high-skilled workers have larger margins to compensate migration costs, because of their greater earnings.

However, it is not reasonable to assume that abilities do not affect efficiency. As high-skilled individuals are more productive in the labour market (for which they are compensated with higher wages), it is reasonable to assume, according to Chiswick (1999), that they are more efficient also in migration, in the investment in human capital. There are several reasons to justify such an assumption, for example the investment in migration requires less time for abler individuals, or direct costs for them are lower.

In the first example, the effect of greater abilities operates through the opportunity cost of migration. As already seen, C_f is equal to the wage in the origin country multiplied by the time units (t) necessary for migrating. If high skilled individuals have a shorter migration period, they have a lower t ($t_h < t_l$), and it follows that their opportunity cost is lower. $C_{f,l}$ and $C_{f,h}$ can be written as:

$$C_{f,l} = t_l W_{a,l}$$
$$C_{f,h} = t_h W_{a,h} = t_h (1 + k) W_{a,l}$$

Due to this difference in the value of t, migrants would be positive selected even in the absence of direct cost. If then it is also assumed that migrants with greater abilities are more efficient in travelling or in relocating once arrived in a new country ($C_{d,h} < C_{d,l}$), the difference in rate of return among high and low skilled is even greater. Assuming a direct cost efficiency parameter $\lambda < 0$, which differentiates $C_{d,h}$ and $C_{d,l}$ such that $C_{d,h} = (1 + \lambda) C_{d,l}$, the rate of return for high skill individuals becomes:

$$r_h = \frac{W_{b,l} - W_{a,l}}{C_{f,l} + \dfrac{C_{d,l}(1 + \lambda)}{(1 + k)}}$$

Meaning that the higher the efficiency in handling direct costs (higher lambda in absolute value), the larger the return for the high skilled with respect to the low skilled.

As mentioned before, Chiswick (1999)'s model differs from Borjas (1987) since it assumes that the distribution of wages is equal in the origin and destination countries (the ratio of variances in the income distribution is always equal to one). The model can be extended in order to consider that different countries have different wages differentials relative to abilities.

To align perfectly to Borjas (1987) framework, Chiswick (1999) also refrains momentarily from considering efficiency in migration.

Assuming no efficiency in time use and no direct costs, returns are now equal to:

$$r_l = \frac{W_{b,l} - W_{a,l}}{tW_{a,l}} = \frac{1}{t}\left(\frac{W_{b,l}}{W_{a,l}} - 1\right)$$

$$r_h = \frac{W_{b,h} - W_{a,h}}{tW_{a,h}} = \frac{1}{t}\left(\frac{W_{b,h}}{W_{a,h}} - 1\right)$$

Under these assumptions, the driver of migration incentives is the ratio of wages in destination and origin countries and so results similar to Borjas (1987) are reached. However, Chiswick (2000) underlines that if the ratio of wages is greater for low skilled, positive selectivity will be less intense, but not absent. He in fact imagines that in reality efficiency in migration is present, meaning that greater income inequalities in the country of origin determines no positive selection only if this effect offsets the effect of efficiency in costs. In this framework huge wage differentials across countries between high and low skilled are requested to have negative selection.

Chiswick (1999) is important also because introduces the problem in selectivity across migrant categories. A rich field of the self-selection's literature discusses the distributions of abilities among migrants belonging to different categories (mainly economic and humanitarian migrants). However, this line of discrimination does not seem to better enlighten the problem and no consensus is found.

Chiswick (1999)'s model described above, explains the behaviour of economic migrants who base their decision to migrate on measured returns; it is not suitable for migrants that leave for non-economic reasons. For them "the favourable self-selectivity for labour market success would be expected to be less intense" (Chiswick, 1999, p. 184). Nations can affect migrants' self-selectivity through their immigration policies. Screening can be made dependent on skills or not (as for refugees) and depending on the criteria that are used, the pool of immigrants arriving in a country will be more or less educated.

These early studies highlight that the theoretical prediction about the type of selectivity (positive or negative) depends ultimately on the assumptions made and the way in which migration costs are designed plays a central role. For example, Borjas (1987) arrives to the conclusion that selectivity depends on the dispersion of wages in the countries. This result derives from the fact that wages depend on an unobservable component with a certain variance and from his assumption of constant migration costs. Chiswick (1999) instead thinks migration costs as different among individuals and shows how huge wage differentials among countries are required in order to witness negative selection. Both models have reasonable assumptions and that is the reason why Fernandez-Huertas Moraga (2011) affirms: "studying the selection

of migrants thus becomes an empirical question" (ibid, p.73). Unfortunately, the problem is not solved through the use of data; it is actually magnified: since Borjas (1987) there has been many studies that using different (or even the same) datasets reached very different results.

Several papers have focused on the controversial issue of migration flows from Mexico to the United States. According to Borjas (1987) theory (and empirics), migrants from Mexico should be negatively selected. However, many empirical studies found the opposite results, for example Chiquiar and Hanson (2002) and Orrenius and Zavodny (2005). While Ibarraran and Lubotsky (2007) found negative selection.

In a later paper, McKenzie and Rapoport (2010) claim that these contrasting results can be explained through the role of migration networks that can alter substantially the pattern of self-selection. Communities in which migration networks (number of individuals who already migrated) are weak favour migration of higher skilled workers and vice versa for communities with strong migration networks. This element has not been usually considered in empirical models; consequently, such models suffer of a relevant omitted variable problem, which explains why different datasets yield different results on the sign of selectivity.

The role of migration networks directly descends from the interpretation of migration costs. As seen in Borjas (1987), and in many interpretations of this model, costs are proportional to wages at home, but there is no efficiency in migrating; costs are assumed to be decreasing in skills in Chiswick (1999). According to McKenzie and Rapoport (2010) migration is costly, involving not only upfront monetary costs, but also search and information and psychological costs. All these costs varies with education level (fixed costs can be met by high skilled individuals with less hours of work or with lower borrowing costs; collect information is easier for more educated) and if they are large enough (and credit constraints binding), positive selection should emerge. The focus of all the debate on self-selection should then be on determining the migration costs of given "communities". In this sense, networks play a role: they diminish migration costs since they provide information (on border crossing, smugglers, etc.), they provide housing services or help relaxing the credit constraints. According to the authors, these effects are more beneficial to low-skilled individuals, leading to a negative selection wherever these networks are particularly strong.

They develop their intuition first through the design of a theoretical model, which is based on Chiquiar and Hanson (2002), to allow for network effects. Then, they empirically test the model using survey data from Mexico. Their work suggests that negative selection is more probable where there are stronger networks effect, in line with the hypothesis that a critical factor in determining who migrate is high costs of migration.

The crucial role of networks in migration decision is stressed also by Hatton (2020). He concentrates on asylum migration to the developed world and he finds that "the most powerful single variable influencing asylum-seeker flows to a country is the stock of previous migrants from the same origin" (Hatton, 2020, p. 85).

These findings help in part to reconcile the conflicting results about Mexicans' selection found in the literature and at the same time suggests that the more migration, the more negatively selected migrants are.

Another effort to address conflicting results on migrant selectivity was made by Grogger and Hanson (2011). They aim at reconciling all the empirical findings of the literature on migrant selectivity with the Roy's income maximization framework. According to them the key is focusing on absolute wage differences, consistent with linear utility, rather than on the relative ones, consistent with log utility.

Since Borjas (1987) migrants' self-selection has been explained looking at the variances in income distributions across countries. No role is played by differences in mean incomes. And as Borjas (1987) correctly pointed out, usually in less developed countries wage differentials by skill level are higher than in developed countries. Only individuals at the bottom of skills distribution are encouraged to migrate, while the incentive for high skilled individuals is not so strong.

Grogger and Hanson (2011), testing empirically different model specifications, find that the data reject log utility, suggesting migration actually responds to absolute rewards to skill. Since absolute skill-related earning differences are instead much larger in destination than in source countries, positive selection of migrants is a rational outcome. Through this specification is possible to reconcile the Roy model with strong positive selectivity. Moreover, Grogger and Hanson (2011) stress that many factors can affect the selection of migrants and that could be the reason of the divergence in the empirical findings.

Their work is not limited to the analysis of migrant selectivity, but it explores also the scale of migration, and the phenomenon of positive sorting (i.e., migrants are more likely to settle in destination countries with high reward to skills). This interest comes from the simple observation of data on OECD migration flows: US and Canada, although receive 51.4% of OECD's immigrants, attract the 65.5% of those with tertiary schooling (more than 13 years of education). On the contrary, Europe is able to attract only the 23.6% of tertiary-educated OECD immigrants, on a total percentage of 38.4 OECD immigrants.

Both positive selection and positive sorting, according to Grogger and Hanson (2011), can be explained by a simple model of income maximization.

Individuals compare wage differentials in order to decide whether to migrate. Differently from Borjas (1987) the wage depends entirely on the return on education investment- primary (μ_h), secondary (δ_h^2), or tertiary (δ_h^3)- and there is no room for the unobserved characteristics of the individual. According to this framework, the individual i with skill level j migrating to destination country h from the source country s, gain:

$$W_{ish}^j = exp(\mu_h + \delta_h^2 D_{is}^2 + \delta_h^3 D_{is}^3) \tag{2.1}$$

where D_{is}^j is a dummy variable equal to one if the individual has schooling level j.

The individual also faces migration costs:

$$C_{ish}^j = f_{sh} + g_{sh}^1 D_i^1 + g_{sh}^2 D_i^2 + g_{sh}^3 D_i^3 \tag{2.2}$$

The authors assume that costs have two components: a fixed one, f_{sh} (cost of moving), and one that varies by skill level, g_{sh}^j (we can think about costs influenced by linguistic and geographic proximity among the countries or by the destination country's immigration policies) which can both be positive or negative.

The model uses a linear utility function dependent on the difference between wages and migration costs and also on an unobserved idiosyncratic term (ε_{ish}^j) with i.i.d. distribution:

$$U_{ish}^j = \alpha(W_{ih}^j - C_{ish}^j) + \varepsilon_{ish}^j \quad \text{with } \alpha > 0 \tag{2.3}$$

Assuming individuals choose whether and where to migrate maximizing their utility, it is possible to write the log odds for individual of ability j of migrating to h versus remaining in s as:

$$\ln\frac{E_{sh}^j}{E_s^j} = \alpha(W_h^j - W_s^j) - \alpha f_{sh} - \alpha g_{sh}^j \tag{2.4}$$

where E_{sh}^j is the population share of education group j in s that migrate to h, while E_s^j the one that reamins. Already from this equation it is possible to see that the skill group-specific log odds of migrating should depend positively on the wage difference in skill-specific wages and negatively on costs. To understand emigrant selection the authors look at the difference of this equation between tertirary and primary educated individuals:

$$\ln\frac{E_{sh}^3}{E_{sh}^1} - \ln\frac{E_s^3}{E_s^1} = \alpha[(W_h^3 - W_s^3 - g_{sh}^3) - (W_h^1 - W_s^1 - g_{sh}^1)] \tag{2.5}$$

On the left side of equation (2.5) there is the difference in skill mix between migrants and non-migrants: if it is positive, then there is positive selectivity. Since $\alpha > 0$, this happens if the wage difference between the source and destination, net of skill varying migration costs, is greater for high-skill workers.

To investigate instead migrants' sorting across destinations, it is sufficiently to collect the terms of the latter equation that vary only by source country to yield to:

$$\ln\frac{E_{sh}^3}{E_{sh}^1} = \alpha(W_h^3 - W_h^1) - \alpha(g_{sh}^3 - g_{sh}^1) + \tau_s \quad \text{with } \tau_s = \ln\frac{E_s^3}{E_s^1} - \alpha(W_s^3 - W_s^1) \tag{2.6}$$

Equation (2.6) shows that migrants sort themselves across destinations on the basis of skill rewards, meaning that if a country h has higher return to skills than country k, it will have more skilled migrants with respect to the mix of country k.

Equations (2.4), (2.5) and (2.6) highlight the role of fixed costs and absolute wage differences in driving the pattern of selectivity. Since Borjas (1987) much of the literature looks instead at relative returns and costs proportional to income. As if, individuals look at the variances and not at the means of income distributions across skill levels, when deciding if and where to migrate. Moreover, costs are interpreted as opportunity ones, meaning that migration is more expensive for individuals with higher skills.

To compare the two settings, Grogger and Hanson (2011) adapt their model using logarithmic utility and an error term that is proportional and not additive. To test their model with linear utility and the one with relative returns to skills, they use the data collected by Docquier, Lowell and Marfouk (2009) from the national statistical offices of OECD countries.

In line with their theory they find positive and significant coefficient for the selection and sorting of migrants, showing that absolute wage gap can be higher for skilled emigrants, even

if the relative gap is not. This is particularly true when considering the post-tax wages, which can also contribute to explain the great attractiveness of North America: not only these countries have relatively large pre-tax skill-related wages difference, but also the tax systems are less progressive.

According to Grogger and Hanson (2011) absolute wage differences are a better predictor of migration pattern because linear utility model is free from the restriction that the decreasing marginal returns to income are comparable among source-destination countries. It is unlikely that they "matter equally when comparing incomes of $3000 a year in Ecuador to $15,000 a year in Spain as when comparing $8000 a year in Turkey to $40,000 a year in Germany, yet log-linear requires that they do" (Grogger and Hanson, 2011, p. 45). Using linear utility marginal returns are not considered at all. However, given that among the analysed countries there are huge differences in income, Grogger and Hanson (2011) believe their restriction abuses the reality less than the strong curvature required by logarithmic utility.

Grogger and Hanson (2011) recognize that numerous other factors can influence selectivity and sorting, e.g., geographic, linguistic, and political relationships between countries. Testing for these "exogenous" factors they find that:

- English-speaking countries receive more migrants than others, ceteris paribus, and that their migrants are also better educated. At the same time, given a certain country of origin, its migrants are higher in destination countries that share with it a common language. These migrants are also better educated than non-migrants of the same origin country and also than migrants from the same source country leaning towards other destinations. This phenomenon seems to suggest that migrants are aware of language being a strategical tool to gain higher rewards to skill.

- Contiguity increases the scale of migration, but reduces the skills of migrants. The interpretation of this fact, according to Grogger and Hanson (2011)'s conjecture, may be that migrating is easier between neighbouring, especially the illegal one.

- A negative effect characterises also countries with colonial past. Recent literature (Pedersen et.al, 2004; Mayda, 2010) points out the role of the economic and social networks between a country and its former colonies in increasing bilateral migration flows. The results found "are consistent with these linkages disproportionately affecting migration of the less-skilled" (Grogger and Hanson, 2011 p.51).

In their study, Grogger and Hanson (2011) focus on the question of if migrants are more skilled than the population remaining in its origin country. They do not investigate if different types of migrants (economic and humanitarian ones), presents systematic differences in their skill levels. However, in the empirical analysis they find an important role of immigration policy in affecting selectivity. Generous asylum policies seem to reduce immigrants' skills with respect to the rest of the population remaining in its home country (non-migrants). Moreover, a generous asylum policy in a certain host country reduces the skills of migrants in that country with respect to migrants directed towards other destinations. Grogger and Hanson (2011) explain this finding suggesting that destinations that allocate higher share of visas to refugees may limit opportunities to entry to more skilled migrants. However, they are not able to provide a deeper and more complete analysis due to the absence of data.

All the results described above derive from the model with linear utility (absolute wage differences). Testing the same regressions on the basis of the log-utility model brings to different results.

Belot and Hatton (2012) use the same dataset of Grogger and Hanson (2011) for the empirical estimation, and build on the Roy-Borjas model, focusing on why the education content of emigrants to OECD countries differs so much among countries of origin. The migration literature has deeply discussed the mechanisms involved in the self-selection of migrants, especially looking at the economic incentives and constraints of individuals. However, still few has been said on why the selection of migrants is so different from source country to source country.

According to Belot and Hatton (2012) a simple glimpse at OECD data on the stock of foreign-born in 2001 can explain the interest in exploring migrants' selection from such an angle.
The percentage of highly educated migrants by country of origin varies consistently across regions. If for many countries in Asia and Africa the high-educated share among migrants is far higher than the one of the overall population in the country of origin (positive educational selection), for many others in Central America, Southern Europe and North America, the gap is much smaller.
This variance is present also looking at the different destination countries: the percentage of highly educated foreign-born in each OECD country differs considerably. As already pointed out by Grogger and Hanson (2011), there are huge variations across countries and not in line with their migrant quotas. Canada, for example, which is a country with a highly selective

immigration policy (point system mechanism), has a population of foreign born that for the almost 60% is highly educated; in many European countries it does not reach 20%.

Since Borjas (1987), migrants' self-selection has been explained resorting to the diverse distributions of income between different countries. Even if it is true that differences in returns to skills between source and destination countries affect the individual's decision to migrate and have a role in migrants' self-selection, according to Belot and Hatton (2012) many other factors, that could also vary by skill levels, affect the decision to migrate. To cite some of these factors: the individual's home country bias, the costs of gaining admission in a country (which could vary by individuals and skill levels) and the poverty constraints which allow only the richer to migrate. The presence of these other factors could explain the huge variations in skilled content by countries of origin outlined above. Moreover, according to Belot and Hatton (2012), it is responsible of the contrasting results found by migrants' selection literature.

This statement can easily be explained by the following figure, which captures the essence of Roy model:
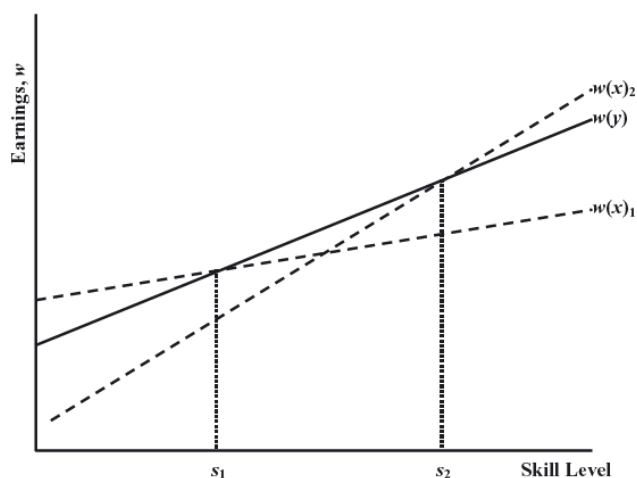

Figure 2.2: Destination and origin wage-by-skill schedules.
Source: Belot and Hatton (2012), p. 1107.

Here $w(y)$ is the destination-country wage schedule, whose slope represents the return on education, while $w(x)_1$ and $w(x)_2$ are two possible wage schedules in the country of origin. In the first case, there is positive selection: only individuals with education level higher than s_1 have an incentive to migrate. On the contrary, if the wage schedule of the country of origin is designed as $w(x)_2$, there will be negative selection since only those with education level below s_2 have an incentive to leave.

The real problem, according to Belot and Hatton (2012), is the identification of home country's wage schedule. Its position depends on several factors, many of which can differ across individuals (e.g., individual's preferences for home country, credit constraints, direct and indirect costs of migration, etc.). This introduces even greater heterogeneity in the selection such that the wage schedule in itself might not be a good predictor of the skill selectivity of migrants. That is the reason why so many studies in the literature have found contrasting results even if referring to the same framework (Roy-Borjas model).

It is important to focus on the driver of selectivity and "on what explains the educational selectivity of outmigration across source countries and what combination of incentives and policy determines the skill content of immigration among the main destinations" (Belot and Hutton, 2012, p. 1106). As a result, they will stress the role of credit constraints: despite skill returns, migrants from poor countries are positive selected because the low-skill individuals are incapacitated to leave.

Belot and Hatton (2012)'s theoretical model starts from the usual characterization of wages in source (x) and destination (y) countries for individual i.

Wages in the origin country (w_{xi}) depend on the return to education α_1 (s_i is individual i's education level) and on a random unobserved productivity component with zero mean and uncorrelated with the individual's preference for migration (ε_{xi}).

$$\ln w_{xi} = \alpha_0 + \alpha_1 s_i + \varepsilon_{xi}$$

In the destination country, wages (w_{yi}) depend once again on the return of education and the unobserved productivity (respectively $\beta_1 s_i$ and ε_{yi}), but also on the cultural distance between the origin and destination country (u) which affects the transferability of educational skills. This term is related to the human capital of the individual in two different ways. From one side the higher the education, the easier for the individual to overcome the cultural difference; for this reason the term $\beta_3 s_i$ reduce the negative effect of cultural difference. On the other side, cultural differences can have smaller effects on productivity for jobs that require lower skills, where little human capital has to be transferred; this effect is captured by the term β_2.

$$\ln w_{yi} = \beta_0 + \beta_1 s_i - u(\beta_2 - \beta_3 s_i) + \varepsilon_{yi}$$

The incentive for the individual to migrate is the difference in earnings between destination and origin country, net of direct migration costs (c) and net of the individual's non-economic preferences (z_i which is a random variable with mean greater than zero such that the average preference for the country of origin is positive).

$$I_i = \ln w_{yi} - \ln(w_{xi} + c) - z_i$$

The direct migration costs can be better specified as $d(1 - \gamma s_i)$. d is a measure of the direct costs and is inversely related to the educational level, as previously suggested by Chiswick (1999). However, direct costs are not the only one affecting the individual's decision to leave. Other factors can increase the costs of migrating. For example immigration policy, can make it difficult for migrants to enter quickly in the destination country. For this reason Belot and Hatton (2012) add to the index function also a variable of individual policy cost, P_i. It can be written as $P_i = \delta_0 - \delta_1 s_i$, where the second term captures the possibility for immigrant policy to be skill-selective (as for example in Canada). Finally, since the authors guess that credit constraints are a key element in explaining selection across countries, the term $R_i = C_i r(1 - s_i)$ is inserted. C_i represents the total cost of migration (both the direct and the policy one) and r is the general poverty rate. The poverty constraint is then proportional to the total costs, and again varies by skill-level. Substituting in C_i the definition of direct and policy costs, R_i becomes equal to: $R_i = [d + \delta_0 - (d\gamma + \delta_1)s_i]r(1 - s_i)$.

Combining the incentive to migrate with the various cost items described above, the following probability to migrate (for individual i) is obtained:

$$\Pr(m_i = 1) = Pr\{\beta_0 - \alpha_0 - d - \delta_0 - \beta_2 u + (\beta_1 - \alpha_1 + \beta_3 u + d\gamma + \delta_1)s_i$$
$$- [d + \delta_0 + (d\gamma + \delta_1)s_i]r(1 - s_i) > z_i + \varepsilon_{xi} - \varepsilon_{yi}\}$$

Assuming that there are two education level (high educated with s_i=1 and low educated with s_i=0), they write the migration rate for high-educated (H) and low educated (L) as:

$$\frac{M_H}{N_H} = \beta_0 - \alpha_0 - d - \delta_0 - \beta_2 u + \beta_1 - \alpha_1 + \beta_3 u + d\gamma + \delta_1 - \bar{z}$$

$$\frac{M_L}{N_L} = \beta_0 - \alpha_0 - d - \delta_0 - \beta_2 u - (d + \delta_0)r - \bar{z}$$

Computing the difference the following equation is obtained:

$$\frac{M_H}{N_H} - \frac{M_L}{N_L} = \beta_1 - \alpha_1 + \beta_3 u + d\gamma + \delta_1 + (d + \delta_0)r$$

Looking at the first two terms of this equation, we can appreciate the same result of Roy's model: an increase in the return to skills in the destination country, relative to the home one, increases positive selection. However, many other variables are present: cultural distance can affect selection, even if its sign is not known; direct costs of migration and policy selectivity

modify migrants' abilities. Finally, it is reasonable to think that the degree of poverty, r, reduces unskilled migration, affecting selection directly and through the interaction with migration costs.

Belot and Hatton (2012) test their model empirically through regression equations. The dataset used is the same of Grogger and Hanson (2011), which in turn is the same of Docquier et al. (2009). However, the specification of the model is different since they use logarithmic utility. Successively, they also test linear utility, adapting their model to the framework of Grogger and Hanson (2011). With this specification they find that absolute wage differences indeed induce positive selection, but only when omitting the liquidity constraints. If the credit constraint variable is inserted, the latter is still significant and positive, while the coefficient of the absolute wage gap becomes negative.

Besides the comparison of models, interesting results are found.

First of all, it seems that poverty constraint is a key variable in explaining selectivity: when excluded from the model the effect of the wage premium is negative and insignificant; considering instead also the poverty trap, results turn in line with the Roy-Borjas model.

In the second place Belot and Hatton (2012) tests many factors for sorting, that we have already seen also in Grogger and Hanson (2011). They analyse cultural distance finding a positive effect on selection, and the presence of colonial history, which instead increase the number of low skilled. Contrary to Grogger and Hanson (2011) they do not find a clear positive effect of language proximity, suggesting that linguistic distance may be less of a barrier for lower educated, whose jobs require less transferability of human capital.

Overall, it seems that costs and constraints are important in shaping the selectivity of migration.

An important factor they inquire is the effect of immigration policy in the destination country. Not only as we have seen, screening mechanism at the border can have an effect on the costs of migration, differentiating them by skill level, but also behind-border policies can affect self-selection. In particular, Belot and Hatton (2012) presume that some factors are crucial, such as the generosity of the welfare state, the flexibility towards foreigners in the labour market and the ease of recognition of foreign qualification to work in the labour market. The latter actually seems to be the most important effect, both in magnitude and significance. The generosity of welfare instead becomes significant only when the variables related to the labour market are present.

This analysis, differently from Grogger and Hanson (2011), leaves out policy towards asylum seekers and family reunification migrants, which actually could have a large effect on selection.

2.4. Selectivity differences and migrants' classes

A study specifically focused on the differences in selectivity between classes of migrants is carried out by Aksoy and Poutvaara (2019), who investigate the self-selection of refugees and irregular migrants arrived in Europe in 2015 and 2016.

Borjas (1987) already investigated the case of self-selection among refugees in his model. However, it was a peculiar case of sorting for "countries that have recently experienced a Communist takeover" (Borjas, 1987, p. 534). The idea was that the regime change from the market economy to Communism would have brought changes in income distribution among the individuals, especially for entrepreneurs' wealth. Migrant escaping from that regime would have been persons unable to match with the new political structure, but not necessarily low – income or low-skill individuals. In the new regime, with the new income distribution, they would have been low-income individuals, figuring as below-average immigrants in terms of the country of origin. However, they would outperform the average U.S. native worker, fitting well in a market economy.

Aksoy and Poutvaara (2019) also start from the Roy-Borjas model of self-selection, trying to explain why it is not always verified in reality. In particular, their focus is on economic migrants arriving in Europe from African and Middle East countries: from a theoretical point of view, following the Roy model and given that European countries have much narrower income differences, migrants from those areas should come from the lower end of the skill distribution; however, empirically is possible to find different results. Even considering Grogger and Hanson (2011) extended framework in which selectivity depends simply on the absolute return to skills, there are still cases of positive self-selection even from countries with higher return to skill.

To solve such inconsistency they provide a theoretical model of refugee self-selection (stressing how it differs from economic migrants' selection), adding as key variable the presence of risks related to living in an unsafe country. They claim that "extending the Roy-Borjas model to account for risks associated with conflict and persecution can explain why migrants from countries facing a major conflict or large-scale repression are positively self-selected, even when returns to skill in those countries would be higher than in the destination countries"[2].

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[2] Aksoy, C., Poutvaara, P. 2019. "Refugees' Self-Selection into Europe: Who Migrates Where?" ifo Working Paper 289

The framework is always Borjas (1987), even if the unobservable skill components are left out as in Grogger and Hanson (2011) since they could not be tested in their data.

Following the literature Aksoy and Poutvaara (2019) develop two equations for the wages in the home (k) and destination (d) country: $w_i^k = \exp(\alpha_k + r_k h_i)$ and $w_i^d = \exp(\alpha_d + r_d h_i - \pi_k)$.

The wage is composed of a fixed return common for all who have at least primary education $(\alpha_{k/d})$, and a second term which captures the return to human capital above primary education (r). The wage equation in the destination country is also adjusted for the possibility of loss of potential productivity due to the imperfect transferability of human capital (π_k).

Individual's expected utility however does not simply depend on wages (that enter in the logarithmic form); there is a country-specific risk q of losing the wage and suffering additional loss L (which instead enters linearly). It is reasonable to expect q to be higher in countries with war or conflicts and close to zero in relatively safe countries. In the latter case migrants are more motivated by lack of job opportunities rather than conflicts or persecutions. Moreover, refugees and irregular migrants face also travel risks, capture by the variable s bounded to be between zero and one. Also, in this case there is the possibility of facing a loss L.

The equations of the expected utility are then the following:

$$EU_i^k = (1 - q_k) \log(w_i^k) - q_k L_k$$

$$EU_i^d = (1 - s_k) \log(w_i^d) - s_k L_M - D_i c_k + \varepsilon_i$$

where ε_i depicts various costs and benefits related to migration that are not captured by other terms, including the valuation of different cultural norms and social networks.

It is rational to migrate if $EU_i^d > EU_i^k$ which, with some calculations, leads to:

$$\varepsilon_i > \varepsilon_i^* = [(1 - q_k)r_k - (1 - s_k)r_d]h_i + (1 - q_k)\alpha_k - (1 - s_k)\alpha_d + \pi_k - q_k L_k + s_k L_M + D_i c_k$$

Migrants are then positive selected if $(1 - q_k)r_k < (1 - s_k)r_d$.

From these results it follows that self-selection depends also on the risks of staying and of migrating, not only on returns of human capital. This implies that for a relatively safe country the prediction we can make about selection are still in line with the Borjas model; however if the country of origin suffer a sufficiently severe conflict, (whenever $q_k > 1 - \frac{(1-s_k)r_d}{r_k}$) the self-selection is reversed.

To test their model the authors use data of the Flow Monitoring Survey (FMS) obtained from the International Organization for Migration (IOM). The survey aims at providing a sample representative of migrants coming to Europe through the Central and Eastern Mediterranean route between 2015 and 2016. Then the model tests also for a sample of migrants arrived in Turkey between 2016 and 2018. These data are combined with 2009-2014 Gallup World Polls to acquire more information on migrants' countries of origin and its population. It is particular precious for comparison between migrating and non-migrating individuals of the same country of origin. Finally Aksoy and Poutvaara (2019) use the Uppsala Conflict Data Program (UCDP) battle-related deaths dataset in order to classify countries by their conflict intensity. In particular, following the definition provided by UCDP, they divide the countries of origin in the dataset in three main categories: countries at major conflict, at minor and no conflict. Major conflict identifies any country that witnessed 1000 or more battle-related deaths in any of the years 2009-2014. Minor conflict instead is for all the countries with a number of battle-related death in the range of 25 and 999. The no conflict category is instead quite self-explanatory.

Looking at the descriptive statistics it is already clear that Aksoy and Poutvaara's intuition is in line with the empirical data: a part from few countries (Nigeria, Bangladesh and Senegal), migrants are better educated than the source population and 77% of the sample is composed by migrants fleeing due to conflict or persecution.

More specifically the authors find that "both male and female refugees from countries suffering from major conflict are positively self-selected with respect to secondary and tertiary education" (Aksoy and Poutvaara, 2019, p.4).

For what concerns instead irregular migrants, female are also positively self-selected while male do not differ much from non-migrants in terms of their education.

This strong positive self-selection is present also if we investigate the predicted earnings of refugees and irregular migrants and for all the country groups (major, minor and no conflict), suggesting that liquidity/poverty constraints remain important also among refugees.

In order to find causal relations, a series of multivariate regression models is estimated. Results are significant and in line with the theory: refugees who escaped conflict or persecution are more likely to have secondary and tertiary level education compared not only to the source population, but also to those who cite other reasons for leaving their countries. Estimations with predicted individual pre-migration income also point towards the same direction: the effect of income (generally positive for all country groups) is greater for countries suffering a major conflict.

Interestingly Aksoy and Poutvaara (2019) investigating the sorting of refugees and irregular migrants find that they do not substantially differ from other migrants: they respond to incentives like social welfare or structure of wages, etc.

Before Aksoy and Poutvaara (2019), Chin and Cortez (2015) analysed selectivity across migrant classes. They wanted to understand if the quantity and quality of refugees might differ from that of other types of migrants. However, they were not able to reach a unique solution, neither from a theoretical point of view, nor empirically.

As usual in the literature, they build a model in which a maximizing individual decides to migrate if the benefits are higher than the costs. Such decision does not depend only on the expected incomes in the different countries, also other considerations play a major role. For example: the cultural differences or similarities between two countries, the level of freedom and the risks of persecution associated with living in a given country, or again the extension of the social network on which someone can rely. Chin and Cortes (2015) defines these factors as the amenities of living in a given country (A_{i0} amenities for individual i of residing in country 0 and A_{i1} of living in country 1).

An individual decides to move if the difference between the utility of leaving (V_{i1}) and the one of staying (V_{i0}) is greater than zero. The different utilities are defined as:

$$V_{i1} \equiv \beta_1 A_{i1} + \beta_2 (w_{i1} - C_{i01})$$

$$V_{i0} \equiv \beta_1 A_{i0} + \beta_2 w_{i0}$$

The authors analyse each variable, focusing on what value should be expected when considering refugees with respect to other migrant categories.

A_{i0} as said represents the (dis)amenities to live in the home country (0). Since the key defining feature of refugees is exactly that they are unsafe living in their home country, we can expect A_{i0} to be smaller for them with respect to other migrants. It could also be negative, since staying in the home country exposes individuals to higher risks. This tells us that the quantity of migrants coming from countries where a refugee-producing event suddenly happens, is higher, but still does not add anything to the investigation on selectivity. According to the model of migration choice, individuals consider also their wage gain. If we imagine that individuals are identical except in their wage gain from migrating (g), it is possible to find a threshold $\bar{g}$ that discriminates the case when everyone migrates from the one where everyone stays. A reduction of A_{i0} would bring some people with $g < \bar{g}$ across the threshold to migrate. Consequently, the wage gain threshold for refugees is lower or even negative, meaning that refugees are less

selected along dimensions associated with economic gain in the destination country, because economic gain is less of a factor in their decision.

W_{i0} is the wage individuals earn in country 0. Non-refugee migrants should be more sensible to wages. However, low wages can be the result of a refugee-producing event. If this is the case, a low W_{i0} determines a flow of refugee-migrants, who are now the more likely to migrate. The effect on selectivity can be various: if the refugee –producing event reduces W_{i0} broadly across the population, the marginal migrants are less selected than in a situation of no refugee-producing event. If the reduction of wages happens only for a subgroup of the population (e.g., political dissenters or a persecuted minority), it's only the migration rate of this subgroup that increases, and the effect on selectivity depends on the characteristics of this group.

A_{i1} and W_{i1} represent instead the so called pull factors which are expected to play a crucial role for non-refugees. It is straightforward to assume that, for example, individuals who migrate to reunite with their families, might have only one desired destination, with and A_{i1} very high for that destination country; or that economic migrants are likely to choose destinations with higher W_{i1}.

Refugees instead are limited by push factor: the latter can make their utility higher even in countries with low or negative wages differentials. Once again, this tell us that refugees have higher chances to migrate, since they have more destination countries where it is convenient to move. As a matter of fact, most refugees live in neighbouring developing countries which are instead undesirable to economic migrants who may decide not to migrate at all.

Finally, the variable C_{i01} captures the costs of migrating. The physical costs can be thought to be equal across individuals. Other costs may differ, the authors, for example, consider as in Borjas (1987) time cost of migrating (i.e., the opportunity cost of the migration process) which are higher for people with higher W_{i0}. Another factor could be the presence of credit constraints, which suggests positive selection also for, or even especially for, refugees. The idea behind it is that a conflict or a persecution can aggravate the financial situation of individuals. In particular, it can happen that people lose their properties and also their connections once useful to borrow money. The consequence is that only the richest can still afford to migrate. In this sense, refugees that enter developed countries should be highly selected on wealth, and so maybe on education.

According to the authors, "the model has an ambiguous prediction for the quality of refugees relative to other types of migrants—the relative quality depends on a number of variables,

including the nature of the refugee-producing event and the nature of selection in "regular" migration flows from country 0 to country 1" (Chin and Cortes 2015, p.600).

As we can see this prediction is quite different from the one of Aksoy and Poutvaara (2019) and the reason is that in Aksoy and Poutvaara (2019) the self-selection depends on the risks of conflict or persecution faced in the country of origin. A higher risk could actually produce stronger selection in migrants. This because the individual face an expected utility and with a certain probability not only he/she will lose the possibility of gaining wages, but he/she will also suffer a major loss. On the contrary, in Chin and Cortes (2015) persecution is simply a disamenity, which does not affect wages in the home country.

Empirically the authors try to find an answer through the use of the New Immigrant Survey-2003 (NIS), which provides a nationally representative sample of individuals (8573) gaining legal permanent residence in the U.S. in 2003.

Looking at the descriptive statistics, they find out that refugees fall in the middle of the distribution of educational attainment among US immigrants. They are usually more educated than family migrants, but less than the economic ones. The same result can be appreciated when looking at the individual's sector of employment prior to the migration: refugees are not the class of migrant that brings more low-skilled individuals in the US.

As common in the literature, Chin and Cortez (2015) provide a deeper investigation of their early results. They want to understand if the selection of migrants operate within a given source country or if the different characteristics that can be observed across migrants' categories actually depend on the fact that these migrants come from different countries of origin, with different characteristics and scenarios. If for example countries of conflicts tend to be the less developed, an increase in the quantity of their migrants—with no change in quality—can end up with the average refugee being less educated.
The authors check differences in mean after controlling for country of origin fixed effects, finding similar results. So, it appears that the variation is due to within-country selection, with refugees being selected from the population in a different way than "regular" migration; a key factor in this process could be the nature of the refugee-producing event or the wage structure. However, at the same time all the coefficients of the variables connected with schooling decrease, suggesting that migrants from countries that send more refugees to the U.S. have higher average schooling than migrants from other countries.

In a later work Dustmann, Fasani, Frattini, Minale, and Schonberg (2016) also stress that the differences in migrants' human capital cannot be fully explained by within-country selectivity: cross-country variability plays a role too. In their study, using the data from the 2008 wave of the EU Labour Force Survey, they find that refugees in Europe are on average less educated than natives and economic immigrants from EU15; however, considering non-European immigrants, refugees are actually better educated than economic migrants.

The problem with these results is that they are very sensitive to the considered dataset: with different cohorts or different destination countries, results could vary. For example, Chin and Cortes (2015), test also another dataset for their analysis finding quite opposite results. They use pooled individual-level data from the 1980, 1990, and 2000 U.S. Census of Population and Housing and the 2005-2010 American Community Survey (ACS). Specifically, they analyse a fixed cohort of immigrants who entered the United States in the years 1975 through 1980. In this case, looking at the descriptive statistics, economic immigrants seem to be more concentrated in the lower levels of education distribution. The results are confirmed also when using regression analysis.

To find another way to assess the selectivity of refugees with respect to economic migrants, Chin and Cortez (2015) consider looking at the investment in human capital after migration. If it is true that refugees have a lower endowment of human capital, then to integrate in the destination country they need larger investments than economic migrants. However, the investment decisions are influenced also by many other factors, first of all the individual time horizon in the host country, which is usually quite different among refugees and economic migrants. Moreover, it is also to be considered that refugees, due to the experiences they live, tend to witness more human capital disruption, which in turn could bring to lower investments.

Refugees migration has always been a great concern for all developed countries. Since the Geneva Convention in 1951, some form of protection for people persecuted in their home country has been granted. However, the increase in economic migration has determined a screening problem for the host states, unable to detect the "true refugees" from economic migrants who mimic them hoping to get better conditions and a more generous treatment. Consequently, rich countries have started shading on the performance of their obligations increasing the standards of proof for refugee status, in turn harming persecuted people or individuals escaping from conflicts (Bubb, Kremer, Levin, 2011). An incentive compatible mechanism design is needed to solve the problem: it should become unattractive for economic migrants to claim refugee status, while granting the latter full protection.

Bubb, Kremer and Levin (2011) look for possible separating mechanisms like tax systems leaving refugees with an after-tax income roughly equal to the one they had before migrating, or transfer systems that allocate refugees knocking on the doors of wealthier countries to developing ones, in exchange for money. Some of these mechanisms could actually solve the problem of screening, but will impose negative externalities on developing countries, or will involve solutions "morally objectionable".

Despite the possibility of finding a solution to the debated question of migrant selectivity, it should be asked also if selectivity matters in in the process of integration. The reason behind selecting migrants is that more educated individuals fits better into the host society (e.g., integrate faster) and, given the fact that they have higher probabilities of finding employment and earnings, that they contribute more positively on the fiscal balance of welfare states.

A paper by Adeymir (2011) challenge this reasoning: it finds that positive selection does not automatically translate into greater success in the labour market.

The first aim of his work is to understand if skill-based selection mechanisms (which are common in countries like Canada, Australia, New Zeland) succeed in their purpose of admitting immigrants more able to adapt to the host country labour market. Of course, he is able to control only for the observed proxies of ability (mainly the education level); nothing can be said about self-selection along the unobserved characteristics of individuals.

Using the Longitudinal Survey of Immigrants to Canada (LSIC) Aydemir (2011) finds that the Canadian point system mechanism of selection of immigrants actually generates a much higher skilled immigrant flow than those admitted through family preferences. This happens not only because the point system mechanism changes the skill distribution of migrants towards the higher skilled. There is also an indirect effect due to assortative matching: the more educated migrants selected through the point system are more likely to have more educated partners who later on could be admitted as family migrants.

It is important to stress that this outcome is generated because the point mechanism changes the selection mechanism inside a given country of origin. It is not the case that enforcing a point mechanism system change the nationalities mix of migrants who usually applied for entering in that country. It does seem to confirm Belot and Hatton (2008) and Chin and Cortes (2015)'s findings about within-country selection.

At the same time, Aydemir (2011) stresses that there are also other factors that can affect migrant selectivity. For example, economic opportunities in destinations countries have a major role in attracting high skilled immigrants, in addition to designed immigration policies.

However, a question still remains unsolved: does this positive selection translate into better labour market outcomes? Considering as indicator of success the conditions of being employed in the short run and being rewarded with higher wages, Aydemir (2011) finds that high skilled migrants do not differ statistically from family migrants and do not show better integration paths. Several reasons may explain this result.

First, it is always necessary to keep in mind that selection mechanisms can operate only on observable characteristics of individuals.

Second, family migrants may be less educated than selected high skilled immigrants, but they can count on a richer amount of resources, thanks to their social networks. Not only they can arrive at the destination country with better information and benefit of country-specific human capital that is already invested by network fellows, but they can also rely on a stronger net for all what concern finding an employment in a short time.

Finally a crucial factor to which pay attention is the transferability of skills across countries. Many of the abilities (education, work experience) acquired in the origin country have no return in the host country, making it difficult for high skilled migrants to find a job in line with their qualifications and forcing them to invest in host country human capital, delaying the entrance in the job market.

Aydemir (2011), neglecting for a moment selectivity, stress a problematic we have already discussed in the previous chapter. Governments have to pay attention also to the foreign recognition of education, qualifications and skills because mismatches between demand and supply of specific skills in the labour market are present even when migrants are highly educated. Being able to attract the 'right' persons, but failing to value them, it is a waist of effort and resources, for migrants but also for citizens.

Before Adeymir (2011), Cobb-Clark (2004) studied the same phenomenon in Australia. She also spots that selective immigration mechanisms are able to attract more skilled individual from an educational, linguistic and professional point of view.

Differently from Aydemir (2011), she finds that the cohort of high skilled migrants, entering in Australia after 1999, perform better in the host country labour market[3] with respect to previous

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[3] The variable chosen as mean of comparison are the participation rate, the level of unemployment and the employment to population ratio

cohorts (when point mechanism was not in place). This is true both in the first survey collected six months after entrance, and in a second survey collected eighteen months after the first. It then seems that these better performances resist also in the medium run.

However, it is important to understand the causal factors behind these performances. Is it the selection mechanism policy that attract only high skilled migrants who consequently do better in the labour market, or are the labour market conditions of the Australian economy that determine this difference among cohorts? What is the role of income support policy in these results?

Cobb-Clark (2004) reflects on the fact that even if the greater weight in the differences among cohorts is given by differences in the demographic and productivity-related characteristics, still the labour market conditions and the income-support policy of a country can play a big role in determining the success of high skilled-migrants. Income-support policy change the individuals' incentive to look for a job, while the labour market conditions are responsible for affecting the ability to find jobs. As Aydemir (2011), she suggests that screening alone is not sufficient to solve migration problems.

CHAPTER THREE: MIGRATION POLICY AS AN INCENTIVE MECHANISM

3.1. The Problem

In the first chapter of this work, we have looked at a general overview of the main integration measures implemented in developed countries. Despite the fact that migration policy and its management are chaotic, a result on which the literature appears to agree is that tailored approaches are a key to efficiency. It seems common sense to avoid the use of equal resources for individual with different needs and who can contribute differently, according to their level of ability and competences. Governments could save important resources if each migrant was allowed and willingness to use fully his/her productivity and put the maximum possible effort in the process of integration.

However, as we have learnt in the second chapter of the literature review, detect migrants' abilities is difficult. More importantly, many empirical works have shown how exploiting migrants' categories to infer on their level of productivity gives no clear results, challenging the role of different permits and pathways of integration for the different migrant categories (refugees, economic migrants, family reunification). The way to detect migrants' abilities and provide resources consequently should be different.

What we will try to do in this chapter, is to design a mechanism that reveals migrants' abilities, when hidden, and that organizes government's resources efficiently. Migration policy will be structured as an incentive mechanism.

The integration problem, designed as we will, can be seen as a public economics' issues, since the interest is to understand how the government should allocate resources to migrants, managing the trade-off between efficiency and equity.

Not integrating migrants, not regulating this activity, leads to a socially inefficient outcome. For this reason, the government has to intervene destining some public funds to immigrants. At this point, the government's aim when designing policy is to find "an efficient means of revenue collection" (Myles, 1995, p.5). "Having determined that the organization of economic activity must generate a revenue requirement, one aspect of the role of public economics is to determine how this revenue can be collected at the least cost to the economy" (Myles, 1995, p.5).

The problem we are modelling is then a problem of finding and optimizing the level of public policy instruments. In doing so, the government has also to consider the distribution of resources in the economy, since it could be desirable to act on the equity's dimension.

It is important to note that, as in taxation problems, the government's objective is to maximize the social welfare. However, differently from other branches of application of public economic problems, in this model there are actors (the migrants) who are not part of the society. Managing their integration is an issue for optimizing social welfare, but migrants' wellness is never in the government's aim. Migrants' utility functions do not add to the citizens' ones; they do not contribute in any way to the social welfare function. That is the reason why they do not appear in the government's objective, at most they are used as constraints to the problem.

Finally, it is important to remark that the integration problem is analysed as a problem of managing a given number of migrants, already settled in a country. The problem begins when migrants are already in that country. The rate of their arrival and all the policies designed to contrast immigration are exogenous variables to this model.

3.2. The Model

We imagine that a given country receive an amount N of migrants, in a given unit of time.

These migrants differ for their abilities (productivity level) θ. For simplicity, we assume there are only two levels of productivity: high and low, indicated respectively as θ_H and θ_L. From now on the subscript H will always refer to high skilled migrants and the subscript L to the low-skilled ones. The proportion of migrants belonging to the type H is common knowledge and it is equal to δ. The remaining fraction $(1 - \delta)$ is composed of low productivity individuals.

As mentioned, the rate of migrants' arrival is considered exogenous to the model, so as the policy to contrast immigration. The government has then 'simply' to deal with these N migrants, trying to maximize their probability of integration. As seen in the first chapter, there can be more than one reason for which governments want or should integrate migrants. However, we will not discuss them in this simple model. We assume governments invest in integration because not doing so comes at a cost (k). K can be thought as the quantification of the social disutility connected with a failed integration. It comprises the costs of segregation, higher risk of criminality, disqualification of the urban fabric, etc.

Although investing in the integration of high skills individuals is more rewarding, given their higher productivity, the government wants to maximize the probability of integration of both types of migrants. The reason is that the cost (k) associated with migrants who are not integrated is equal for everyone.

As seen in the literature review, the concept of integration is quite complex and involve more than one field. However, it seems that without a proper and quick entry in the labour market, migrants fail to integrate also in the society. Consequently, for simplicity, we model the probability of integration as the probability of entering the labour market. The latter is a function of two variables: the migrant's effort in integrating (e) and an initial input of resources provided by the government (q). Unfortunately, the individual's effort is not directly observable. What can be observed, is the number of hours (t) that an individual dedicate to integration activities (language courses, skills assessments, bridging programs, etc.).

The probability depends also on the type θ, is labelled as $\pi(t, q, \theta)$, and quite obviously its domain is between zero and one: $0 < \pi(t, q) < 1$. Specifically, when t or q tend to zero, π tends to zero; if t or q goes to infinity, π tends to one.

More specifically, we define the probability as:

$$\pi = \frac{x}{x + 1}$$

Where x can be thought as a constant elasticity of substitution (CES) production function. It is function of two inputs, the observable effort and government's resources:

$$x = (t^\rho + q^\rho)^{1/\rho}$$

The parameter ρ, that belongs to the interval $\rho \in [-\infty; 1]$, indicates the degree of substitutability/complementarity of the two inputs.

The marginal productivity of the individual's effort and of the government's resources is increasing, but at a decreasing rate. Both the first partial derivatives are positive and both the second negative:

- $\pi_t > 0$;
- $\pi_{tt} < 0$;
- $\pi_q > 0$;
- $\pi_{qq} < 0$.

The sign of the mixed second derivatives depend on the coefficient ρ:

- When $\rho < 0$ and $\rho = 1 => \pi_{tq}$ e $\pi_{qt} < 0$;
- When $0 < \rho < 1/3 => \pi_{tq}$ e $\pi_{qt} > 0$.

Both for the government and for the migrants, increasing the probability of integration is far from being a free process.

Government's resources are collected at a cost. In particular, we define as λ the marginal cost of public funds, which is a positive number. If migrants' effort and public resources are

substitutable (even to a minimum degree), is in the government's interest that migrants put the highest possible effort. This would allow it to cut down the public spending and to have integration at the lowest possible cost for native citizens. The fact that the effort is not observable could rise a problem of moral hazard. As a matter of fact, although it is also in the migrant's interest to integrate (once entered the labour market the migrant receives an exogenous amount of labour income W), to make an effort is costly for the individual. It is then in the migrant's interest to put the lowest possible level of effort and to exploit government's resources to increase the probability of getting a job.

To complicate further the analysis, we assume that the effort's cost is not equal among individuals. High skilled migrants struggle less when working, and so the disutility that comes from making an effort is lower with respect to the one of low skilled individuals. This fact, in a scenario in which the type θ is not observable by the government, rises also a problem of adverse selection.

Migrant's utility is indicated as $\overline{U}$ for the high skilled and $\underline{U}$ for the low skilled. Utility depends positively on consumption and negatively on the amount of hours dedicated to integration (the individual's effort).

Before defining the utility functions, it is necessary to spend few words on the consumption variable. Consumption, that quite surprisingly and innovatively we name A, is not a certain good. As a matter of fact, in a given period of time, two states of the world are possible. The best scenarios (B) happens with probability π, when migrants succeed in integration. With the remaining probability $(1 - \pi)$ instead, the state of the world with a failed integration, that we indicate with M, comes true.

In B, migrants' consumption is given by the exogenous labour income W, plus a government transfer C. While in M, migrants do not integrate, and cannot enjoy the income W. With probability $(1 - \pi)$, A is then simply equal to the government's transfer C.

The government's transfer C can be thought as a subsidy given on daily basis to migrants in order to provide to their basic needs. As q, every unit of C costs to the governments $(1 + \lambda)$.

While we assume that W is exogenous and constant for all the individuals, C is a control variable for the governments and could be differentiated by types. From now on, we will then use the label C_H to refer to the transfer for high productive migrants, and C_L to refer to the low productivity's one.

To briefly summarize with equations:

$$A_H = \pi_H A_H^B + (1 - \pi_H)A_H^M = \pi_H(C_H + W) + (1 - \pi_H)C_H$$

$$A_L = \pi_L A_L^B + (1 - \pi_L)A_L^M = \pi_L(C_L + W) + (1 - \pi_L)C_L$$

Given that there are two state of the worlds for the individual, also utility is an expected value. In particular, with probability π the migrant enjoy utility U^B; with probability $(1 - \pi)$ (s)he does not integrate successfully and consequently his/her utility is equal to U^M. Remember that utility differs according to types which in this case are indicated by the upper or lower bar ($\overline{U}$ and $\underline{U}$):

$$\overline{U} = \pi_H \overline{U^B} + (1 - \pi_H)\overline{U^M}$$

$$\underline{U} = \pi_L \underline{U^B} + (1 - \pi_L)\underline{U^M}$$

Utility in the best state of the world ($\overline{U^B}$ and $\underline{U^B}$) depends positively on the level of consumption A which comprehends C and W, and negatively on the amount of hours dedicated to integration activities, t: $\overline{U^B}(C_H, t_H, \theta_H, W)$ and $\underline{U^B}(C_L, t_L, \theta_L, W)$.

Utility in the bad state of the world ($\overline{U^M}$ and $\underline{U^M}$) depends in the same way from A and t; however A simply consists of C: $\overline{U^M}(C_H, t_H, \theta_H)$ and $\underline{U^M}(C_L, t_L, \theta_L)$.

As conventionally, we assume utility is concave in consumption (transfer):

- $\overline{U_c^{B/M}} > 0 \ e \ \overline{U_{cc}^{B/M}} < 0$;
- $\underline{U_c^{B/M}} > 0 \ e \ \underline{U_{cc}^{B/M}} < 0$.

Individual's effort instead is a cost and procure disutility to the individual:

- $\overline{U_t^{B/M}} < 0 \ e \ \overline{U_{tt}^{B/M}} < 0$;
- $\underline{U_t^{B/M}} < 0 \ e \ \underline{U_{tt}^{B/M}} < 0$.

Since utility is positive in C and negative in t, we can draw the indifferent curves of the individual as follow:
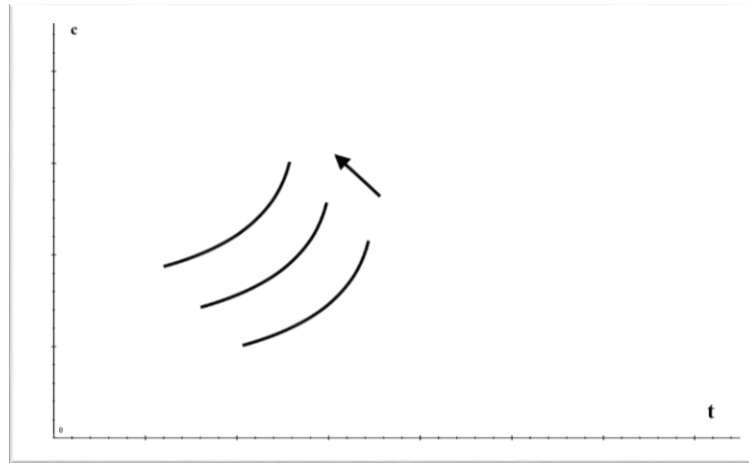
Figure 3.1: Migrant's indifference curve between transfer and hours of activities

As expressed in the figure, utility increases as we move up to the left.

3.3. The Setting

As mentioned, government's interest is to allocate resources (q and C) efficiently to H and L, and to make them work such that to maximize their integration's probability. The government is a risk neutral actor, while migrants are risk averse individuals.

We delineate two different situations.

At first, the problem is set assuming there is symmetry of information between the economic agents: the government observe the individuals' type θ and can provide q and C consequently, exploiting the maximum possible effort from each category. As we will see, when the adverse selection problem is absent, also moral hazard is impossible. The government knows exactly the amount of hours that a productive and less productive individual can dedicate to integration (t is informative). Once it is able to identify each individual as belonging to a certain type, it can force them to put t_H and t_L, through the control of q and C.

Successively, we will assume that the government is unable to observe migrants' type. This asymmetry of information could allow the high type individuals to mimic the low type, putting a level of effort lower than optimal (the one of symmetric information). To avoid bunching at the bottom, the government has built an incentive mechanism such that it will never be in the high type's interest to behave as a low skilled. Manipulating the migrant's choices through the use of the policy variable q and C, the government can arrive to a situation of equilibrium better than the one that would have occurred in the absence of any intervention.

The timing of the problem is as follow: nature decides the amount of migrants arriving to a country, if a migrant is H or L and the proportion of δ. The government, which is the uniformed party, moves first, offering migrants one or more contracts. Migrants choose the contract they prefer and the integration process begins. At the end, an outcome realizes and the migrant is either in the good or in the bad state of the world.

The contract offered by the government is a combination of C and t. The level of C and t could vary by type. However, as said, the uninformed party does not know the type of individual is dealing with. The government plays as in a Stackelberg model: the individual knows that the government is committed to the contracts offered and (s)he will choose consequently; the government has to anticipate the individual's behaviour and design contracts accordingly.

The sorting condition for the two groups resides in the marginal rate of substitution between C and t. As mentioned, for less productive individuals is more costly to make an effort. The behaviour of high and low skilled, then, will be different at the margin. Even if the individuals are forced to consume the same and to make an effort for the same amount of hours, the marginal rate of substitution in that point, for the two groups, is different. The amount of hours they are disposed to work more, in order to have more units of the transfer, is different. This means that their preferences are different, that the slope of the indifference curves of the individuals are not equal in every point, and that the government can exploit this diverse behaviour to screen and detect the true ability of individuals.

What we have just described, is asking for the Spence-Mirrlees or single crossing property condition. As the name suggests, the property assure that the indifference curves of different types of individuals cross only once. The Spence-Mirrlees property is guaranteed by agent monotonicity: the marginal rate of substitution between the transfer C and the amount of hours t is a decreasing function of the productivity type θ (Myles, 1995). This states that the slope of the indifference curve for high productive individuals is flatter than the one of the low skilled, as we can see in the following figure:
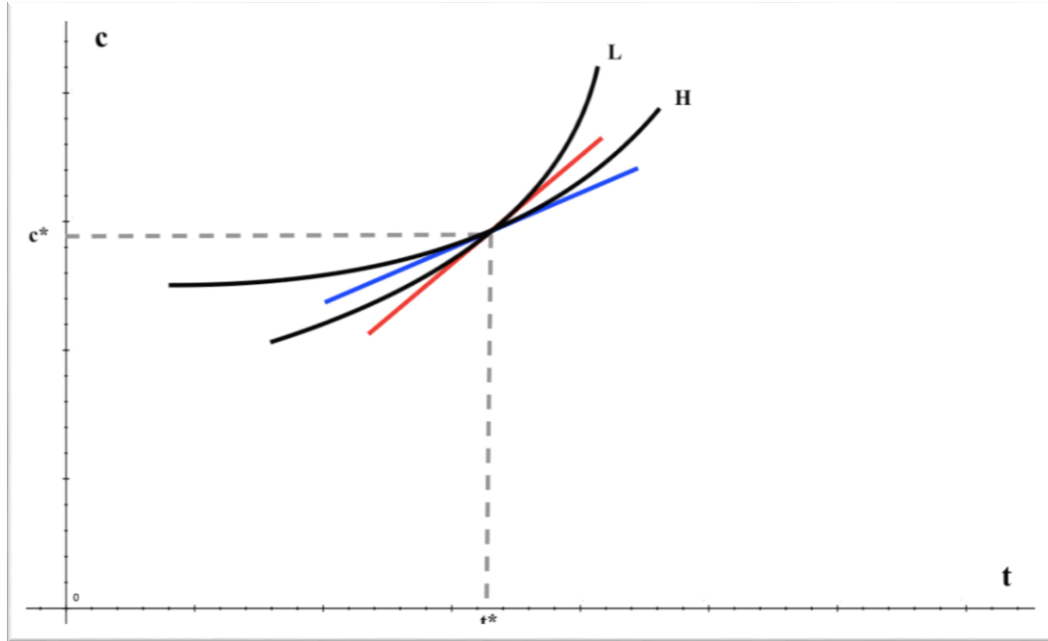
Figure 3.2: Slope of the indifference curves for individuals H and L

We can easily state this property through equations.

First, we compute the partial derivative of utility for high skilled individuals:

- $$\frac{\partial \overline{U}}{\partial t_H} = \frac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial t_H}$$

- $$\frac{\partial \overline{U}}{\partial C_H} = \pi_H \frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}$$

From these, we can compute the Marginal Rate of Substitution (MRS):

$$MRS_H = -\frac{\frac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial t_H}}{\pi_H \frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}}$$

For low skilled individuals instead the partial derivatives are:

- $$\frac{\partial \underline{U}}{\partial C_L} = \pi_L \frac{\partial \underline{U^B}}{\partial C_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial C_L}$$

- $$\frac{\partial \underline{U}}{\partial t_L} = \frac{\partial \pi_L}{\partial t_L}(\underline{U^B} - \underline{U^M}) + \pi_L \frac{\partial \underline{U^B}}{\partial t_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial t_L}$$

From which:

$$MRS_L = - \frac{\frac{\partial \pi_L}{\partial t_L}(U^B - U^M) + \pi_L \frac{\partial U^B}{\partial t_L} + (1 - \pi_L)\frac{\partial U^M}{\partial t_L}}{\pi_L \frac{\partial U^B}{\partial C_L} + (1 - \pi_L)\frac{\partial U^M}{\partial C_L}}$$

The single crossing property condition is guaranteed when:

$$- \frac{\frac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial t_H}}{\pi_H \frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}} < - \frac{\frac{\partial \pi_L}{\partial t_L}(U^B - U^M) + \pi_L \frac{\partial U^B}{\partial t_L} + (1 - \pi_L)\frac{\partial U^M}{\partial t_L}}{\pi_L \frac{\partial U^B}{\partial C_L} + (1 - \pi_L)\frac{\partial U^M}{\partial C_L}}$$

That is equivalent to say that:

$$\frac{\frac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial t_H}}{\pi_H \frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}} > \frac{\frac{\partial \pi_L}{\partial t_L}(U^B - U^M) + \pi_L \frac{\partial U^B}{\partial t_L} + (1 - \pi_L)\frac{\partial U^M}{\partial t_L}}{\pi_L \frac{\partial U^B}{\partial C_L} + (1 - \pi_L)\frac{\partial U^M}{\partial C_L}}$$

Thanks to this condition, the government can design a menu of contracts that is incentive compatible and induce migrants to truthfully reveal their characteristics. The idea is to exploit optimally the available information, which regards individual' preferences and behaviours.

3.4. Symmetric Information

First of all, we write the government's objective function as:

$$
\begin{aligned}
F(q_H, q_L, t_H, t_L, C_H, C_L) \\
&= \delta \pi_H + (1 - \delta)\pi_L - \delta k(1 - \pi_H) - (1 - \delta)k(1 - \pi_L) - (1 + \lambda)(q_H + q_L \\
&+ C_H + C_L)
\end{aligned}
$$

In this function, we can see the probabilities of integration that the government wants to maximize and also the cost related to failed integration and the cost of public funds. We have already inserted the government's budget constraint in this objective function.

However, the budget constraint is not the only one to operate.

In symmetric information, the government observe θ and can assign migrants to different integration paths without difficulties. It can use lump-sum transfers and exploit the maximum possible effort of the individuals, so that the amount of resources it has to provide to increase the probability of integration is minimum. However, even if not citizens of the host country, migrants are human beings. The government cannot operate avoiding completely any attention at migrants' wellness and utility.

For this reason the maximization of F, even in this context of symmetry, is not free.

We add two constraints to the problem. We ask the utility of type H and L individuals to be at least equal, if not greater, than a given amount U^*. U^* is a parameter in the model and represents the minimum level of utility a human being can experience to be called as such.

Given these premises, we can write the problem as follow:

$$Max_{q_h,q_l,t_h,t_l,C_H,C_L} \quad \delta\pi_H + (1-\delta)\pi_L - \delta k(1-\pi_H) - (1-\delta)k(1-\pi_L) - (1+\lambda)(q_H + q_L + C_H + C_L)$$

$$S.t. \quad \pi_H\overline{U^B} + (1-\pi_H)\overline{U^M} \geq U^*$$

$$\pi_L\underline{U^B} + (1-\pi_L)\underline{U^M} \geq U^*$$

We can solve it thorough Lagrange's method. Rewriting the constraints as:

$$-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + U^* \leq 0$$

$$-\pi_L\underline{U^B} - (1-\pi_L)\underline{U^M} + U^* \leq 0$$

We obtain the Lagrangian:

$$L(q_h, q_L, t_H, t_L, C_H, C_L, \mu, \beta)$$
$$= \delta\pi_H + (1-\delta)\pi_L - \delta k(1-\pi_H) - (1-\delta)k(1-\pi_L)$$
$$- (1+\lambda)(q_H + q_L + C_H + C_L) - \mu[-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + U^*]$$
$$- \beta[-\pi_L\underline{U^B} - (1-\pi_L)\underline{U^M} + U^*]$$

As mentioned above, it is clear to see that the government's aim is not to maximize migrants' utilities. These functions appear only in the constraints.

We can derive the first order conditions (FOC) of the Lagrangian function and interpret the results obtained. At first, we do not consider the input q in the problem and concentrate on the variable C and t.

The FOCs are:

$$
\begin{cases}
\dfrac{\partial L}{\partial t_H} = \delta \dfrac{\partial \pi_H}{\partial t_H} + \delta k \dfrac{\partial \pi_H}{\partial t_H} + \mu \overline{U^B} \dfrac{\partial \pi_H}{\partial t_H} + \mu \pi_H \dfrac{\partial \overline{U^B}}{\partial t_H} - \mu \overline{U^M} \dfrac{\partial \pi_H}{\partial t_H} + \mu(1-\pi_H)\dfrac{\partial \overline{U^M}}{\partial t_H} = 0 & (3.23) \\[2mm]
\dfrac{\partial L}{\partial t_L} = (1-\delta)\dfrac{\partial \pi_L}{\partial t_L} + (k-\delta k)\dfrac{\partial \pi_L}{\partial t_L} + \beta \underline{U^B}\dfrac{\partial \pi_L}{\partial t_L} + \beta \pi_L \dfrac{\partial \underline{U^B}}{\partial t_L} - \beta \underline{U^M}\dfrac{\partial \pi_L}{\partial t_L} + \beta(1-\pi_L)\dfrac{\partial \underline{U^M}}{\partial t_L} = 0 & (3.24) \\[2mm]
\dfrac{\partial L}{\partial C_H} = \mu \pi_H \dfrac{\partial \overline{U^B}}{\partial C_H} - \mu \pi_H \dfrac{\partial \overline{U^M}}{\partial C_H} + \mu \dfrac{\partial \overline{U^M}}{\partial C_H} = (1+\lambda) & (3.25) \\[2mm]
\dfrac{\partial L}{\partial C_L} = \beta \pi_L \dfrac{\partial \underline{U^B}}{\partial C_L} - \beta \pi_L \dfrac{\partial \underline{U^M}}{\partial C_L} + \beta \dfrac{\partial \underline{U^M}}{\partial C_L} = (1+\lambda) & (3.26) \\[2mm]
\mu\left[-\pi_H \overline{U^B} - (1-\pi_H)\overline{U^M} + U^*\right] = 0 & (3.27) \\[1mm]
\beta\left[-\pi_L \underline{U^B} - (1-\pi_L)\underline{U^M} + U^*\right] = 0 & (3.28) \\[1mm]
\mu \geq 0 & (3.29) \\[1mm]
\beta \geq 0 & (3.30)
\end{cases}
$$

Adjusting we obtain:

$$
\begin{cases}
\dfrac{\partial L}{\partial t_H} = (\delta + \delta k)\dfrac{\partial \pi_H}{\partial t_H} + \mu \dfrac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \mu \pi_H \dfrac{\partial \overline{U^B}}{\partial t_H} + \mu(1-\pi_H)\dfrac{\partial \overline{U^M}}{\partial t_H} = 0 & (3.23) \\[2mm]
\dfrac{\partial L}{\partial t_L} = (1-\delta + k - \delta k)\dfrac{\partial \pi_L}{\partial t_L} + \beta \dfrac{\partial \pi_L}{\partial t_L}(\underline{U^B} - \underline{U^M}) + \beta \pi_L \dfrac{\partial \underline{U^B}}{\partial t_L} + \beta(1-\pi_L)\dfrac{\partial \underline{U^M}}{\partial t_L} = 0 & (3.24) \\[2mm]
\dfrac{\partial L}{\partial C_H} = \mu\left(\pi_H \dfrac{\partial \overline{U^B}}{\partial C_H} - \pi_H \dfrac{\partial \overline{U^M}}{\partial C_H} + \dfrac{\partial \overline{U^M}}{\partial C_H}\right) = (1+\lambda) & (3.25) \\[2mm]
\dfrac{\partial L}{\partial C_L} = \beta\left(\pi_L \dfrac{\partial \underline{U^B}}{\partial C_L} - \pi_L \dfrac{\partial \underline{U^M}}{\partial C_L} + \dfrac{\partial \underline{U^M}}{\partial C_L}\right) = (1+\lambda) & (3.26) \\[2mm]
\mu\left[-\pi_H \overline{U^B} - (1-\pi_H)\overline{U^M} + U^*\right] = 0 & (3.27) \\[1mm]
\beta\left[-\pi_L \underline{U^B} - (1-\pi_L)\underline{U^M} + U^*\right] = 0 & (3.28) \\[1mm]
\mu \geq 0 & (3.29) \\[1mm]
\beta \geq 0 & (3.30)
\end{cases}
$$

From the derivatives (3.23) and (3.24) is straightforward to notice that in the absence of the utility constraints, the government could exploit at maximum the individual's effort and productivity. It could bring the marginal productivity of t close to zero, and t close to infinity, while offering the lowest possible amount of q.

However, since migrants' utility matter in some form, in this problem, the government is constrained to guarantee the minimum level of utility U^*, but nothing more: at the optimum both the constraints are binding. This means that the expected utility of migrants of type H and type L are equal.

However, as we know $\overline{U}$ and $\underline{U}$ differ in their relationship with t. High skill migrants, since more productive, have a lower cost of effort (t) and, ceteris paribus, can spend more hours in integrating activities with respect to low skill individuals, maintaining the same level of utility. At the optimum then, $t_H > t_L$ without the need for the government to compensate such different effort. Since there is complete information, it can easily provide two different contracts tailored according to individual's productivity.

From equations (3.23) and (3.24) and (3.25) and (3.26), we can also compute the MRS for both types of migrants.

The marginal utilities of effort are:

- $\frac{\partial \bar{U}}{\partial t_H} = -\frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{\mu}$;

- $\frac{\partial \underline{U}}{\partial t_L} = -\frac{\partial \pi_L}{\partial t_L} \frac{(1 - \delta + k - \delta k)}{\beta}$

While from equations (3.25) and (3.26) we have the marginal utility of transfers:

- $\frac{\partial \bar{U}}{\partial c_H} = \frac{(1 + \lambda)}{\mu}$;

- $\frac{\partial \underline{U}}{\partial c_L} = \frac{(1 + \lambda)}{\beta}$

MRS_H and MRS_L are then equal to:

$$MRS_H = \frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{(1 + \lambda)}$$

$$MRS_L = \frac{\partial \pi_L}{\partial t_L} \frac{(1 - \delta + k - \delta k)}{(1 + \lambda)}$$

3.5. Asymmetric Information

Now we imagine θ is private information. The government cannot offer the same transfer to individuals and ask for different level of effort. It is in fact in the interest and in the possibility of H to pretend to be less productive than what they really are and deviate from the equilibrium of symmetric information. The government has to offer two different contracts, one designed for the H type and one designed for the low skilled. However, to make sure H reveal truthfully their type and choose the contract was designed for them, the government needs to add another constraint to the problem. It must be that the utility of individual of type H when declaring the truth and accepting the contract designed for type H is at least equal, if not greater, than the utility of type H individual who pretend to be of the low type and accept the contract designed for type L. In order to achieve this result, the government has to exploit the sorting condition: the willingness to make an effort at the margin is different between H and L. The contract designed for L, must be unattractive to H.

This new constraint can be written as:

$$\pi_H \overline{U^B} + (1 - \pi_H)\overline{U^M} \geq \pi_L \widehat{U^B} + (1 - \pi_L)\widehat{U^M}$$

Where:

- $\widehat{U^B}(C_L, t_L, \theta_H, W)$ is the utility of individual of type H who mimics type L and succeed in integrating;

- $\widehat{U^M}(C_L, t_L, \theta_H)$ is the utility of individual of type H who mimics type L but do not integrate.

The expected utility $\widehat{U}$ has the same characteristics of $\overline{U}$ and $\underline{U}$:

- $\widehat{U_c^{B/M}} > 0 \ e \ \widehat{U_c^{B/M}} < 0$;

- $\widehat{U_t^{B/M}} < 0 \ e \ \widehat{U_{tt}^{B/M}} < 0$.

The Lagrangian can then now be rewritten as:

$$
\begin{aligned}
L\big(q_h, q_L, t_H, t_L, C_H, C_L, \gamma, \mu, \beta\big) \\
= \delta\pi_H + (1-\delta)\pi_L - \delta k(1-\pi_H) - (1-\delta)k(1-\pi_L) \\
- (1+\lambda)(q_H + q_L + C_H + C_L) \\
- \gamma\big[-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + \pi_L\widehat{U^B} + (1-\pi_L)\widehat{U^M}\big] \\
- \mu\big[-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + U^*\big] - \beta\big[-\pi_L\underline{U^B} - (1-\pi_L)\underline{U^M} + U^*\big]
\end{aligned}
$$

And the FOCs as:

$$
\frac{\partial L}{\partial t_H} = (\delta + \delta k)\frac{\partial \pi_H}{\partial t_H} + \gamma\frac{\partial \pi_H}{\partial t_H}\big(\overline{U^B} - \overline{U^M}\big) + \gamma\pi_H\frac{\partial \overline{U^B}}{\partial t_H} + (1-\pi_H)\gamma\frac{\partial \overline{U^M}}{\partial t_H} + \mu\frac{\partial \pi_H}{\partial t_H}\big(\overline{U^B} - \overline{U^M}\big) + \mu\pi_H\frac{\partial \overline{U^B}}{\partial t_H} + (1-\pi_H)\mu\frac{\partial \overline{U^M}}{\partial t_H} = 0 \quad (3.33)
$$

$$
\frac{\partial L}{\partial t_L} = (1 - \delta + k - \delta k)\frac{\partial \pi_L}{\partial t_L} + \gamma\frac{\partial \pi_L}{\partial t_L}\big(\widehat{U^M} - \widehat{U^B}\big) - \gamma\pi_L\frac{\partial \widehat{U^B}}{\partial t_L} - \gamma(1-\pi_L)\frac{\partial \widehat{U^M}}{\partial t_L} + \beta\frac{\partial \pi_L}{\partial t_L}\big(\underline{U^B} - \underline{U^M}\big) + \beta\pi_L\frac{\partial \underline{U^B}}{\partial t_L} + \beta(1-\pi_L)\frac{\partial \underline{U^M}}{\partial t_L} = 0 \quad (3.34)
$$

$$
\frac{\partial L}{\partial C_H} = (\gamma + \mu)\left[\pi_H\frac{\partial \overline{U^B}}{\partial C_H} + (1-\pi_H)\frac{\partial \overline{U^M}}{\partial C_H}\right] = 1 + \lambda \quad (3.35)
$$

$$
\frac{\partial L}{\partial C_L} = -\gamma\pi_L\frac{\partial \widehat{U^B}}{\partial C_L} - \gamma(1-\pi_L)\frac{\partial \widehat{U^M}}{\partial C_L} + \beta\pi_L\frac{\partial \underline{U^B}}{\partial C_L} + \beta(1-\pi_L)\frac{\partial \underline{U^M}}{\partial C_L} = 1 + \lambda \quad (3.36)
$$

$$
\gamma\big[-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + \pi_L\widehat{U^B} + (1-\pi_L)\widehat{U^M}\big] = 0 \quad (3.37)
$$

$$
\mu\big[-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + U^*\big] = 0 \quad (3.38)
$$

$$
\beta\big[-\pi_L\underline{U^B} - (1-\pi_L)\underline{U^M} + U^*\big] = 0 \quad (3.39)
$$

$$
\gamma \geq 0 \quad (3.40)
$$

$$
\mu \geq 0 \quad (3.41)
$$

$$
\beta \geq 0 \quad (3.42)
$$

To understand if the government distorts individuals' choices with respect to the situation in symmetry of information, we have to look at the MRS.

The derivatives are more complex since the optimization happens under three constraints. By assumption, we know the incentive compatible constraint is binding, meaning that the lagrangian multiplier γ is different from zero.

Also the β multiplier is different from zero: note that in equation (3.34) if β is equal to zero, we will have that:

$$
(1 - \delta + k - \delta k)\frac{\partial \pi_L}{\partial t_L} = \gamma\left[\frac{\partial \pi_L}{\partial t_L}\big(\widehat{U^B} - \widehat{U^M}\big) + \pi_L\frac{\partial \widehat{U^B}}{\partial t_L} + (1-\pi_L)\frac{\partial \widehat{U^M}}{\partial t_L}\right]
$$

Since the right hand side of the equation is the partial derivative of $\widehat{U}$ with respect to t (which is negative) and since γ and $(1 - \delta + k - \delta k)$ are positive, it would mean that $\frac{\partial \pi_L}{\partial t_L}$ is negative. By definition, this is impossible.

We are then left with two possible cases.

Case 1: $\gamma, \beta, \mu \neq 0$

We compute the MRS of H and L. From (3.33) and (3.34) we obtain:

- $\frac{\partial \overline{U}}{\partial t_H} = -\frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{\mu + \gamma};$

- $\frac{\partial \underline{U}}{\partial t_L} = -\frac{\partial \pi_L}{\partial t_L} \frac{(1 - \delta + k - \delta k)}{\beta} + \frac{\gamma}{\beta} \left[\frac{\partial \pi_L}{\partial t_L} \left(\widehat{U^B} - \widehat{U^M} \right) + \pi_L \frac{\partial \widehat{U^B}}{\partial t_L} + (1 - \pi_L) \frac{\partial \widehat{U^M}}{\partial t_L} \right] =$

  $\frac{-\frac{\partial \pi_L}{\partial t_L}(1 - \delta + k - \delta k) + \gamma \frac{\partial \widehat{U}}{\partial t_L}}{\beta}$

While from equations (3.35) and (3.36) we have:

- $\frac{\partial \overline{U}}{\partial c_H} = \frac{(1+\lambda)}{\mu + \gamma};$

- $\frac{\partial \underline{U}}{\partial c_L} = \frac{(1+\lambda)}{\beta} + \frac{\gamma}{\beta} \frac{\partial \widehat{U}}{\partial c_L}$

MRS_H and MRS_L are then equal to:

$$MRS_H = \frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{(1 + \lambda)}$$

$$MRS_L = \frac{(1 - \delta + k - \delta k) \frac{\partial \pi_L}{\partial t_L} - \gamma \frac{\partial \widehat{U}}{\partial t_L}}{1 + \lambda + \gamma \frac{\partial \widehat{U}}{\partial C_L}}$$

Case 2: $\gamma, \beta \neq 0$ and $\mu = 0$

In this case the partial derivatives of utility for H that we can derive from (3.33) and (3.35) are:

- $\frac{\partial \overline{U}}{\partial t_H} = -\frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{\gamma};$

- $\frac{\partial \overline{U}}{\partial c_H} = \frac{(1+\lambda)}{\gamma};$

Leading to:

$$MRS_H = \frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{(1 + \lambda)}$$

Looking at the low type, we can see that μ never enters in equations (3.34) and (3.36), leaving MRS_L unchanged.

For both types of individual, then, the marginal rate of substitution in case one is equal to the one in case two. What is interesting is to compare these marginal rates of substitution of H and L with the ones in symmetric information, in order to understand if and how the solutions have changed.

We can easily see that the marginal rate of substitution for high skilled individuals has not changed in asymmetry, meaning that individual's choices are not distorted. What has changed is the MRS_L. As we expected in this kind of adverse selection problem, to avoid mimicking, the government is forced to distort the choices of the low type. The high type has no incentive whatsoever to pretend to be someone else.

However, we are not able to determine the change in the size of the marginal rate of substitution. Remember that:

- With symmetric information: $MRS_L = \dfrac{\partial \pi_L}{\partial t_L} \dfrac{(1-\delta+k-\delta k)}{(1+\lambda)}$

- With asymmetries: $MRS_L = \dfrac{(1-\delta+k-\delta k)\frac{\partial \pi_L}{\partial t_L}-\gamma\frac{\partial \widehat{U}}{\partial t_L}}{1+\lambda+\gamma\frac{\partial \widehat{U}}{\partial c_L}}$

In the latter ratio than, the numerator is greater than in symmetry (since the marginal utility of the effort is negative), but greater is also the denominator, leaving us with an uncertain results.

To have a more complete picture, we try now to reflect on the initial input of resources that can complement or substitute the individual's hours of activities.

3.6. Maximization with the input q

In symmetric information, we can rewrite the FOCs as:

$$\begin{cases} \dfrac{\partial L}{\partial q_H} = \delta\dfrac{\partial \pi_H}{\partial q_H} + \delta k\dfrac{\partial \pi_H}{\partial q_H} - (1+\lambda) + \mu\overline{U^B}\dfrac{\partial \pi_H}{\partial q_H} - \mu\overline{U^M}\dfrac{\partial \pi_H}{\partial q_H} = 0 & (3.21) \\[2mm]
\dfrac{\partial L}{\partial q_L} = (1-\delta)\dfrac{\partial \pi_L}{\partial q_L} + (k-\delta k)\dfrac{\partial \pi_L}{\partial q_L} - (1+\lambda) + \beta\underline{U^B}\dfrac{\partial \pi_L}{\partial q_L} - \beta\underline{U^M}\dfrac{\partial \pi_L}{\partial q_L} = 0 & (3.22) \\[2mm]
\dfrac{\partial L}{\partial t_H} = (\delta + \delta k)\dfrac{\partial \pi_H}{\partial t_H} + \mu\dfrac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \mu\pi_H\dfrac{\partial \overline{U^B}}{\partial t_H} + \mu(1-\pi_H)\dfrac{\partial \overline{U^M}}{\partial t_H} = 0 & (3.23) \\[2mm]
\dfrac{\partial L}{\partial t_L} = (1-\delta + k - \delta k)\dfrac{\partial \pi_L}{\partial t_L} + \beta\dfrac{\partial \pi_L}{\partial t_L}(\underline{U^B} - \underline{U^M}) + \beta\pi_L\dfrac{\partial \underline{U^B}}{\partial t_L} + \beta(1-\pi_L)\dfrac{\partial \underline{U^M}}{\partial t_L} = 0 & (3.24) \\[2mm]
\dfrac{\partial L}{\partial C_H} = \mu(\pi_H\dfrac{\partial \overline{U^B}}{\partial C_H} - \pi_H\dfrac{\partial \overline{U^M}}{\partial C_H} + \dfrac{\partial \overline{U^M}}{\partial C_H}) = (1+\lambda) & (3.25) \\[2mm]
\dfrac{\partial L}{\partial C_L} = \beta(\pi_L\dfrac{\partial \underline{U^B}}{\partial C_L} - \pi_L\dfrac{\partial \underline{U^M}}{\partial C_L} + \dfrac{\partial \underline{U^M}}{\partial C_L}) = (1+\lambda) & (3.26) \\[2mm]
\mu[-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + U^*] = 0 & (3.27) \\[2mm]
\beta[-\pi_L\underline{U^B} - (1-\pi_L)\underline{U^M} + U^*] = 0 & (3.28) \\[2mm]
\mu \geq 0 & (3.29) \\[2mm]
\beta \geq 0 & (3.30)
\end{cases}$$

We can see from equations (3.21) and (3.22) that:

- $\dfrac{\partial \pi_H}{\partial q_H} = \dfrac{(1+\lambda)}{(\delta - \delta k + \mu\overline{U^B} - \mu\overline{U^M})}$;

- $\dfrac{\partial \pi_L}{\partial q_L} = \dfrac{(1+\lambda)}{(1-\delta + k - \delta k + \beta\underline{U^B} - \beta U^M)}$;

- $\dfrac{\partial \pi_H / \partial q_H}{\partial \pi_L / \partial q_L} = \dfrac{(1-\delta + k - \delta k + \beta\underline{U^B} - \beta U^M)}{(\delta - \delta k + \mu\overline{U^B} - \mu\overline{U^M})}$

In asymmetric information instead, the FOCs are:

$$\begin{cases} \dfrac{\partial L}{\partial q_H} = (\delta + \delta k + \gamma\overline{U^B} - \gamma\overline{U^M} + \mu\overline{U^B} - \mu\overline{U^M})\dfrac{\partial \pi_H}{\partial q_H} = (1+\lambda) & (3.31) \\[2mm]
\dfrac{\partial L}{\partial q_L} = (1-\delta + k - \delta k - \gamma\widehat{U^B} + \gamma\widehat{U^M} + \beta\underline{U^B} - \beta U^M)\dfrac{\partial \pi_L}{\partial q_L} = (1+\lambda) & (3.32) \\[2mm]
\dfrac{\partial L}{\partial t_H} = (\delta + \delta k)\dfrac{\partial \pi_H}{\partial t_H} + \gamma\dfrac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \gamma\pi_H\dfrac{\partial \overline{U^B}}{\partial t_H} + (1-\pi_H)\gamma\dfrac{\partial \overline{U^M}}{\partial t_H} + \mu\dfrac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \mu\pi_H\dfrac{\partial \overline{U^B}}{\partial t_H} + (1-\pi_H)\mu\dfrac{\partial \overline{U^M}}{\partial t_H} = 0 & (3.33) \\[2mm]
\dfrac{\partial L}{\partial t_L} = (1-\delta + k - \delta k)\dfrac{\partial \pi_L}{\partial t_L} + \gamma\dfrac{\partial \pi_L}{\partial t_L}(\widehat{U^M} - \widehat{U^B}) - \gamma\pi_L\dfrac{\partial \widehat{U^B}}{\partial t_L} - \gamma(1-\pi_L)\dfrac{\partial \widehat{U^M}}{\partial t_L} + \beta\dfrac{\partial \pi_L}{\partial t_L}(\underline{U^B} - \underline{U^M}) + \beta\pi_L\dfrac{\partial \underline{U^B}}{\partial t_L} + \beta(1-\pi_L)\dfrac{\partial \underline{U^M}}{\partial t_L} = 0 & (3.34) \\[2mm]
\dfrac{\partial L}{\partial C_H} = (\gamma + \mu)\left[\pi_H\dfrac{\partial \overline{U^B}}{\partial C_H} + (1-\pi_H)\dfrac{\partial \overline{U^M}}{\partial C_H}\right] = 1+\lambda & (3.35) \\[2mm]
\dfrac{\partial L}{\partial C_L} = -\gamma\pi_L\dfrac{\partial \widehat{U^B}}{\partial C_L} - \gamma(1-\pi_L)\dfrac{\partial \widehat{U^M}}{\partial C_L} + \beta\pi_L\dfrac{\partial \underline{U^B}}{\partial C_L} + \beta(1-\pi_L)\dfrac{\partial \underline{U^M}}{\partial C_L} = 1+\lambda & (3.36) \\[2mm]
\gamma[-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + \pi_L\widehat{U^B} + (1-\pi_L)\widehat{U^M}] = 0 & (3.37) \\[2mm]
\mu[-\pi_H\overline{U^B} - (1-\pi_H)\overline{U^M} + U^*] = 0 & (3.38) \\[2mm]
\beta[-\pi_L\underline{U^B} - (1-\pi_L)\underline{U^M} + U^*] = 0 & (3.39) \\[2mm]
\gamma \geq 0 & (3.40) \\[2mm]
\mu \geq 0 & (3.41) \\[2mm]
\beta \geq 0 & (3.42)
\end{cases}$$

In case 1, we obtain from equations (3.31) and (3.32):

- $\dfrac{\partial \pi_H}{\partial q_H} = \dfrac{(1+\lambda)}{(\delta + \delta k + \gamma\overline{U^B} - \gamma\overline{U^M} + \mu\overline{U^B} - \mu\overline{U^M})}$;

- $\dfrac{\partial \pi_L}{\partial q_L} = \dfrac{(1+\lambda)}{(1-\delta + k - \delta k - \gamma\widehat{U^B} + \gamma\widehat{U^M} + \beta\underline{U^B} - \beta\underline{U^M})}$;

- $\dfrac{\partial \pi_H / \partial q_H}{\partial \pi_L / \partial q_L} = \dfrac{(1-\delta + k - \delta k - \gamma\widehat{U^B} + \gamma\widehat{U^M} + \beta\underline{U^B} - \beta U^M)}{(\delta + \delta k + \gamma\overline{U^B} - \gamma\overline{U^M} + \mu\overline{U^B} - \mu\overline{U^M})}$

In case 2 instead, we will have:

- $\dfrac{\partial \pi_H}{\partial q_H} = \dfrac{(1+\lambda)}{(\delta + \delta k + \gamma \overline{U^B} - \gamma U^M)}$;

- $\dfrac{\partial \pi_L}{\partial q_L} = \dfrac{(1+\lambda)}{(1 - \delta + k - \delta k - \gamma \widehat{U^B} + \gamma \widehat{U^M} + \beta \underline{U^B} - \beta \underline{U^M})}$;

- $\dfrac{\partial \pi_H / \partial q_H}{\partial \pi_L / \partial q_L} = \dfrac{(1 - \delta + k - \delta k - \gamma \widehat{U^B} + \gamma \widehat{U^M} + \beta \underline{U^B} - \beta \underline{U^M})}{(\delta + \delta k + \gamma \overline{U^B} - \gamma U^M)}$

With respect to the situation in symmetry, we can note that:

- The marginal productivity of q_L is lower, since $\widehat{U^B}$ and $\widehat{U^M}$ are positive and $\widehat{U^M} < \widehat{U^B}$. This suggest that, if q and t are substitutable, the government in asymmetric information had to compensate with more resources to increase the probability of integration.

- The marginal productivity of q_H depends on the value of the multipliers γ and μ. If μ is different from zero, then also $\dfrac{\partial \pi_H}{\partial q_H}$ is lower in asymmetry than in symmetric information. If instead, μ is equal to zero, the difference between the productivity depends on the different value of γ and μ.

CONCLUSIONS

At the beginning of this work, we have tried to understand what integration is, why is in the policy agenda, and how OECD countries deal with it.

From the general overview of measures described in chapter one, we have learnt what are the main problems and challenges that governments face worldwide. At the same time, we have seen some interesting solutions and good practises that are, or should be, applied. One, over which there seems to be consensus, is the idea of designing integration paths tailored to individuals' needs and characteristics, so that to exploit their full potential, to allocate resources efficiently and to improve the coordination and collaboration between the different actors involved in the integration process.

In the second chapter of this work, we tried to understand what the main characteristics of migrants coming to western countries were. In particular, the focus has been on migrants' abilities and on how different push and pull factors could have a role in determining migrants' self-selection along this dimension. Unfortunately, the literature both theoretically and empirically shows how precise, unique and definite criteria to understand migrants' abilities are hard to find. Looking at the reasons why they left, or at the countries from which they fled, is not sufficient to infer on their skills and competences. Their productivities remain unobservable to governments, and a proper mechanism to reveal them should be applied.

In the third and final chapter of this work, we tried to design such mechanism. We imagined that governments have to deal with two different types of migrants: the high skilled and the low skilled. Their objective is to maximize migrants' probability of integration, since not including them generates costs for the society. However, the process of integration is costly both for the governments, who have to subsidize migrants and give them public resources, and for individuals, who have to put an effort in the activities for integration. Detecting the effort migrants need to put according to their productivity, and assuring they are collaborating at their maximum potential, is what governments have to do to spend efficiently public resources.

We have described two possible situations. At first, there is symmetry of information between the economic actors and governments have no difficulties in designing tailored contracts (defined by the quantity of public transfers and individual efforts). Later on, migrants' productivity becomes private information. Due to this asymmetry, governments need to distort individual choices at the optimum to make sure there is no mimicking between the two types. In order to do so and to build an incentive compatible revelation mechanism, they have to

exploits the available information they dispose of: the sorting condition is represented by individuals' preferences towards the effort and the transfer they receive. Thanks to the different cost migrants perceive when making an effort, the government is able to construct an incentive compatible solution. At the optimum it is possible to observe that low skill migrants are the one whose choices are distorted with respect to the situation of symmetric information; high skilled instead at the margin maintain the same willingness to work, in order to receive a certain amount of subsidy.

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IMPEGNO DI RISERVATEZZA DA PARTE DEL LAUREANDO

Il/La sottoscritto/a ………………………Bianca Navoni………………, nato/a …Brescia……………… il …15/07/1995……………..

residente a ………Brescia……………… in via ……Col di Lana………………….n. …21……...…

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…Migration Policy as an incentive mechanism: a theoretical analysis…………………………………

con relatore il Prof. ………Luciano Greco……………………………………………………………..

PRENDE ATTO E ACCETTA

che le informazioni, le conoscenze e i materiali riservati, ossia non pubblicamente accessibili, che gli verranno messi a disposizione dal relatore e/o dal gruppo di ricerca per lo svolgimento del lavoro di tesi/prova finale, possono rientrare nell'ambito di applicazione della normativa sulla proprietà industriale (D.lgs. n.30 del 10 febbraio 2005 e successive modificazioni) o essere oggetto di eventuali registrazioni di tipo brevettuale, o possono rientrare nell'ambito di progetti finanziati da soggetti pubblici o privati che hanno posto a priori particolari vincoli alla divulgazione dei risultati per motivi di segretezza.

SI IMPEGNA:

1. a mantenere la riservatezza sulle informazioni, conoscenze e materiali di cui sopra, evitando di divulgarli a soggetti diversi da quelli che glieli hanno forniti;

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3. a non compiere atti che possano essere di pregiudizio all'utilizzazione economica degli stessi da parte dei legittimi proprietari.

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Index

INTRODUCTION

Human migrations are an imperishable phenomenon: the reasons to migrate are, and will be in the future, numerous and variegated.

Over the past two decades, migration has increased rapidly (Frattini, 2017) and in 2019, the number of international migrants reached 272 million of people, up from 153 million in 1990 (UN DESA, 2019).

Avoiding or completely preventing human flows is impossible and migrants' integration and inclusion is a key police objective, even if challenging (OECD, 2020). From one side, the need of integrating migrants comes from states' commitments in taking care of people migrating out of desperation (UNGA, 2017). From the other, policy intervention is necessary to avoid economic and social costs connected with a failed integration. Moreover, a proper social and economic inclusion of migrants could bring positive returns to the country that will host them.

Despite these reasons, the long history of migrations, and the surge in migrant inflows in recent years, countries still struggle in managing the phenomenon. All over the world, movements of people are often considered as an emergency and legislation and policy lack a structured framework. From an overview of the main integration measures adopted in the countries involved by migration flows, emerges a scattered patchwork of actions undertaken at the local, national or international level, without proper planning, coordination and collaboration. Moreover, there is also a lack of data and information to evaluate the measures adopted and their casual effects on policy outcomes (Martin et al., 2016; OECD, 2019).

These problematics appear even more urgent considering that governments worldwide, even if unaware of the effectiveness of their integration policy, are already destining public resources to integration. An inefficient use of resources is detrimental both for migrants and residents people and aggravates the already high level of public concern for the effects in the short and long run of migrations (OECD, 2020).

In this work, we will try to address the problems that governments face in allocating resource to migrants. Our focus will be on the design of measures responding to specific migrants' needs and according to individual characteristics. The literature on migration seems to agree that

tailored approaches can be the key to efficiency: governments could save important resources if migrants were helped in reaching their full potential.

The main problem of individual's characteristics-policy based, is that usually many of them are unobservable to the public planner. As the literature show, trying to detect migrants' abilities based on their reasons to migrate or their geographical origin is not easy neither completely possible. Consequently, a problem of adverse selection arise that could be addressed through the creation of an incentive mechanism of revelation. In the final part of this work, we will try to design such mechanism in the context of migrants' integration and to derive some conclusions.

The following work is structured as follow: in the first chapter, we will present an overview of the main integration problems and measures experienced in western countries. The second chapter is dedicated to a literature review on migrants' self-selection. In the third and last chapter, a tentative model of migration policy as an incentive mechanism is presented. Finally conclusions are drawn.

CHAPTER ONE: INTEGRATION POLICY MEASURES

1.1. Some Definitions

Before understanding if, why, and how governments deal with migrants' integration, it is important to have clear in mind who migrants are.

According to the IOM, "migrant" is an umbrella term, which is not defined under international law and of which no universally accepted definition exists. As a generic term it reflects "the common lay understanding of a person who moves away from his or her place of usual residence, whether within a country or across an international border, temporarily or permanently, and for a variety of reasons" (IOM, 2019, p.132-133).

For the purpose of our analysis, the focus is on international migrants: individuals willing or forced to leave their country of origin. More specifically, we will concentrate on international migrants headed to western, industrialized countries. We will often refer interchangeably to the latter as 'destination' or 'host' or 'receiving' countries, while the countries from which migrants are leaving are named as 'source' or 'origin' countries.

The term 'international migrant' comprehends in itself a number of well-defined legal categories of people, or 'types' of migrants.

The main three categories analysed in the literature and based on migrants' reasons to leave are: humanitarian migrants, economic (or labour) migrants and family migrants.

The first category refers to people who have successfully applied for asylum in a country and consequently have been granted some sort of protection. Refugee, for example, belong to this categories; but different form or status of protection exist. At the same time, the term "humanitarian migrants" includes also migrants resettled through humanitarian programmes with UNCHR or other private sponsorship (OECD, 2016).

Economic migrants, instead, are "persons who leave their countries of origin purely for economic reasons not in any way related to the refugee definition, or in order to seek material improvements in their livelihood" (UNHCR, 2006, p.10).

Finally, with the term family migrants the literature refers to migrants admitted in a foreign country thanks to a family reunification process. Family reunification is "the right of non-nationals to enter into and reside in a country where their family members reside lawfully or of which they have the nationality in order to preserve the family unit" (IOM, 2019, p.72).

Clearly, in reality it is often difficult to understand the ultimate reason why a person decided to leave his/her own country and the categories defined above are not so tight and often they mixed up together. This leads to a series of problems both in everyday life when managing the integration processes, and in the literature when conducting an accurate theoretical or empirical analysis.

1.2. Why integration?

Despite the type, migration has been and, we can say with almost certainty, will be a phenomenon connatural of human activity. Migrant flows are hard to die. Over the past two decades migration has increased rapidly (Frattini, 2017), and according to OECD projections, flows from developing countries to the developed ones will increase, or at least remain constant, in the future. It is important to analyse migrants' pull and push factors and to forecast possible global migration scenarios if not to stop flows, to be better prepared in dealing with them (OECD, 2009).

Governments of western countries have alternated their effort between preventing migration and managing migrants' integration because for what the first policies cannot reach, the second need to be addressed. Even if preventing and mitigating the forces that drive large movements of people is useful, governments have also to recognize their duty to assist those who migrate out of desperation (UNGA, 2017).

Above all, migrants' integration is a moral imperative: not all migrants are refugees, but all refugees are migrants. In 1951, 196 states entered the *Geneva Convention*, recognizing their duty to admit all the individuals that enter their borders "unable or unwilling to return to their country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion" (UNGA, 1951). In that occasion was also defined the principle of non-refoulement such that no country could expel or return a refugee against his or her will to a territory where he or she fears threats to life or freedom (ibid).

States' commitment in taking care of humanitarian migrants does not end with the Geneva Convention. Multiple declarations and agreements have been signed to protect and assist humanitarian migrants (UNGA, 2017).[1]

Moreover, the question of integration has recently appeared on the international policy agenda as never before. To make some example: in 2016 was held in Istanbul the World Humanitarian Summit, organised by the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA); at the European Union level, many coordinated actions have been undertaken to respond to the increase in international migration; integration appeared more prominently also in the work of the G20 (OECD, 2019).

Nonetheless, in recent years states have gradually drift away from their commitments, making it more difficult for migrants to successfully apply as refugees.

The reason of such trend has to be found in the constant increase of another type of migration, the economic one. Since 1951, due to the growth of welfare states, the increase in inequality worldwide and the reduction of migration costs, people willing to migrate in search of better economic prospects have increased. As mentioned above, unfortunately is not always easy to understand who migrate in search of better opportunity and who migrate out of desperation. This gives economic migrants an opportunity to mimic asylum seekers and it presents governments with a serious screening problem. The easiest solution to it is to reinforce border policies and to augment the burden of proof to obtain refugee status, at the expenses of the most vulnerable. The failure of industrialized countries in assisting refugees resides in the very nature of international protection. Hospitality is a public good: everyone is better off with a refugee protection scheme in place, but the burden of cost is beard only by the host state (Bubb, Kremer, Levine, 2011).

The desire to curb migrations comes from the fear of its negative impact on the economy and the society of receiving countries. Migration is certainly a challenge and represents a substantial financial cost for governments. However, managing migrants' integration is not only a costly

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[1] See for example: "the report of the United Nations High Commissioner for Human Rights to the Human Rights Council on the compendium of principles, good practices and policies on safe, orderly and regular migration in line with international human rights law (A/HRC/36/42); the 2013 High-level dialogue on International Migration and Development; the United Nations Framework Convention on Climate Change; the Sendai Framework for Disaster Risk Reduction 2015–2030; the New Urban Agenda; the 2030 Agenda for Sustainable Development; the New York Declaration for Refugees and Migrants; and the Sustainable Development Goals" (UNGA, 2017, pg.2).

activity, but host states are more hesitant about its possible positive contribution to the local economy (Backman, Lopez, Rowe, 2020).

Beyond international obligations, migration could be an asset for western states. A rich body of literature in economics (micro and macro) investigates theoretically and empirically the impact of migration on the host country's economy (especially for what concern the labour market) and society. There is no unanimous consensus on the effects, however, many works stress the beneficial impact of migration in the long-run. In particular, immigration can be a key component of human capital to address labour and skills shortages, especially for those states facing ageing process and falls in the fertility rate (Backman, Lopez, Rowe, 2020).

Also Storesletten (see Bratsber, Raaum and Røed, 2017, p.3) suggests how migration could be a solution to the demographic and fiscal challenges faced by European countries due to ageing populations.

Migrants are mainly in their working age, meaning that they usually contribute the host state' finances more than the cost of services they receive. They inject around 85% of their earnings into the economies of host societies (UNGA, 2017).

In many OECD countries actually there is a demand "to replace the declining numbers of young workers, replenish retirement funds and raise productivity, as well as demand for caregivers to look after the elderly" (OECD, 2009, p.10). For this reason, many countries are actually attempting to attract more foreign students in order to successively integrate them into the workforce (ibidem).

Not to mention that migrants can fill jobs that natives do not want to do, boosting economic activity, and they could also offer expertise and entrepreneurship benefiting the host country innovation process (ONU, 2017).

More in general, since in the world there are countries with large productivity differences, unrestricted migrations of people could bring economic gains (Clemens, 2011).

However, as we will explain, for migration to have positive effects on the receiving countries' economies, a successful integration is crucial, especially in the labour market. Depressing effects on the natives' wages in low-skilled jobs and in the short run, represent one of the principal objections to immigration. However, to have a complete evaluation of migrants' performance and contribution, all the potentially productive years spent in the host country should be considered. "Simple cross-sectional comparisons of, say, employment rates between

immigrants and natives may not be informative about the ultimate economic consequences of immigration" (Bratsber, Raaum and Røed, 2017, p.3).

As mentioned, the debate on migration's impact in the short and long run is rich and complex. It is far from the purpose of this analysis to investigate it. We are more interested in the integration challenge that governments has to face, more or less willingly.

Before providing a general overview of the main integration measures and policies implemented nowadays, it is important to reflect on the nature and meaning of integration.

1.3. What is integration?

What does integration mean? What is the objective governments should tend to, and how can we measure the progresses or regressions of governments' policies in reaching it?

Unfortunately, there is no easy and unique answers to these questions, because "the concept of integration with respect to immigrants can take on a number of meanings" (Lemaître, 2007, p.10).

Lemaître (2007) explains how from one side we can think at integration simply in terms of socio-economic convergence between immigrant and native population. In this case, we are interested in the efficacy and efficiency of policies in eliminating or at least reducing the gap between the two groups, and the evaluation concerns some key statistical measures such as the employment rate, the earnings, the education level, the poverty rate, etc.

Otherwise, we can think at integration in a broader way as assimilation: "acceptance of, and behaviour in accordance with, host countries values and beliefs, including similarity of economic and social outcomes" (Lemaître, 2007, p.10).

In this sense, integration is even more complex since it should arrive to the complete cultural adaptation, meaning that the migrant has to abandon its own culture and beliefs. Between these two visions of integration, a wide spectrum of interpretations are possible.

The works of Robinson and Castles et al. (see Ager and Strang, 2008, p. 167) also stress how integration is a very chaotic concept, which varies by context and of which no commonly accepted definition exists.

Not only the definition of integration is contextual, but also the idea of who are the actors involved in the integration process has changed over time. At the beginning of integration studies, classical theories defined settlement as a linear process: immigrants had to change in order to fit with the mainstream culture and society. The process was though as an individual one, in which the only actor involved was the migrant. The length of the integration depended then on the individual characteristics of the migrant, like for example cultural distance (Garcés-Mascareñas and Penninx, 2016).

Successively this view was broadly criticised moving towards a "two-way process of integration" in which also the receiving society had to play a major role. The process of integration was now an active one, with two distinct actors involved: the migrant and the country of his/her destination (Unterreiner, Weinar, 2014).

This shift is clear also in the empirical research. Before the 1980s, the focus was only at the micro-level of individual migrants. It was after the 1990s that research switched also to the macro-level analysis of organizations and structural factors. In particular, cross-country comparisons of the same immigrant group gave the possibility to examine the contextual factors of destination countries (Pennix, 2013; Garcés-Mascareñas and Penninx, 2016).

Finally, even more recently, the approach to integration has changed to the transnationalism and development framework. Both theories have brought into the picture a third paramount actor: the sending country, even if they have not been able to research its role in the integration process (Garcés-Mascareñas and Penninx, 2016).

Even if now the there is a more comprehensive picture of all the actors involved in integration, still a unique definition of the concept lacks. The problem is that integration is more than a concept, is a policy goal and a target. For this reason, it is important to develop at least an operational definition of it, such that is possible to evaluate and range the measures of integration adopted by governments (Ager and Strang, 2008).

1.4. Integration measures worldwide

Shifting from the theoretical debate to the practise, policy makers usually struggle to design effective and efficient policy guidelines and strategies for integration. The existing literature laments the lack of benchmark integration models and stress the need for further research and evaluation of existing measures.

This lack of benchmark models becomes clear when looking at an overview of the integration measures developed in different host countries. For example, Martin et al. (2016) maps the different types of labour market integration support measures for refugees in nine EU countries (Austria, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden and the United Kingdom). Although differences across countries, the first problem they highlight, common to every state, is the absence of data and information. The solution should be surveys that follow migrants over time in order to proper evaluate the integration measures implemented and to reflect on impacts and causality. It would mean switching from simply descriptive studies, to quantitative ones. The need of quantitative studies investigating causal relationships between integration measures and their effects is compelling: governments already spend resources for integration; if they operate without the necessary planning or knowledge of the measures' effectiveness, it is detrimental for everyone, migrants and native citizens (Martin et al., 2016; OECD, 2019).

Another gap in the literature, is the absence of a proper analysis of the programmes implemented. Even if integration measures are designed after a proper evaluation of goals, means, benefits and costs, once implemented there is no explanation of "the mechanisms through which the designed activities lead to better labour market integration" (Martin et. al, 2016, p.19). To add complexity, migrants are usually part of "multi-component programmes" (ibidem) and it is difficult to evaluate the impact of a single measure. Finally, the optimal mechanism design is challenging because of a lack of external validity of the measures already undertaken: single policies or experimental measures are often implemented with a very low number of beneficiaries, leaving out any possibility of further analysis.

Absent any benchmark model and taking into account that immigration has always been considered by many European countries has an emergency, there is not a clear and unique policy of integration, and also countries' legislation lacks a structured framework.
The problem is that in receiving countries we assist at many different actions undertaken at the local, regional or national level, without any coordination. This leads to a patchwork of measures missing any strategy or coherence (Martin et al., 2016).
For this reason there is an urgent need of coordination across government levels and between the various actors involved, such that common minimum standards, at least in the same country, are granted (OECD, 2020).

1.5. Integration in and through the labour market

Despite the debate on the nature of integration, surely the success in the labour market is one of the most important and investigated aspect of migrants' inclusion. It is possible to affirm that without integration in the labour market, it is extremely difficult for migrants to blend in any other aspect of the host country's society. The literature stresses how the sooner is the access to the labour market, the easier the process of integration (see for example Lemaitre 2007; Ayer et al, 2016; OECD, 2016).

Moreover, labour market integration can be the key to unleash migrants' full potential, to make them self-reliant and productive citizens, with positive effects on the local economic productivity. This success in the labour market cannot happen and it is not beneficial if not coordinated with a serious investment in migrant's education and human capital formation (Backman, Lopez, Rowe, 2020).

However, the labour market participation in itself can be an optimal way to prevent the depreciation of the human capital migrants are already in possess of. Not to mention that through the labour market success, migrants become less reliant on the welfare state (Fasani, Frattini, Minale, 2018).

In this sense, an early entry in the labour market, upon arriving in the country, is beneficial also for the host country: migrants lower their welfare dependency and are not forced to join the informal labour market, incrementing a vicious circle of exploitation and criminality (Aiyar et al. 2016).

Finally, integration into the labour market is also crucial for the host country citizens' predisposition to accept immigrants since it seems to depend on migrants' potential economic contribution (Bansak et al. 2016).

Naturally, migrants' success in the labour market bring along also perverse effects on the native population, especially in the short run. As we mentioned, if large numbers of migrants rapidly enter a labour market, they can have a destabilizing impact on jobs and wages (UNGA, 2017). In particular, the competitive pressure is on low-earning workers.

However, it is not the purpose of this analysis to investigate these effects since they belong to the issue of whether migration should be contrasted. We are interested in finding an efficient way to manage migrants' integration, given that they already are in a country and governments need to deal with them, if not with the hope of profitable gains, at least to avoid the costs of uncontrolled migration.

Given the importance assigned to the labour market, among the first policies to be inquired in order to find an efficient model of integration there are labour market ones. How to build a system of incentives for migrants to integrate in the host country's labour market and for natives to help that process?

Before analysing the most common policies that have been enforced in western countries to facilitate the economic assimilation of migrants, it is important to understand the legal framework with whom immigrants have to confront and its implication for the integration process. Do migrants have full access to the labour market of the host country? At which conditions? How they can operate in it? How all these affect their incentives to integrate?

Not to all types of migrants is granted full access to the labour market (often there are legal barriers that make them turn into informal jobs). The situation is particularly critical for migrants who require asylum. In almost all OECD countries they cannot access immediately the labour market during the pendency of their asylum procedure (OECD, 2016). The times for processing a request of asylum vary from country to country, but it can arrive to last even an entire year. The European Union with Directive 2013/33/EU on Reception Condition of humanitarian migrants has fixed the limit of nine months, after which, even if the application is still ongoing, the asylum seeker can enter the labour market.

Beyond waiting periods, it is also common that the right to work is granted only after having met certain conditions (e.g. labour market tests, restriction to certain sectors, wage and priority check, no self-employment). It is quite clear the reason behind these restrictions: granting an unconditional access to labour market for asylum seekers would "leave the asylum channel prone to abuse by those seeking a job rather than international protection" (OECD, 2016, p.18). The consequences on the employment of the domestic workforce could be too negative.

Contrary to its major purpose, in some countries the labour market access is used as an incentive for asylum seekers to co-operate in their application procedure. In Norway and Sweden for example, labour market access is granted if asylum seekers actively assist in the procedure for obtaining valid documents (OECD, 2016).

More in general the legal framework for accessing the labour market is crucial for all the categories of migrants: not only it influence the incentives to integrate, but also determine the level of uncertainty with whom migrants have to cope. The idea behind temporary protection

is that it may facilitate returns to the origin country once the conditions improve. However, "it conveys the message that migrants are not expected to stay" (OECD, 2016, p.8).

It creates a situation of uncertainty, detrimental for taking on any activity: the incentives to invest in host country-specific human capital and to socially integrate are reduced (Adda, Dustmann, Gorlach, 2014). The uncertainty itself can be psychological distracting (Brell, Dustmann, Preston 2020). Most importantly, uncertainty deters also employers from hiring and training migrants.

Despite the legal framework, what are the labour market integration policy measures implemented by industrialized countries?

For what concerns European policies, despite differences across countries (social contexts, labour market structures, support measures), a sort of standard package of measures is often implemented. The four key elements of this package are: early skills assessment; introduction programmes including general cultural orientation, socio-professional one and even some training; language courses; access to job intermediation services (Martin et al., 2016).

1.5.1. Early skills assessment

This measure is often implemented and analysed also in countries outside of Europe. It is one of the main challenges and good policy practises to support the lasting integration of immigrants in all OECD countries: it is essential for a better integration to assess promptly foreign qualifications and individual skills and to take stock of them (OECD, 2016).

As one can imagine, assessing foreign qualification is a phenomenon involving the majority of immigrants: OECD-wide, almost two out of three immigrants have obtained their qualifications abroad (OECD, 2020).

The latter are broadly discounted in the labour market because of informational asymmetries. Since local employers' unfamiliarity with foreign education systems and skills assessments, foreign credentials do not send the same positive signal as domestic qualification. The consequences of this problem of adverse selection for immigrants are a higher risk of unemployment, of lower wages and of over-qualification (OECD, 2019). Over-qualification occurs when individuals work in occupations that do not match their skill levels. Since the main measure of skills is usually education, the literature recognizes as measure of over-qualification a measure of over-education that compare the worker's educational attainment to his/her occupation. In particular, migrants' educational level is compared with the mean or median one in the native population for a given occupation (Damas de Matos, 2014).

For these reasons, skills assessment is a key measure of interest if governments want to support the economic assimilation of migrants. However, the assessments should regard not only the formal recognition of foreign qualification (to reduce the risk of over-qualification), but also all the informal skills and previous job experiences. An instrument adopted in many OECD countries is the recognition of prior learning which can be a signal used to reduce uncertainties among employers in valuing qualifications. This method can vary by country, but usually involve interviews or aptitude tests and practical demonstrations in the workplace or in simulated scenarios. It is fundamental for grasping migrants' professional skills and experiences and present them to employers (OECD, 2016).

The recognition of prior learning helps migrant to enter the labour market and it is also a "quick, cost-effective mean to identify needs for further training and to prevent the duplication of training content for migrants whose foreign qualifications are not found to be equivalent to domestic ones" (OECD, 2016, p.31).

The duplication of training content is a major problem in migrants' integration. Courses and workshop are almost never designed according to individual needs and stock of abilities. In this way it is quite common that the immigrant spends time and resources on developing competencies (s)he already has and (s)he should only translate in order to better fit the peculiarity of the host country labour market. A cost-effective solution to this problem is bridging courses that enable immigrants to fill their specific gaps (OECD, 2016).

Offering tailored courses is difficult and expensive, but divide them in modules and exploit distance-learning programmes could be a solution. The latter in particular may help labour migrants to prepare for the receiving country' s labour market even before the departure, so that they could be immediately active at the arrival. It is crucial if recruitment of foreign workers is to play a role in responding to skills shortages needs of domestic employers (OECD, 2020).

More than migrants themselves, crucial stakeholders to consider when designing early skills assessments measures are employers. Employers know the skills they need and the specific pieces of information they are looking for when assessing credentials and they can provide valuable feedback for improving the procedures. If employers are consulted during this process, the risks of designing inefficient or unnecessary measures is reduced and it is easier to meet everyone's needs. Alongside OECD countries, there are good examples of engagement of employers in the process of recognition. For example, in Austria the Chamber of Commerce is involved in skills assessments and mentorship programs. In Sweden, both employers and unions contributed to the design of schemes to fast track refugees into a number of shortage occupations.

Important is also sharing information: create platforms with publicly available information concerning foreign qualifications and how to value them, can help employers in the decision of hiring migrants (OECD, 2016; OECD 2019).

Unfortunately, it is not always the case that the recognition of qualifications speeds up the labour market integration. Correa-Velez et al. (2013) states that (see Martin et al., p. 18) per se it could not help employers to overcome their doubts on foreign education. Moreover, migrants with recognised qualification might delay their entrance in the labour market because they are focused on finding a job in line with their qualifications and home country experiences. Employers on the other side reward host country work experience and this postpones migrants employment at least in the short run.

1.5.2. Introduction Programmes and Language Courses

All migrants should acquire the basic knowledge and skills necessary to find and maintain a job in the long run in the host country. Introduction programmes consisting of language courses, civic orientation courses and general overview of the host country labour market's rules and practises are one of the main instruments used by countries to help the process of integration (OECD, 2016).

According to the literature, the knowledge of the host country's language is crucial: it is associated with higher attainments in the labour market and so it may be important to support the process of economic assimilation (Dustmann and Fabbri, 2003).

The same consideration has emerged during an online survey conducted by the OECD, the German Ministry of Labour and Social Affairs and the association of German Chambers of Commerce and Industry concerning the labour market integration of migrants. Over 2000 German employers participated to the survey in 2017 whose main finding was that, regardless the company size and the type of work, employers consider a good knowledge of German language a fundamental competence, also for low-skilled jobs (OECD, 2017a). It seems to be the most important skill migrants need to acquire as soon as possible. From the same survey, insufficient language skills were shown to be the most frequently stated reason for not hiring refugees and asylum seekers (OECD, 2017a).

At the same time, also from the side of migrants, language difficulties are cited as the principal obstacle to employability (Fasani, Frattini, Minale, 2018).

In Europe, publicly financed language programmes are common practise and there is consensus on their benefits. However, they are not free from some downturns. The heart of the debate concern the slowness of theoretical studies and the benefits of learning by doing. If it is true that employment is in itself a way to acquire the language, all the formal requirements of a certain level of language, simply prevent migrants from getting a job. The question is then "if integration is powered by language acquisition or if it is the language acquisition a consequence of integration" (Martin et al., p.46). The same reasoning can be applied to introduction programmes: "as a kind of waiting period, they might contribute to delaying the integration of beneficiaries into the labour market rather than facilitating it" (ibid). Lemaitre in his work (2007) points out the same concern: since a long absence from work is associated with human capital depreciation, language instruction completed over a relatively short period of time has to be preferred.

Another solution to this problem could be language programmes alternated to workplace experience (see Lemaitre, 2007; OECD, 2016). The advantage of this type of programs is that migrants can have real-life language practise becoming familiar with work-related terms, while building relationships useful for finding a job. It is also a way to acquire the missing skills to obtain full recognition of job qualifications, as we have seen before (Martin et al, 2016). From this example is once again clear that co-operation with employer is crucial for developing highly effective measures.

New technologies can be a fundamental tool to increase the cost-effectiveness of courses for migrants. First of all, they have the advantage, with respect to face-to-face learning, of reaching everyone, even if in the most remote place. Moreover, they can be used pre-departure, anticipating the acquisition of the additional skills specific to the host-country human capital and they ease the design of more targeted contents.

Most importantly, technologies allow continuous learning, helping migrants to maintain skills in the long-run. This is crucial, because to equip migrants with the basic skills necessary in the host country labour market and society, multi-years investment in training and education are needed. The latter are costly, and they pay off only in the long-run. For this reason, learning should be continuous, but immigrants are usually underrepresented in adult education and training (OECD, 2020).

1.5.3. Job intermediation services

Job intermediation services can be helpful in alleviating labour market frictions typical of migrants' experience: lack of information of the host country labour market, limited social networks, uncertainty about residence status, legal barriers, etc (Battisti, Giesing, Laurentsyeva, 2019).

In European countries, there is a clear tendency to extend to migrants those job services offered to the general population, instead of setting up specific services (Martin et al., 2016).
There is no doubt that a customised approach is beneficial for an effective labour market integration and not only (Hagelund, 2005). Government policies should go in the direction of specific, individually tailored integration pathways (OECD, 2016).

However, it is often difficult for the public employment services, often already overwhelmed by high level of unemployment, to provide customised services for the specific needs of immigrants (Martin et al., 2016).

1.5.4. The role of employers

Of course, a key figure in the process of integration are employers. As mentioned, they are in a better position with respect to the government to value which foreign qualifications and work experiences are more useful. They are precious in designing what content should go into bridging programmes or vocational training (OECD, 2016).

Simultaneously they are key actors in the social-cultural integration of migrants and in their life beyond the labour market. For this reason, it is important to try to align their incentives with the ones of the integration policies and reduce the perceived higher costs that discourage them from hiring migrants (OECD, 20016; OECD, 2019).

According with certain studies, subsidise private sector employment with wage subsidy increase the employment probability. At the same time, other studies look at the effectiveness of wage subsidies as a signal that high entry wages are a significant barrier to immigrant integration: targeted and temporal exemptions from minimum wages may help at the beginning to reduce the disadvantages migrants face in the labour market (Ayer et al., 2016).

1.5.5. The role of labour market demand

No need to say that the basis for labour market integration is the labour demand in the host country. This can explain why labour market integration seems more difficult in Southern

European countries with respect to the Nordic ones, where actually also native workers emigrate in search of better employment opportunities. Already in 2014, an OECD study on labour market integration in Italy showed how unemployment rate for immigrants were quite high, but at the same time in line with the ones of native-born. This condition questions integration policy, if also natives are facing difficulties in integrating in the labour market. It may be useful to investigate transversal policies: think at solutions for both categories or design measures in which integration is not only a goal, but becomes a tool to solve long lasting problems of the host country (OECD, 2014).

The reflection on labour market demand opens up considerations on the geographical distribution of migrants across countries and within the same country. If labour market conditions influence the process of integration, the distribution of migrants along the country should reflect the distribution of the labour demand. It would be helpful granting them freedom of movement, not only within the country, but even in the European Union (Martin et al., 2016). According to Ayer et al. (2016), geographical mobility by migrants is useful to balance eventual asymmetric shocks in the labour market and by so contributing to the growth of the host country. Reducing restrictions on their geographical mobility would allow them to move to where labour demand is high.

The problem gets even more complicated when considering refugees. As already mention, hosting refugees can be considered as having the characteristics of a public good since the humanitarian benefit is non-rival and non-excludable (Hatton, 2016). Refugees in fact are admitted to satisfy basic humanitarian motives. Consequently, when a country hosts a refugee it is the only to bear the economic and social costs of this action, but also residents of another country benefit since refugees have been hosted. For this reason European countries struggle in distributing evenly refugees. Hatton (2016) suggest to create a market for tradable refugee quotas so that the costs of each state are taken into account.

The same happens also within a single country. Many governments want to distribute refugees and asylum seekers evenly across the country in order to share costs and avoid segregation (OECD, 2016). If these dispersal policies do not take into account labour market conditions and the so called "secondary migration" is not allowed, it can be quite detrimental on migrants' outcome.

At the same time, freedom of movement has some downturns. There can be concentration of migrants where housing is cheaper or where other migrants of the same nationality are already

located. This aggravated the problems of segregation, of uneven conditions of centres and peripheries and of anti-migration views (Darling, 2016; OECD, 2018; OECD, 2019).

1.6. Integration in and through social networks

"Without civil society organizations, a welcoming business environment and the support of local communities, integration policies are likely to be ineffective" (OECD, 2016, p.49).

The host society must be involved in the process of integration, or the latter is never going to happen and despite the effort, policies would be ineffective. From the mapping of good practises alongside OECD countries, it seems that a cost-effective way of promoting integration and together increasing interactions between immigrants and citizens could be mentorship programmes. They bring closer locals and migrants while helping the latter preparing for the labour market (OECD, 2016).

More in general all the activities that bring together locals and migrants are beneficial in the integration process. Galera, Giannetto, Noya (2018) analyse four different integration pathways developed by third sector organisations in four European countries, that had beneficial impact not only on the recipients, but also on the host community.

In all four cases, it has been crucial the creation of meetings and opportunity of cooperation between migrants and locals. Thanks to this collaboration, often locals change their mind-set towards immigrants. Moreover, since their local nature, these models of integration are often able to benefit the host territory with profits redistribution and to revitalise activities and places that were dying. The key to succeed is to engage the community in the design and management of the integration process, so that the integration policy is incorporated with the others territorial, educational, social, housing policies. This is helpful because allows to respond simultaneously to multiple challenges and migrants are usually empowered thanks to the fact that are not segregated with their problems (Galera, Giannetto, Noya, 2018).

Furthermore, volunteer initiatives help migrants entering the labour market because they are a boost for learning the host country language and strengthening social networks' formation (OECD, 2019).

Moreover, these organizations are usually able to find new approaches or innovative tools in the integration process: they are not mere implementer of public policies, but they are also able to identify the specific needs of migrants and local communities (Galera, Giannetto, Noya, 2018). Sometimes their ideas contribute to shape future policy measures: they are in the perfect

position to valuate whether policies work and they can give precious feedbacks on how integration measures should be adapted to better address migrants' needs. Migrants association should be a key interlocutor for policy makers so that policies would be designed not only for migrants, but also with them (OECD, 2019).

These experiences are not free from problematic issues. Third sector organizations and volunteers can play a positive role in a community. However, at the same time, they aggravate the already huge problem of coordination and fragmentation in managing migrants' integration. For this reason, they should be a precious instrument for governments to provide welfare, but should not be independent organizers. Governments should ex ante design the policy objective function, and then in it consider the role that NGOs can play locally. There is a need of tailored regulations and a deeper exploration and study of public-private partnership: they can have a big potential, but also become ineffective tools (Martin et al., 2016).

Moreover, it has to be considered that often these experiences born because of the inability of the State to quickly respond to pressing problems in local communities. "Expecting volunteers to take over tasks that are the responsibility of the state is not going to be viable in the medium or long run. […] Investing in the capacity of volunteers is therefore important, but the right balance must be found between supporting volunteers and continuing to offer professional, high-quality public services" (OECD, 2019, p.65).

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

Migrant integration is a complex subject: too many factors and variables take a role and too little is known about policies' effectiveness. In the literature, many studies have tried to analyse the phenomenon of integration from each possible angle. Governments and non-governmental organisations (NGOs) deal with this challenge and have to face and manage migration flows often unpredictable.

Even if no golden rules or perfect schemes have been found to tackle the question, the literature seems to agree that the key to a successful integration is to personalize the path of integration. It is vital to implement policy measures designed in accordance with individual characteristics and abilities (see for example Aiyar et al., 2016; Brell et al., 2020; OECD 2019; OECD 2020).

The first thing governments have to do is to understand the characteristics of the migrants knocking at the doors of their countries. Knowing migrants' skills and motivations gives the possibility to assign them to the more adapted integration programme, allowing a more efficient use of resources and a more successful process of integration.

Moreover, understanding how to detect migrants' abilities and motivations is crucial for governments wanting to attract, through their immigration policies, high-skill individuals. The reasoning behind such a consideration is quite simple: the higher the individual's skills, the higher the probability of employment, the larger migrants' net fiscal contribution and so the less negative is the sentiment of natives towards immigration (Boeri, 2010).

Also Cobb-Clark (2004) stresses the role of selection policy in influencing the formation of attitudes towards immigrants, and she also notes that by altering the skills of the migration flows, these policy can affect macroeconomic variables such as employment and wages (because they change the complementarity/substitutability of immigrants and natives).

Finally investigating migrant selection is fundamental in the discussion on brain drain. Increase in migration has given rise to concerns about countries with high emigration rates, especially developing ones: if only the more skilled and able individuals leaves for a better life, then their home country will face greater difficulties in developing and growing (Belot, Hatton, 2012). The same argument stands for countries generating high numbers of refugees: if the latter have better skills, once the country enters the reconstruction stage, it will be harder for it to regain prosperity and stability (Aksoy and Poutvaara, 2019).

These considerations lead the literature to argue in terms of determinants of migration, individual choices and human capital theory. What economic considerations affect the individual's decision to move? Are there personal characteristics that influence differently the costs and benefits of leaving a country?

If it is true that individual characteristics affect the migrating decision, then migrants are not a random sample of the population in their origin country, but they are systematically self-selected along certain characteristics, some observables and others not. Western countries are particularly interested in the analysis of migrant self-selection along the dimension of ability: are they high or low skilled? In other words, countries receiving migrants witness a phenomenon of positive or negative selection? Positive selectivity occurs when migrants entering a host state come from the upper skills distribution in their country of origin's population. The reverse is true for negative selectivity.

Despite the relevance of the subject, unfortunately "migrants' self-selection has been one of the most controversial topics in the migration literature" (Fernandez-Huertas, 2011, p.73).

2.2. Asymmetry of information and patterns of selectivity

At the very beginning of this stream of literature, Kwok and Leland (1982) introduced the debate on selectivity developing a model of asymmetric information to investigate the problem of brain drain in less developed countries (in particular, they looked at high-skilled colleges graduates who left their country for advanced studies in the Western countries).
Their focus is Taiwan's situation, where "more than 50,000 college graduates left the country for advanced studies overseas during the period from 1960 to 1979, but only 6,000 of them returned" (Kwow and Leland, 1982, p. 91). Since the economic conditions in Taiwan are far from justify this exodus, neither individual preferences can explain such high flows, Kwok and Leland (1982) suggests that the cause of these high numbers of migrants who do not return, is the presence of asymmetric information in the labour market.

In particular, in order to explain migration, they place the asymmetry in Taiwan. How to justify such a phenomenon? They imagine employers in the destination country (USA) are familiar with their national education system (where Taiwanese high skilled individuals are studying) and they already have experiences with foreign workers. These facts translate in a better knowledge of potential employees' abilities (which instead are not so clear for Taiwanese employers, mainly because its young trained abroad). Consequently, only foreign employers are able to offer a wage in line with the true productivity of the individual, while in the home

country employers have to base their wages on average productivity, meaning that their wage offers will be higher than true productivity for someone and lower for others. In particular, best workers who could aspire at higher wages, they would prefer not to come back. That is how the brain drain problem is generated and how western countries experience positive selectivity among migrants.

Interestingly Kwok and Leland (1982) underline the fact that market imperfection may drive individuals to leave their country even if originally they did not want to. This happens even when individuals face competitive wages in the two countries and have preferences for working home rather than abroad.

Few years later the publication of this paper, Katz and Stark (1984) commented it, underlining the fact that this positive selectivity is one of the possible equilibria with asymmetric of information. It could also happen that low skills individual migrate abroad. Crucial in determining the type of selectivity experienced is the location of the asymmetry of information: there is no reason why only Taiwanese employers should not be able to detect individuals' true productivity. They clarify their argument by the following graphs.
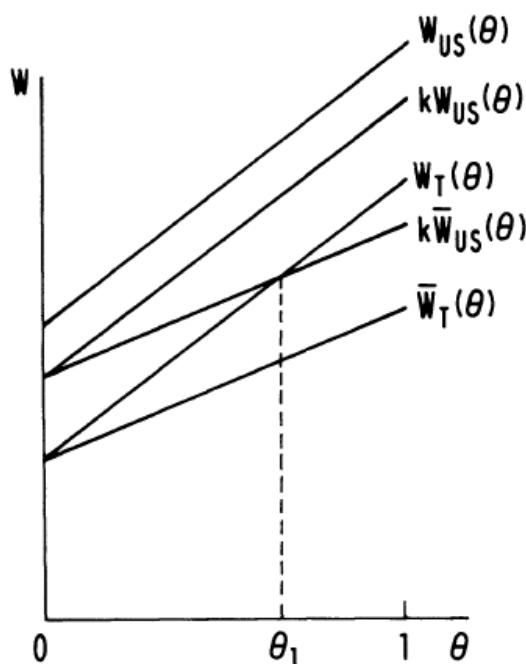

Figure 2.1. Source: Katz and Stark (1984), p. 534.

In this figure it is represented the productivity (θ) of the individual on the horizontal axis, while in the vertical axis it is pictured the wage (W) they can gain. Productivity is distributed on the

interval [0, 1] with distribution functions $F_{US}(\theta)$ and $F_T(\theta)$. $W_{US}(\theta)$ and $W_T(\theta)$ are wages paid to workers of productivity θ respectively in the Unites States and in Taiwan. However, these two are not the wages the individual compare when deciding where to live. Katz and Stark (1984), as in Kwow and Leland (1982), assume individuals have a preference for their home country, meaning that they discount US wages by a parameter $k<1$. When making migration decision, they compare $kW_{US}(\theta)$ to $W_T(\theta)$. Furthermore, they assume that in a given occupation the wage differential between the two states does not vary with the productivity. Two cases can be distinguished.

Looking at the graph it is clear that if the difference between the U.S. and Taiwanese wage is sufficiently large, so that the $kW_{US}(\theta)$ line lies above the $W_T(\theta)$ line, with perfect information all individuals will move to the USA. The situation, however, could change considering the effect of information asymmetry. If USA employers cannot perfectly detect θ, they could only offer wages equal to the average productivity: $\overline{W_{US}}(\theta)$. Then, comparing $W_T(\theta)$ to $\overline{W_{US}}(\theta)$, only the less skilled individuals with $\theta<\theta_1$ migrate. If however, also in Taiwan the true productivity is not observable, Taiwan employers are forced to offer an average wage $\overline{W_T}(\theta)$ and the situation would come back to a complete exodus.

A different scenario is depicted when the difference between the U.S. and Taiwanese wage is small so that the $kW_{US}(\theta)$ line lies below the $W_T(\theta)$ line, as it can be seen in this second figure.
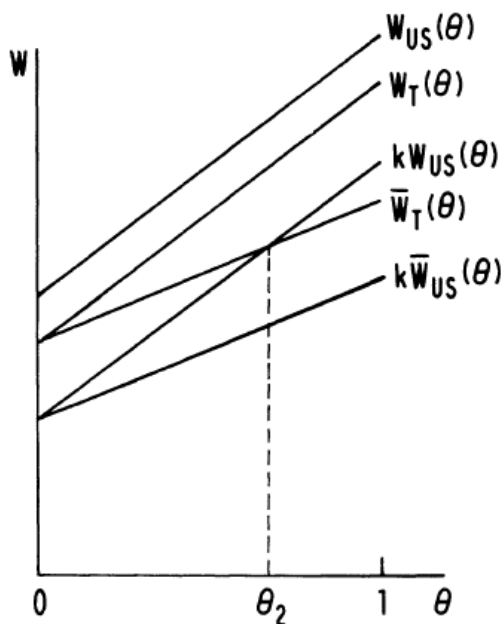

Figure 1.2. Source: Katz and Stark (1984), p. 534.

The notation is the same as Figure 1, and it is possible to observe that now, in the scenario with perfect information $W_T(\theta)$ is always higher than $kW_{US}(\theta)$, meaning that migration does not occur. The same it is true if we compare $k\overline{W_{US}}(\theta)$ to $W_T(\theta)$ when there is asymmetry of information in the USA. When instead also Taiwanese employers offer the average wage $\overline{W_T}(\theta)$, there is migration for the high skilled individuals, the one with $\theta>\theta_2$. This is actually the case described by Kwow and Leland (1982), but it is only one of the possible scenarios.

The concept that Katz and Stark (1984) want to stress is that several situations can verify, and the critical point is to understand if and especially where asymmetries of information are present. They claim that the pattern of labour migration with asymmetries differs substantially from the perfect information and interesting paths can rise.

After this first short analysis, born as a comment on Kwow and Leland (1982), Katz and Stark (1987) developed their own model of international migration under asymmetric information, maintaining Kwok and Leland (1982)'s framework. The main results of the model are that several scenarios of migrant selection are possible and asymmetric information tends to reduce the skill level of migrants. However, they introduce also the possibility for workers to signal their ability. In this case, a U shaped pattern of migration can be an equilibrium: individuals both from the top and the bottom of the skill distribution may migrate, while individuals from the middle part of the distribution stay in the home country.

Finally, Katz and Stark (1987) underline how risk aversion of employers or of employees could also be a critical factor in determining the migration equilibria. It is a topic that should be further explored, together with the role of government in migration policy, which could be crucial for the different equilibrium patterns and should be incorporated in the model.

2.3. Migration as investment decision

Another strand of literature models migration as an investment decision, following the seminal contribution of Sjaasstad (1962) who introduced the human capital approach in the migration framework. Income-maximizing individuals compare the expected utilities they can reach worldwide and decide to move wherever their utility is higher. Since earnings and costs expectations depend on individual characteristics, the latter play a key role in migration choice and consequently in migrant selectivity: only individuals with higher returns to migration will migrate, considering their observable and unobservable characteristics. Therefore, in order to understand selectivity, the central issue are the individual differences between migrants and non-migrants.

A milestone in this strand of literature is Borjas (1987)'s model, developed looking at Roy (1951)'s model on occupational decisions.

His analysis starts from the weakness of what he defines the "first generation" studies of the literature on migrant selection (Chiswick, 1978; Carliner, 1980; De- Freitas, 1980).

These papers concentrated their reasoning on the fact that the age-earnings profile of immigrants is steeper than the one of natives, so that after an initial period of adaptation, immigrant earnings overtake the earnings of comparable natives. The explanation behind these results, according to them, can be discovered looking at the human capital theory: earnings of immigrant grow faster because migrants have stronger investment incentives. Chiswick (1978) states that migrants are actually a self-selected group and so immigrants may be more able and highly motivated.

Borjas (1987) challenges these results: they come from the use of a single cross-section dataset, which cannot allow for the distinctive identification of aging effects and cohort effects. Consequently, a series of questions remains unsolved: are cohort quality and immigrants self-selection related? Is there positive or negative selection among migrants? If the selection mechanism changes over time, what is the reason behind it?

Borjas (1987) tries to answer these questions through the construction of a theoretical model in which individuals decide if to migrate looking at income differential in alternative countries, net of the migration costs. The characteristics of income distribution determine the type of selection that arises when individuals maximize their utility.

In the model citizens of country 0 choose whether to migrate to country 1 on the basis of the wages they can earn in each respective country. Earnings are distributed as $\ln w_0 = \mu_0 + \varepsilon_0$ in country 0 and as $\ln w_1 = \mu_1 + \varepsilon_1$ in country 1. So individual earnings are in both cases decomposed in a part of observables socioeconomic variables ($\mu_0 \ and \ \mu_1$) and a part of unobserved characteristics ($\varepsilon_0 \ and \ \varepsilon_1$). The latter variables are distributed as a normal with zero mean and variance σ_0^2 and σ_1^2 respectively.

The individual decides to migrate when the index function $I = \ln \frac{w_1}{(w_0 + C)}$ is positive (C stands for the mobility costs). The latter can be rewritten as: $(\mu_1 - \mu_0 - \pi) + (\varepsilon_1 - \varepsilon_0)$, where π represents the "time-equivalent" measure of migration costs, defined as $\pi = C/w_0$. π is constant across all individuals in the country of origin, since it express a fraction of the home forgone earnings, and it represents the cost of the time spent migrating.

From this simple model, Borjas (1987) draws the conclusion that the selection of migrants depends entirely on the ratio of variances in the income distributions of the country of origin

and destinations, while differences in mean incomes, or migration costs do not affect it. Particularly:

- If income is more dispersed in the country of origin ($\sigma_0^2 > \sigma_1^2$), it is as if the destination country "insures low-income workers against poor labour market outcomes while taxing high-income workers (relative to the country of origin)" (Borjas 1987, p. 534). This leads to negative selectivity, since the low-income workers have greater incentives to migrate;

- On the contrary, if income distribution is more unequal in the destination country, positive selectivity happens.

Since, according to Borjas (1987), income is more unequally distributed in the large number of Third World countries, income-maximizing behaviour is inconsistent with the positive selection of migrants.

Borjas (1987) is a seminal contribution of the literature on migrant selectivity and has been questioned and tested from both a theoretical and an empirical point of view by several subsequent papers.

Chiswick (1999), for example, harshly criticize Borjas (1987). His model amends Borjas' and reaches the exactly opposite conclusion on selectivity.

He assumes that the return on migration are written as:

$$r = \frac{W_b - W_a}{C_f + C_d}$$

where W_b represents earnings in the destination and W_a in the origin. C_d are the direct costs of migration, which include not only the cost of the journey, but also the cost of relocating once arrived (cost of adjusting consumption and work to the new destination). C_f represents the cost of foregone earnings, a sort of opportunity cost of migration: it is the money the individual could have gained remaining in his/her country during the period of migration. It is composed of the value of time in the origin country (the wage) multiplied by the time units necessary for the migration (which includes also the adjustment period).

The individual migrates "if the rate of return from the investment in migration (r) is greater than the interest cost of funds for investment in human capital. The interest cost of fund is lower, the greater the person's wealth and access to the capital market" (Chiswick, 1999, p. 181).

In the first place, Chiswick (1999) assumes that there are two categories of individuals: high skilled (h) and low skilled (l), and that both the individuals and the employers know these abilities; hence, there is no asymmetric information. He also assumes that wages in the origin and destination countries for the high skilled workers are a fixed multiple of wages of low-skilled workers:

$$W_{b,h} = (1 + k)W_{b,l}$$

$$W_{a,h} = (1 + k)W_{a,l}$$

It follows that the gain/loss of wages when moving to the destination country is always *(1+k)* and is independent of the level of ability. Contrary to Borjas (1987), there are no differences between low and high skilled in income dispersion between origin and destination country.

For what concerns costs, Chiswick (1999) first assumes that the direct ones do not varies with ability. He also assumes that there are no differences in managing the costs between high and low skilled individuals, meaning that abilities do not affect in efficiency the whole migration and adaptation processes. However, even if ability does not directly affect the costs, the latter variate among the two types of individuals. The reason is that the costs of foregone earnings (C_f) are higher for the high skilled individuals. Since wages of high skilled are higher than the wages of low skilled, and C_f is computed as the individual's wage multiplied by the time units of the migration period, it follows that $C_{f,h}$ is higher than $C_{f,l}$. More specifically, $C_{f,h} = (1 + k)C_{f,l}$.

The rates of return are:

$$r_h = \frac{(1 + k)W_{b,l} - (1 + k)W_{a,l}}{(1 + k)C_{f,l} + C_d} = \frac{W_{b,l} - W_{a,l}}{C_{f,l} + \frac{C_d}{(1 + k)}}$$

$$r_l = \frac{W_{b,l} - W_{a,l}}{C_{f,l} + C_d}$$

Thus, $r_h > r_l$ (implying positive self-selection), as long as earnings increase with ability (k>0) and there are positive direct costs of migration ($C_d > 0$). If there are no direct costs or there is no labour market premium for higher abilities, there would not be selectivity in migration, since return would be equal for high and low skilled. High direct costs reduce the overall incentive to migrate, but they increase the probability of positive selection: high-skilled workers have larger margins to compensate migration costs, because of their greater earnings.

However, it is not reasonable to assume that abilities do not affect efficiency. As high-skilled individuals are more productive in the labour market (for which they are compensated with higher wages), it is reasonable to assume, according to Chiswick (1999), that they are more efficient also in migration, in the investment in human capital. There are several reasons to justify such an assumption, for example the investment in migration requires less time for abler individuals, or direct costs for them are lower.

In the first example, the effect of greater abilities operates through the opportunity cost of migration. As already seen, C_f is equal to the wage in the origin country multiplied by the time units (t) necessary for migrating. If high skilled individuals have a shorter migration period, they have a lower t ($t_h < t_l$), and it follows that their opportunity cost is lower. $C_{f,l}$ and $C_{f,h}$ can be written as:

$$C_{f,l} = t_l W_{a,l}$$
$$C_{f,h} = t_h W_{a,h} = t_h (1 + k) W_{a,l}$$

Due to this difference in the value of t, migrants would be positive selected even in the absence of direct cost. If then it is also assumed that migrants with greater abilities are more efficient in travelling or in relocating once arrived in a new country ($C_{d,h} < C_{d,l}$), the difference in rate of return among high and low skilled is even greater. Assuming a direct cost efficiency parameter $\lambda<0$, which differentiates $C_{d,h}$ and $C_{d,l}$ such that $C_{d,h} = (1 + \lambda)C_{d,l}$, the rate of return for high skill individuals becomes:

$$r_h = \frac{W_{b,l} - W_{a,l}}{C_{f,l} + \dfrac{C_{d,l}(1 + \lambda)}{(1 + k)}}$$

Meaning that the higher the efficiency in handling direct costs (higher lambda in absolute value), the larger the return for the high skilled with respect to the low skilled.

As mentioned before, Chiswick (1999)'s model differs from Borjas (1987) since it assumes that the distribution of wages is equal in the origin and destination countries (the ratio of variances in the income distribution is always equal to one). The model can be extended in order to consider that different countries have different wages differentials relative to abilities.
To align perfectly to Borjas (1987) framework, Chiswick (1999) also refrains momentarily from considering efficiency in migration.
Assuming no efficiency in time use and no direct costs, returns are now equal to:

$$r_l = \frac{W_{b,l} - W_{a,l}}{tW_{a,l}} = \frac{1}{t}(\frac{W_{b,l}}{W_{a,l}} - 1)$$

$$r_h = \frac{W_{b,h} - W_{a,h}}{tW_{a,h}} = \frac{1}{t}(\frac{W_{b,h}}{W_{a,h}} - 1)$$

Under these assumptions, the driver of migration incentives is the ratio of wages in destination and origin countries and so results similar to Borjas (1987) are reached. However, Chiswick (2000) underlines that if the ratio of wages is greater for low skilled, positive selectivity will be less intense, but not absent. He in fact imagines that in reality efficiency in migration is present, meaning that greater income inequalities in the country of origin determines no positive selection only if this effect offsets the effect of efficiency in costs. In this framework huge wage differentials across countries between high and low skilled are requested to have negative selection.

Chiswick (1999) is important also because introduces the problem in selectivity across migrant categories. A rich field of the self-selection's literature discusses the distributions of abilities among migrants belonging to different categories (mainly economic and humanitarian migrants). However, this line of discrimination does not seem to better enlighten the problem and no consensus is found.

Chiswick (1999)'s model described above, explains the behaviour of economic migrants who base their decision to migrate on measured returns; it is not suitable for migrants that leave for non-economic reasons. For them "the favourable self-selectivity for labour market success would be expected to be less intense" (Chiswick, 1999, p. 184). Nations can affect migrants' self-selectivity through their immigration policies. Screening can be made dependent on skills or not (as for refugees) and depending on the criteria that are used, the pool of immigrants arriving in a country will be more or less educated.

These early studies highlight that the theoretical prediction about the type of selectivity (positive or negative) depends ultimately on the assumptions made and the way in which migration costs are designed plays a central role. For example, Borjas (1987) arrives to the conclusion that selectivity depends on the dispersion of wages in the countries. This result derives from the fact that wages depend on an unobservable component with a certain variance and from his assumption of constant migration costs. Chiswick (1999) instead thinks migration costs as different among individuals and shows how huge wage differentials among countries are required in order to witness negative selection. Both models have reasonable assumptions and that is the reason why Fernandez-Huertas Moraga (2011) affirms: "studying the selection

of migrants thus becomes an empirical question" (ibid, p.73). Unfortunately, the problem is not solved through the use of data; it is actually magnified: since Borjas (1987) there has been many studies that using different (or even the same) datasets reached very different results.

Several papers have focused on the controversial issue of migration flows from Mexico to the United States. According to Borjas (1987) theory (and empirics), migrants from Mexico should be negatively selected. However, many empirical studies found the opposite results, for example Chiquiar and Hanson (2002) and Orrenius and Zavodny (2005). While Ibarraran and Lubotsky (2007) found negative selection.

In a later paper, McKenzie and Rapoport (2010) claim that these contrasting results can be explained through the role of migration networks that can alter substantially the pattern of self-selection. Communities in which migration networks (number of individuals who already migrated) are weak favour migration of higher skilled workers and vice versa for communities with strong migration networks. This element has not been usually considered in empirical models; consequently, such models suffer of a relevant omitted variable problem, which explains why different datasets yield different results on the sign of selectivity.

The role of migration networks directly descends from the interpretation of migration costs. As seen in Borjas (1987), and in many interpretations of this model, costs are proportional to wages at home, but there is no efficiency in migrating; costs are assumed to be decreasing in skills in Chiswick (1999). According to McKenzie and Rapoport (2010) migration is costly, involving not only upfront monetary costs, but also search and information and psychological costs. All these costs varies with education level (fixed costs can be met by high skilled individuals with less hours of work or with lower borrowing costs; collect information is easier for more educated) and if they are large enough (and credit constraints binding), positive selection should emerge. The focus of all the debate on self-selection should then be on determining the migration costs of given "communities". In this sense, networks play a role: they diminish migration costs since they provide information (on border crossing, smugglers, etc.), they provide housing services or help relaxing the credit constraints. According to the authors, these effects are more beneficial to low-skilled individuals, leading to a negative selection wherever these networks are particularly strong.

They develop their intuition first through the design of a theoretical model, which is based on Chiquiar and Hanson (2002), to allow for network effects. Then, they empirically test the model using survey data from Mexico. Their work suggests that negative selection is more probable where there are stronger networks effect, in line with the hypothesis that a critical factor in determining who migrate is high costs of migration.

The crucial role of networks in migration decision is stressed also by Hatton (2020). He concentrates on asylum migration to the developed world and he finds that "the most powerful single variable influencing asylum-seeker flows to a country is the stock of previous migrants from the same origin" (Hatton, 2020, p. 85).

These findings help in part to reconcile the conflicting results about Mexicans' selection found in the literature and at the same time suggests that the more migration, the more negatively selected migrants are.

Another effort to address conflicting results on migrant selectivity was made by Grogger and Hanson (2011). They aim at reconciling all the empirical findings of the literature on migrant selectivity with the Roy's income maximization framework. According to them the key is focusing on absolute wage differences, consistent with linear utility, rather than on the relative ones, consistent with log utility.

Since Borjas (1987) migrants' self-selection has been explained looking at the variances in income distributions across countries. No role is played by differences in mean incomes. And as Borjas (1987) correctly pointed out, usually in less developed countries wage differentials by skill level are higher than in developed countries. Only individuals at the bottom of skills distribution are encouraged to migrate, while the incentive for high skilled individuals is not so strong.

Grogger and Hanson (2011), testing empirically different model specifications, find that the data reject log utility, suggesting migration actually responds to absolute rewards to skill. Since absolute skill-related earning differences are instead much larger in destination than in source countries, positive selection of migrants is a rational outcome. Through this specification is possible to reconcile the Roy model with strong positive selectivity. Moreover, Grogger and Hanson (2011) stress that many factors can affect the selection of migrants and that could be the reason of the divergence in the empirical findings.

Their work is not limited to the analysis of migrant selectivity, but it explores also the scale of migration, and the phenomenon of positive sorting (i.e., migrants are more likely to settle in destination countries with high reward to skills). This interest comes from the simple observation of data on OECD migration flows: US and Canada, although receive 51.4% of OECD's immigrants, attract the 65.5% of those with tertiary schooling (more than 13 years of education). On the contrary, Europe is able to attract only the 23.6% of tertiary-educated OECD immigrants, on a total percentage of 38.4 OECD immigrants.

Both positive selection and positive sorting, according to Grogger and Hanson (2011), can be explained by a simple model of income maximization.

Individuals compare wage differentials in order to decide whether to migrate. Differently from Borjas (1987) the wage depends entirely on the return on education investment- primary (μ_h), secondary (δ_h^2), or tertiary (δ_h^3)- and there is no room for the unobserved characteristics of the individual. According to this framework, the individual i with skill level j migrating to destination country h from the source country s, gain:

$$W_{ish}^j = exp(\mu_h + \delta_h^2 D_{is}^2 + \delta_h^3 D_{is}^3) \tag{2.1}$$

where D_{is}^j is a dummy variable equal to one if the individual has schooling level j.

The individual also faces migration costs:

$$C_{ish}^j = f_{sh} + g_{sh}^1 D_i^1 + g_{sh}^2 D_i^2 + g_{sh}^3 D_i^3 \tag{2.2}$$

The authors assume that costs have two components: a fixed one, f_{sh} (cost of moving), and one that varies by skill level, g_{sh}^j (we can think about costs influenced by linguistic and geographic proximity among the countries or by the destination country's immigration policies) which can both be positive or negative.

The model uses a linear utility function dependent on the difference between wages and migration costs and also on an unobserved idiosyncratic term (ε_{ish}^j) with i.i.d. distribution:

$$U_{ish}^j = \alpha(W_{ih}^j - C_{ish}^j) + \varepsilon_{ish}^j \quad \text{with } \alpha > 0 \tag{2.3}$$

Assuming individuals choose whether and where to migrate maximizing their utility, it is possible to write the log odds for individual of ability j of migrating to h versus remaining in s as:

$$\ln \frac{E_{sh}^j}{E_s^j} = \alpha(W_h^j - W_s^j) - \alpha f_{sh} - \alpha g_{sh}^j \tag{2.4}$$

where E_{sh}^j is the population share of education group j in s that migrate to h, while E_s^j the one that reamins. Already from this equation it is possible to see that the skill group-specific log odds of migrating should depend positively on the wage difference in skill-specific wages and negatively on costs. To understand emigrant selection the authors look at the difference of this equation between tertirary and primary educated individuals:

$$\ln\frac{E_{sh}^3}{E_{sh}^1} - \ln\frac{E_s^3}{E_s^1} = \alpha[(W_h^3 - W_s^3 - g_{sh}^3) - (W_h^1 - W_s^1 - g_{sh}^1)] \tag{2.5}$$

On the left side of equation (2.5) there is the difference in skill mix between migrants and non-migrants: if it is positive, then there is positive selectivity. Since $\alpha > 0$, this happens if the wage difference between the source and destination, net of skill varying migration costs, is greater for high-skill workers.

To investigate instead migrants' sorting across destinations, it is sufficiently to collect the terms of the latter equation that vary only by source country to yield to:

$$\ln\frac{E_{sh}^3}{E_{sh}^1} = \alpha(W_h^3 - W_h^1) - \alpha(g_{sh}^3 - g_{sh}^1) + \tau_s \quad \text{with } \tau_s = \ln\frac{E_s^3}{E_s^1} - \alpha(W_s^3 - W_s^1) \tag{2.6}$$

Equation (2.6) shows that migrants sort themselves across destinations on the basis of skill rewards, meaning that if a country h has higher return to skills than country k, it will have more skilled migrants with respect to the mix of country k.

Equations (2.4), (2.5) and (2.6) highlight the role of fixed costs and absolute wage differences in driving the pattern of selectivity. Since Borjas (1987) much of the literature looks instead at relative returns and costs proportional to income. As if, individuals look at the variances and not at the means of income distributions across skill levels, when deciding if and where to migrate. Moreover, costs are interpreted as opportunity ones, meaning that migration is more expensive for individuals with higher skills.

To compare the two settings, Grogger and Hanson (2011) adapt their model using logarithmic utility and an error term that is proportional and not additive. To test their model with linear utility and the one with relative returns to skills, they use the data collected by Docquier, Lowell and Marfouk (2009) from the national statistical offices of OECD countries.

In line with their theory they find positive and significant coefficient for the selection and sorting of migrants, showing that absolute wage gap can be higher for skilled emigrants, even

if the relative gap is not. This is particularly true when considering the post-tax wages, which can also contribute to explain the great attractiveness of North America: not only these countries have relatively large pre-tax skill-related wages difference, but also the tax systems are less progressive.

According to Grogger and Hanson (2011) absolute wage differences are a better predictor of migration pattern because linear utility model is free from the restriction that the decreasing marginal returns to income are comparable among source-destination countries. It is unlikely that they "matter equally when comparing incomes of $3000 a year in Ecuador to $15,000 a year in Spain as when comparing $8000 a year in Turkey to $40,000 a year in Germany, yet log-linear requires that they do" (Grogger and Hanson, 2011, p. 45). Using linear utility marginal returns are not considered at all. However, given that among the analysed countries there are huge differences in income, Grogger and Hanson (2011) believe their restriction abuses the reality less than the strong curvature required by logarithmic utility.

Grogger and Hanson (2011) recognize that numerous other factors can influence selectivity and sorting, e.g., geographic, linguistic, and political relationships between countries. Testing for these "exogenous" factors they find that:

- English-speaking countries receive more migrants than others, ceteris paribus, and that their migrants are also better educated. At the same time, given a certain country of origin, its migrants are higher in destination countries that share with it a common language. These migrants are also better educated than non-migrants of the same origin country and also than migrants from the same source country leaning towards other destinations. This phenomenon seems to suggest that migrants are aware of language being a strategical tool to gain higher rewards to skill.

- Contiguity increases the scale of migration, but reduces the skills of migrants. The interpretation of this fact, according to Grogger and Hanson (2011)'s conjecture, may be that migrating is easier between neighbouring, especially the illegal one.

- A negative effect characterises also countries with colonial past. Recent literature (Pedersen et.al, 2004; Mayda, 2010) points out the role of the economic and social networks between a country and its former colonies in increasing bilateral migration flows. The results found "are consistent with these linkages disproportionately affecting migration of the less-skilled" (Grogger and Hanson, 2011 p.51).

In their study, Grogger and Hanson (2011) focus on the question of if migrants are more skilled than the population remaining in its origin country. They do not investigate if different types of migrants (economic and humanitarian ones), presents systematic differences in their skill levels. However, in the empirical analysis they find an important role of immigration policy in affecting selectivity. Generous asylum policies seem to reduce immigrants' skills with respect to the rest of the population remaining in its home country (non-migrants). Moreover, a generous asylum policy in a certain host country reduces the skills of migrants in that country with respect to migrants directed towards other destinations. Grogger and Hanson (2011) explain this finding suggesting that destinations that allocate higher share of visas to refugees may limit opportunities to entry to more skilled migrants. However, they are not able to provide a deeper and more complete analysis due to the absence of data.

All the results described above derive from the model with linear utility (absolute wage differences).Testing the same regressions on the basis of the log-utility model brings to different results.

Belot and Hatton (2012) use the same dataset of Grogger and Hanson (2011) for the empirical estimation, and build on the Roy-Borjas model, focusing on why the education content of emigrants to OECD countries differs so much among countries of origin. The migration literature has deeply discussed the mechanisms involved in the self-selection of migrants, especially looking at the economic incentives and constraints of individuals. However, still few has been said on why the selection of migrants is so different from source country to source country.

According to Belot and Hatton (2012) a simple glimpse at OECD data on the stock of foreign-born in 2001 can explain the interest in exploring migrants' selection from such an angle.
The percentage of highly educated migrants by country of origin varies consistently across regions. If for many countries in Asia and Africa the high-educated share among migrants is far higher than the one of the overall population in the country of origin (positive educational selection), for many others in Central America, Southern Europe and North America, the gap is much smaller.
This variance is present also looking at the different destination countries: the percentage of highly educated foreign-born in each OECD country differs considerably. As already pointed out by Grogger and Hanson (2011), there are huge variations across countries and not in line with their migrant quotas. Canada, for example, which is a country with a highly selective

immigration policy (point system mechanism), has a population of foreign born that for the almost 60% is highly educated; in many European countries it does not reach 20%.

Since Borjas (1987), migrants' self-selection has been explained resorting to the diverse distributions of income between different countries. Even if it is true that differences in returns to skills between source and destination countries affect the individual's decision to migrate and have a role in migrants' self-selection, according to Belot and Hatton (2012) many other factors, that could also vary by skill levels, affect the decision to migrate. To cite some of these factors: the individual's home country bias, the costs of gaining admission in a country (which could vary by individuals and skill levels) and the poverty constraints which allow only the richer to migrate. The presence of these other factors could explain the huge variations in skilled content by countries of origin outlined above. Moreover, according to Belot and Hatton (2012), it is responsible of the contrasting results found by migrants' selection literature.

This statement can easily be explained by the following figure, which captures the essence of Roy model:
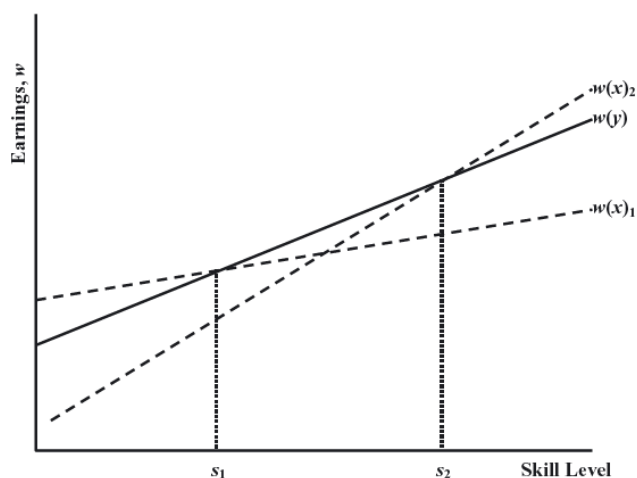

Figure 2.2: Destination and origin wage-by-skill schedules.
Source: Belot and Hatton (2012), p. 1107.

Here $w(y)$ is the destination-country wage schedule, whose slope represents the return on education, while $w(x)_1$ and $w(x)_2$ are two possible wage schedules in the country of origin. In the first case, there is positive selection: only individuals with education level higher than s_1 have an incentive to migrate. On the contrary, if the wage schedule of the country of origin is designed as $w(x)_2$, there will be negative selection since only those with education level below s_2 have an incentive to leave.

The real problem, according to Belot and Hatton (2012), is the identification of home country's wage schedule. Its position depends on several factors, many of which can differ across individuals (e.g., individual's preferences for home country, credit constraints, direct and indirect costs of migration, etc.). This introduces even greater heterogeneity in the selection such that the wage schedule in itself might not be a good predictor of the skill selectivity of migrants. That is the reason why so many studies in the literature have found contrasting results even if referring to the same framework (Roy-Borjas model).

It is important to focus on the driver of selectivity and "on what explains the educational selectivity of outmigration across source countries and what combination of incentives and policy determines the skill content of immigration among the main destinations" (Belot and Hutton, 2012, p. 1106). As a result, they will stress the role of credit constraints: despite skill returns, migrants from poor countries are positive selected because the low-skill individuals are incapacitated to leave.

Belot and Hatton (2012)'s theoretical model starts from the usual characterization of wages in source (x) and destination (y) countries for individual i.

Wages in the origin country (w_{xi}) depend on the return to education α_1 (s_i is individual i's education level) and on a random unobserved productivity component with zero mean and uncorrelated with the individual's preference for migration (ε_{xi}).

$$\ln w_{xi} = \alpha_0 + \alpha_1 s_i + \varepsilon_{xi}$$

In the destination country, wages (w_{yi}) depend once again on the return of education and the unobserved productivity (respectively $\beta_1 s_i$ and ε_{yi}), but also on the cultural distance between the origin and destination country (u) which affects the transferability of educational skills. This term is related to the human capital of the individual in two different ways. From one side the higher the education, the easier for the individual to overcome the cultural difference; for this reason the term $\beta_3 s_i$ reduce the negative effect of cultural difference. On the other side, cultural differences can have smaller effects on productivity for jobs that require lower skills, where little human capital has to be transferred; this effect is captured by the term β_2.

$$\ln w_{yi} = \beta_0 + \beta_1 s_i - u(\beta_2 - \beta_3 s_i) + \varepsilon_{yi}$$

The incentive for the individual to migrate is the difference in earnings between destination and origin country, net of direct migration costs (c) and net of the individual's non-economic preferences (z_i which is a random variable with mean greater than zero such that the average preference for the country of origin is positive).

$$I_i = \ln w_{yi} - \ln(w_{xi} + c) - z_i$$

The direct migration costs can be better specified as $d(1 - \gamma s_i)$. d is a measure of the direct costs and is inversely related to the educational level, as previously suggested by Chiswick (1999). However, direct costs are not the only one affecting the individual's decision to leave. Other factors can increase the costs of migrating. For example immigration policy, can make it difficult for migrants to enter quickly in the destination country. For this reason Belot and Hatton (2012) add to the index function also a variable of individual policy cost, P_i. It can be written as $P_i = \delta_0 - \delta_1 s_i$, where the second term captures the possibility for immigrant policy to be skill-selective (as for example in Canada). Finally, since the authors guess that credit constraints are a key element in explaining selection across countries, the term $R_i = C_i r(1 - s_i)$ is inserted. C_i represents the total cost of migration (both the direct and the policy one) and r is the general poverty rate. The poverty constraint is then proportional to the total costs, and again varies by skill-level. Substituting in C_i the definition of direct and policy costs, R_i becomes equal to: $R_i = [d + \delta_0 - (d\gamma + \delta_1)s_i]r(1 - s_i)$.

Combining the incentive to migrate with the various cost items described above, the following probability to migrate (for individual i) is obtained:

$$\Pr(m_i = 1) = Pr\{\beta_0 - \alpha_0 - d - \delta_0 - \beta_2 u + (\beta_1 - \alpha_1 + \beta_3 u + d\gamma + \delta_1)s_i$$
$$- [d + \delta_0 + (d\gamma + \delta_1)s_i]r(1 - s_i) > z_i + \varepsilon_{xi} - \varepsilon_{yi}\}$$

Assuming that there are two education level (high educated with s_i=1 and low educated with s_i=0), they write the migration rate for high-educated (H) and low educated (L) as:

$$\frac{M_H}{N_H} = \beta_0 - \alpha_0 - d - \delta_0 - \beta_2 u + \beta_1 - \alpha_1 + \beta_3 u + d\gamma + \delta_1 - \bar{z}$$

$$\frac{M_L}{N_L} = \beta_0 - \alpha_0 - d - \delta_0 - \beta_2 u - (d + \delta_0)r - \bar{z}$$

Computing the difference the following equation is obtained:

$$\frac{M_H}{N_H} - \frac{M_L}{N_L} = \beta_1 - \alpha_1 + \beta_3 u + d\gamma + \delta_1 + (d + \delta_0)r$$

Looking at the first two terms of this equation, we can appreciate the same result of Roy's model: an increase in the return to skills in the destination country, relative to the home one, increases positive selection. However, many other variables are present: cultural distance can affect selection, even if its sign is not known; direct costs of migration and policy selectivity

modify migrants' abilities. Finally, it is reasonable to think that the degree of poverty, *r*, reduces unskilled migration, affecting selection directly and through the interaction with migration costs.

Belot and Hatton (2012) test their model empirically through regression equations. The dataset used is the same of Grogger and Hanson (2011), which in turn is the same of Docquier et al. (2009). However, the specification of the model is different since they use logarithmic utility. Successively, they also test linear utility, adapting their model to the framework of Grogger and Hanson (2011). With this specification they find that absolute wage differences indeed induce positive selection, but only when omitting the liquidity constraints. If the credit constraint variable is inserted, the latter is still significant and positive, while the coefficient of the absolute wage gap becomes negative.

Besides the comparison of models, interesting results are found.

First of all, it seems that poverty constraint is a key variable in explaining selectivity: when excluded from the model the effect of the wage premium is negative and insignificant; considering instead also the poverty trap, results turn in line with the Roy-Borjas model.

In the second place Belot and Hatton (2012) tests many factors for sorting, that we have already seen also in Grogger and Hanson (2011). They analyse cultural distance finding a positive effect on selection, and the presence of colonial history, which instead increase the number of low skilled. Contrary to Grogger and Hanson (2011) they do not find a clear positive effect of language proximity, suggesting that linguistic distance may be less of a barrier for lower educated, whose jobs require less transferability of human capital.

Overall, it seems that costs and constraints are important in shaping the selectivity of migration.

An important factor they inquire is the effect of immigration policy in the destination country. Not only as we have seen, screening mechanism at the border can have an effect on the costs of migration, differentiating them by skill level, but also behind-border policies can affect self-selection. In particular, Belot and Hatton (2012) presume that some factors are crucial, such as the generosity of the welfare state, the flexibility towards foreigners in the labour market and the ease of recognition of foreign qualification to work in the labour market. The latter actually seems to be the most important effect, both in magnitude and significance. The generosity of welfare instead becomes significant only when the variables related to the labour market are present.

This analysis, differently from Grogger and Hanson (2011), leaves out policy towards asylum seekers and family reunification migrants, which actually could have a large effect on selection.

2.4. Selectivity differences and migrants' classes

A study specifically focused on the differences in selectivity between classes of migrants is carried out by Aksoy and Poutvaara (2019), who investigate the self-selection of refugees and irregular migrants arrived in Europe in 2015 and 2016.

Borjas (1987) already investigated the case of self-selection among refugees in his model. However, it was a peculiar case of sorting for "countries that have recently experienced a Communist takeover" (Borjas, 1987, p. 534). The idea was that the regime change from the market economy to Communism would have brought changes in income distribution among the individuals, especially for entrepreneurs' wealth. Migrant escaping from that regime would have been persons unable to match with the new political structure, but not necessarily low – income or low-skill individuals. In the new regime, with the new income distribution, they would have been low-income individuals, figuring as below-average immigrants in terms of the country of origin. However, they would outperform the average U.S. native worker, fitting well in a market economy.

Aksoy and Poutvaara (2019) also start from the Roy-Borjas model of self-selection, trying to explain why it is not always verified in reality. In particular, their focus is on economic migrants arriving in Europe from African and Middle East countries: from a theoretical point of view, following the Roy model and given that European countries have much narrower income differences, migrants from those areas should come from the lower end of the skill distribution; however, empirically is possible to find different results. Even considering Grogger and Hanson (2011) extended framework in which selectivity depends simply on the absolute return to skills, there are still cases of positive self-selection even from countries with higher return to skill.

To solve such inconsistency they provide a theoretical model of refugee self-selection (stressing how it differs from economic migrants' selection), adding as key variable the presence of risks related to living in an unsafe country. They claim that "extending the Roy-Borjas model to account for risks associated with conflict and persecution can explain why migrants from countries facing a major conflict or large-scale repression are positively self-selected, even when returns to skill in those countries would be higher than in the destination countries"[2].

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[2] Aksoy, C., Poutvaara, P. 2019. "Refugees' Self-Selection into Europe: Who Migrates Where?" ifo Working Paper 289

The framework is always Borjas (1987), even if the unobservable skill components are left out as in Grogger and Hanson (2011) since they could not be tested in their data.

Following the literature Aksoy and Poutvaara (2019) develop two equations for the wages in the home (k) and destination (d) country: $w_i^k = \exp(\alpha_k + r_k h_i)$ and $w_i^d = \exp(\alpha_d + r_d h_i - \pi_k)$.

The wage is composed of a fixed return common for all who have at least primary education $(\alpha_{k/d})$, and a second term which captures the return to human capital above primary education (r). The wage equation in the destination country is also adjusted for the possibility of loss of potential productivity due to the imperfect transferability of human capital (π_k).

Individual's expected utility however does not simply depend on wages (that enter in the logarithmic form); there is a country-specific risk q of losing the wage and suffering additional loss L (which instead enters linearly). It is reasonable to expect q to be higher in countries with war or conflicts and close to zero in relatively safe countries. In the latter case migrants are more motivated by lack of job opportunities rather than conflicts or persecutions. Moreover, refugees and irregular migrants face also travel risks, capture by the variable s bounded to be between zero and one. Also, in this case there is the possibility of facing a loss L.

The equations of the expected utility are then the following:

$$EU_i^k = (1 - q_k) \log(w_i^k) - q_k L_k$$

$$EU_i^d = (1 - s_k) \log(w_i^d) - s_k L_M - D_i c_k + \varepsilon_i$$

where ε_i depicts various costs and benefits related to migration that are not captured by other terms, including the valuation of different cultural norms and social networks.

It is rational to migrate if $EU_i^d > EU_i^k$ which, with some calculations, leads to:

$$\varepsilon_i > \varepsilon_i^* = [(1 - q_k) r_k - (1 - s_k) r_d] h_i + (1 - q_k) \alpha_k - (1 - s_k) \alpha_d + \pi_k - q_k L_k + s_k L_M + D_i c_k$$

Migrants are then positive selected if $(1 - q_k) r_k < (1 - s_k) r_d$.

From these results it follows that self-selection depends also on the risks of staying and of migrating, not only on returns of human capital. This implies that for a relatively safe country the prediction we can make about selection are still in line with the Borjas model; however if the country of origin suffer a sufficiently severe conflict, (whenever $q_k > 1 - \frac{(1 - s_k) r_d}{r_k}$) the self-selection is reversed.

To test their model the authors use data of the Flow Monitoring Survey (FMS) obtained from the International Organization for Migration (IOM). The survey aims at providing a sample representative of migrants coming to Europe through the Central and Eastern Mediterranean route between 2015 and 2016. Then the model tests also for a sample of migrants arrived in Turkey between 2016 and 2018. These data are combined with 2009-2014 Gallup World Polls to acquire more information on migrants' countries of origin and its population. It is particular precious for comparison between migrating and non-migrating individuals of the same country of origin. Finally Aksoy and Poutvaara (2019) use the Uppsala Conflict Data Program (UCDP) battle-related deaths dataset in order to classify countries by their conflict intensity. In particular, following the definition provided by UCDP, they divide the countries of origin in the dataset in three main categories: countries at major conflict, at minor and no conflict. Major conflict identifies any country that witnessed 1000 or more battle-related deaths in any of the years 2009-2014. Minor conflict instead is for all the countries with a number of battle-related death in the range of 25 and 999. The no conflict category is instead quite self-explanatory.

Looking at the descriptive statistics it is already clear that Aksoy and Poutvaara's intuition is in line with the empirical data: a part from few countries (Nigeria, Bangladesh and Senegal), migrants are better educated than the source population and 77% of the sample is composed by migrants fleeing due to conflict or persecution.

More specifically the authors find that "both male and female refugees from countries suffering from major conflict are positively self-selected with respect to secondary and tertiary education" (Aksoy and Poutvaara, 2019, p.4).

For what concerns instead irregular migrants, female are also positively self-selected while male do not differ much from non-migrants in terms of their education.

This strong positive self-selection is present also if we investigate the predicted earnings of refugees and irregular migrants and for all the country groups (major, minor and no conflict), suggesting that liquidity/poverty constraints remain important also among refugees.

In order to find causal relations, a series of multivariate regression models is estimated. Results are significant and in line with the theory: refugees who escaped conflict or persecution are more likely to have secondary and tertiary level education compared not only to the source population, but also to those who cite other reasons for leaving their countries. Estimations with predicted individual pre-migration income also point towards the same direction: the effect of income (generally positive for all country groups) is greater for countries suffering a major conflict.

Interestingly Aksoy and Poutvaara (2019) investigating the sorting of refugees and irregular migrants find that they do not substantially differ from other migrants: they respond to incentives like social welfare or structure of wages, etc.

Before Aksoy and Poutvaara (2019), Chin and Cortez (2015) analysed selectivity across migrant classes. They wanted to understand if the quantity and quality of refugees might differ from that of other types of migrants. However, they were not able to reach a unique solution, neither from a theoretical point of view, nor empirically.

As usual in the literature, they build a model in which a maximizing individual decides to migrate if the benefits are higher than the costs. Such decision does not depend only on the expected incomes in the different countries, also other considerations play a major role. For example: the cultural differences or similarities between two countries, the level of freedom and the risks of persecution associated with living in a given country, or again the extension of the social network on which someone can rely. Chin and Cortes (2015) defines these factors as the amenities of living in a given country (A_{i0} amenities for individual i of residing in country 0 and A_{i1} of living in country 1).

An individual decides to move if the difference between the utility of leaving (V_{i1}) and the one of staying (V_{i0}) is greater than zero. The different utilities are defined as:

$$V_{i1} \equiv \beta_1 A_{i1} + \beta_2 (w_{i1} - C_{i01})$$

$$V_{i0} \equiv \beta_1 A_{i0} + \beta_2 w_{i0}$$

The authors analyse each variable, focusing on what value should be expected when considering refugees with respect to other migrant categories.

A_{i0} as said represents the (dis)amenities to live in the home country (0). Since the key defining feature of refugees is exactly that they are unsafe living in their home country, we can expect A_{i0} to be smaller for them with respect to other migrants. It could also be negative, since staying in the home country exposes individuals to higher risks. This tells us that the quantity of migrants coming from countries where a refugee-producing event suddenly happens, is higher, but still does not add anything to the investigation on selectivity. According to the model of migration choice, individuals consider also their wage gain. If we imagine that individuals are identical except in their wage gain from migrating (g), it is possible to find a threshold $\bar{g}$ that discriminates the case when everyone migrates from the one where everyone stays. A reduction of A_{i0} would bring some people with $g < \bar{g}$ across the threshold to migrate. Consequently, the wage gain threshold for refugees is lower or even negative, meaning that refugees are less

selected along dimensions associated with economic gain in the destination country, because economic gain is less of a factor in their decision.

W_{i0} is the wage individuals earn in country 0. Non-refugee migrants should be more sensible to wages. However, low wages can be the result of a refugee-producing event. If this is the case, a low W_{i0} determines a flow of refugee-migrants, who are now the more likely to migrate. The effect on selectivity can be various: if the refugee –producing event reduces W_{i0} broadly across the population, the marginal migrants are less selected than in a situation of no refugee-producing event. If the reduction of wages happens only for a subgroup of the population (e.g., political dissenters or a persecuted minority), it's only the migration rate of this subgroup that increases, and the effect on selectivity depends on the characteristics of this group.

A_{i1} and W_{i1} represent instead the so called pull factors which are expected to play a crucial role for non-refugees. It is straightforward to assume that, for example, individuals who migrate to reunite with their families, might have only one desired destination, with and A_{i1} very high for that destination country; or that economic migrants are likely to choose destinations with higher W_{i1}.

Refugees instead are limited by push factor: the latter can make their utility higher even in countries with low or negative wages differentials. Once again, this tell us that refugees have higher chances to migrate, since they have more destination countries where it is convenient to move. As a matter of fact, most refugees live in neighbouring developing countries which are instead undesirable to economic migrants who may decide not to migrate at all.

Finally, the variable C_{i01} captures the costs of migrating. The physical costs can be thought to be equal across individuals. Other costs may differ, the authors, for example, consider as in Borjas (1987) time cost of migrating (i.e., the opportunity cost of the migration process) which are higher for people with higher W_{i0}. Another factor could be the presence of credit constraints, which suggests positive selection also for, or even especially for, refugees. The idea behind it is that a conflict or a persecution can aggravate the financial situation of individuals. In particular, it can happen that people lose their properties and also their connections once useful to borrow money. The consequence is that only the richest can still afford to migrate. In this sense, refugees that enter developed countries should be highly selected on wealth, and so maybe on education.

According to the authors, "the model has an ambiguous prediction for the quality of refugees relative to other types of migrants—the relative quality depends on a number of variables,

including the nature of the refugee-producing event and the nature of selection in "regular" migration flows from country 0 to country 1" (Chin and Cortes 2015, p.600).

As we can see this prediction is quite different from the one of Aksoy and Poutvaara (2019) and the reason is that in Aksoy and Poutvaara (2019) the self-selection depends on the risks of conflict or persecution faced in the country of origin. A higher risk could actually produce stronger selection in migrants. This because the individual face an expected utility and with a certain probability not only he/she will lose the possibility of gaining wages, but he/she will also suffer a major loss. On the contrary, in Chin and Cortes (2015) persecution is simply a disamenity, which does not affect wages in the home country.

Empirically the authors try to find an answer through the use of the New Immigrant Survey-2003 (NIS), which provides a nationally representative sample of individuals (8573) gaining legal permanent residence in the U.S. in 2003.

Looking at the descriptive statistics, they find out that refugees fall in the middle of the distribution of educational attainment among US immigrants. They are usually more educated than family migrants, but less than the economic ones. The same result can be appreciated when looking at the individual's sector of employment prior to the migration: refugees are not the class of migrant that brings more low-skilled individuals in the US.

As common in the literature, Chin and Cortez (2015) provide a deeper investigation of their early results. They want to understand if the selection of migrants operate within a given source country or if the different characteristics that can be observed across migrants' categories actually depend on the fact that these migrants come from different countries of origin, with different characteristics and scenarios. If for example countries of conflicts tend to be the less developed, an increase in the quantity of their migrants—with no change in quality—can end up with the average refugee being less educated.

The authors check differences in mean after controlling for country of origin fixed effects, finding similar results. So, it appears that the variation is due to within-country selection, with refugees being selected from the population in a different way than "regular" migration; a key factor in this process could be the nature of the refugee-producing event or the wage structure. However, at the same time all the coefficients of the variables connected with schooling decrease, suggesting that migrants from countries that send more refugees to the U.S. have higher average schooling than migrants from other countries.

In a later work Dustmann, Fasani, Frattini, Minale, and Schonberg (2016) also stress that the differences in migrants' human capital cannot be fully explained by within-country selectivity: cross-country variability plays a role too. In their study, using the data from the 2008 wave of the EU Labour Force Survey, they find that refugees in Europe are on average less educated than natives and economic immigrants from EU15; however, considering non-European immigrants, refugees are actually better educated than economic migrants.

The problem with these results is that they are very sensitive to the considered dataset: with different cohorts or different destination countries, results could vary. For example, Chin and Cortes (2015), test also another dataset for their analysis finding quite opposite results. They use pooled individual-level data from the 1980, 1990, and 2000 U.S. Census of Population and Housing and the 2005-2010 American Community Survey (ACS). Specifically, they analyse a fixed cohort of immigrants who entered the United States in the years 1975 through 1980. In this case, looking at the descriptive statistics, economic immigrants seem to be more concentrated in the lower levels of education distribution. The results are confirmed also when using regression analysis.

To find another way to assess the selectivity of refugees with respect to economic migrants, Chin and Cortez (2015) consider looking at the investment in human capital after migration. If it is true that refugees have a lower endowment of human capital, then to integrate in the destination country they need larger investments than economic migrants. However, the investment decisions are influenced also by many other factors, first of all the individual time horizon in the host country, which is usually quite different among refugees and economic migrants. Moreover, it is also to be considered that refugees, due to the experiences they live, tend to witness more human capital disruption, which in turn could bring to lower investments.

Refugees migration has always been a great concern for all developed countries. Since the Geneva Convention in 1951, some form of protection for people persecuted in their home country has been granted. However, the increase in economic migration has determined a screening problem for the host states, unable to detect the "true refugees" from economic migrants who mimic them hoping to get better conditions and a more generous treatment. Consequently, rich countries have started shading on the performance of their obligations increasing the standards of proof for refugee status, in turn harming persecuted people or individuals escaping from conflicts (Bubb, Kremer, Levin, 2011). An incentive compatible mechanism design is needed to solve the problem: it should become unattractive for economic migrants to claim refugee status, while granting the latter full protection.

Bubb, Kremer and Levin (2011) look for possible separating mechanisms like tax systems leaving refugees with an after-tax income roughly equal to the one they had before migrating, or transfer systems that allocate refugees knocking on the doors of wealthier countries to developing ones, in exchange for money. Some of these mechanisms could actually solve the problem of screening, but will impose negative externalities on developing countries, or will involve solutions "morally objectionable".

Despite the possibility of finding a solution to the debated question of migrant selectivity, it should be asked also if selectivity matters in in the process of integration. The reason behind selecting migrants is that more educated individuals fits better into the host society (e.g., integrate faster) and, given the fact that they have higher probabilities of finding employment and earnings, that they contribute more positively on the fiscal balance of welfare states.

A paper by Adeymir (2011) challenge this reasoning: it finds that positive selection does not automatically translate into greater success in the labour market.

The first aim of his work is to understand if skill-based selection mechanisms (which are common in countries like Canada, Australia, New Zeland) succeed in their purpose of admitting immigrants more able to adapt to the host country labour market. Of course, he is able to control only for the observed proxies of ability (mainly the education level); nothing can be said about self-selection along the unobserved characteristics of individuals.

Using the Longitudinal Survey of Immigrants to Canada (LSIC) Aydemir (2011) finds that the Canadian point system mechanism of selection of immigrants actually generates a much higher skilled immigrant flow than those admitted through family preferences. This happens not only because the point system mechanism changes the skill distribution of migrants towards the higher skilled. There is also an indirect effect due to assortative matching: the more educated migrants selected through the point system are more likely to have more educated partners who later on could be admitted as family migrants.

It is important to stress that this outcome is generated because the point mechanism changes the selection mechanism inside a given country of origin. It is not the case that enforcing a point mechanism system change the nationalities mix of migrants who usually applied for entering in that country. It does seem to confirm Belot and Hatton (2008) and Chin and Cortes (2015)'s findings about within-country selection.

At the same time, Aydemir (2011) stresses that there are also other factors that can affect migrant selectivity. For example, economic opportunities in destinations countries have a major role in attracting high skilled immigrants, in addition to designed immigration policies.

However, a question still remains unsolved: does this positive selection translate into better labour market outcomes? Considering as indicator of success the conditions of being employed in the short run and being rewarded with higher wages, Aydemir (2011) finds that high skilled migrants do not differ statistically from family migrants and do not show better integration paths. Several reasons may explain this result.

First, it is always necessary to keep in mind that selection mechanisms can operate only on observable characteristics of individuals.

Second, family migrants may be less educated than selected high skilled immigrants, but they can count on a richer amount of resources, thanks to their social networks. Not only they can arrive at the destination country with better information and benefit of country-specific human capital that is already invested by network fellows, but they can also rely on a stronger net for all what concern finding an employment in a short time.

Finally a crucial factor to which pay attention is the transferability of skills across countries. Many of the abilities (education, work experience) acquired in the origin country have no return in the host country, making it difficult for high skilled migrants to find a job in line with their qualifications and forcing them to invest in host country human capital, delaying the entrance in the job market.

Aydemir (2011), neglecting for a moment selectivity, stress a problematic we have already discussed in the previous chapter. Governments have to pay attention also to the foreign recognition of education, qualifications and skills because mismatches between demand and supply of specific skills in the labour market are present even when migrants are highly educated. Being able to attract the 'right' persons, but failing to value them, it is a waist of effort and resources, for migrants but also for citizens.

Before Adeymir (2011), Cobb-Clark (2004) studied the same phenomenon in Australia. She also spots that selective immigration mechanisms are able to attract more skilled individual from an educational, linguistic and professional point of view.

Differently from Aydemir (2011), she finds that the cohort of high skilled migrants, entering in Australia after 1999, perform better in the host country labour market[3] with respect to previous

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[3] The variable chosen as mean of comparison are the participation rate, the level of unemployment and the employment to population ratio

cohorts (when point mechanism was not in place). This is true both in the first survey collected six months after entrance, and in a second survey collected eighteen months after the first. It then seems that these better performances resist also in the medium run.

However, it is important to understand the causal factors behind these performances. Is it the selection mechanism policy that attract only high skilled migrants who consequently do better in the labour market, or are the labour market conditions of the Australian economy that determine this difference among cohorts? What is the role of income support policy in these results?

Cobb-Clark (2004) reflects on the fact that even if the greater weight in the differences among cohorts is given by differences in the demographic and productivity-related characteristics, still the labour market conditions and the income-support policy of a country can play a big role in determining the success of high skilled-migrants. Income-support policy change the individuals' incentive to look for a job, while the labour market conditions are responsible for affecting the ability to find jobs. As Aydemir (2011), she suggests that screening alone is not sufficient to solve migration problems.

CHAPTER THREE: MIGRATION POLICY AS AN INCENTIVE MECHANISM

3.1. The Problem

In the first chapter of this work, we have looked at a general overview of the main integration measures implemented in developed countries. Despite the fact that migration policy and its management are chaotic, a result on which the literature appears to agree is that tailored approaches are a key to efficiency. It seems common sense to avoid the use of equal resources for individual with different needs and who can contribute differently, according to their level of ability and competences. Governments could save important resources if each migrant was allowed and willingness to use fully his/her productivity and put the maximum possible effort in the process of integration.

However, as we have learnt in the second chapter of the literature review, detect migrants' abilities is difficult. More importantly, many empirical works have shown how exploiting migrants' categories to infer on their level of productivity gives no clear results, challenging the role of different permits and pathways of integration for the different migrant categories (refugees, economic migrants, family reunification). The way to detect migrants' abilities and provide resources consequently should be different.

What we will try to do in this chapter, is to design a mechanism that reveals migrants' abilities, when hidden, and that organizes government's resources efficiently. Migration policy will be structured as an incentive mechanism.

The integration problem, designed as we will, can be seen as a public economics' issues, since the interest is to understand how the government should allocate resources to migrants, managing the trade-off between efficiency and equity.

Not integrating migrants, not regulating this activity, leads to a socially inefficient outcome. For this reason, the government has to intervene destining some public funds to immigrants. At this point, the government's aim when designing policy is to find "an efficient means of revenue collection" (Myles, 1995, p.5). "Having determined that the organization of economic activity must generate a revenue requirement, one aspect of the role of public economics is to determine how this revenue can be collected at the least cost to the economy" (Myles, 1995, p.5).

The problem we are modelling is then a problem of finding and optimizing the level of public policy instruments. In doing so, the government has also to consider the distribution of resources in the economy, since it could be desirable to act on the equity's dimension.

It is important to note that, as in taxation problems, the government's objective is to maximize the social welfare. However, differently from other branches of application of public economic problems, in this model there are actors (the migrants) who are not part of the society. Managing their integration is an issue for optimizing social welfare, but migrants' wellness is never in the government's aim. Migrants' utility functions do not add to the citizens' ones; they do not contribute in any way to the social welfare function. That is the reason why they do not appear in the government's objective, at most they are used as constraints to the problem.

Finally, it is important to remark that the integration problem is analysed as a problem of managing a given number of migrants, already settled in a country. The problem begins when migrants are already in that country. The rate of their arrival and all the policies designed to contrast immigration are exogenous variables to this model.

3.2. The Model

We imagine that a given country receive an amount N of migrants, in a given unit of time.

These migrants differ for their abilities (productivity level) θ. For simplicity, we assume there are only two levels of productivity: high and low, indicated respectively as θ_H and θ_L. From now on the subscript H will always refer to high skilled migrants and the subscript L to the low-skilled ones. The proportion of migrants belonging to the type H is common knowledge and it is equal to δ. The remaining fraction $(1 - \delta)$ is composed of low productivity individuals.

As mentioned, the rate of migrants' arrival is considered exogenous to the model, so as the policy to contrast immigration. The government has then 'simply' to deal with these N migrants, trying to maximize their probability of integration. As seen in the first chapter, there can be more than one reason for which governments want or should integrate migrants. However, we will not discuss them in this simple model. We assume governments invest in integration because not doing so comes at a cost (k). K can be thought as the quantification of the social disutility connected with a failed integration. It comprises the costs of segregation, higher risk of criminality, disqualification of the urban fabric, etc.

Although investing in the integration of high skills individuals is more rewarding, given their higher productivity, the government wants to maximize the probability of integration of both types of migrants. The reason is that the cost (k) associated with migrants who are not integrated is equal for everyone.

As seen in the literature review, the concept of integration is quite complex and involve more than one field. However, it seems that without a proper and quick entry in the labour market, migrants fail to integrate also in the society. Consequently, for simplicity, we model the probability of integration as the probability of entering the labour market. The latter is a function of two variables: the migrant's effort in integrating (e) and an initial input of resources provided by the government (q). Unfortunately, the individual's effort is not directly observable. What can be observed, is the number of hours (t) that an individual dedicate to integration activities (language courses, skills assessments, bridging programs, etc.).

The probability depends also on the type θ, is labelled as $\pi(t, q, \theta)$, and quite obviously its domain is between zero and one: $0 < \pi(t, q) < 1$. Specifically, when t or q tend to zero, π tends to zero; if t or q goes to infinity, π tends to one.

More specifically, we define the probability as:

$$\pi = \frac{x}{x + 1}$$

Where x can be thought as a constant elasticity of substitution (CES) production function. It is function of two inputs, the observable effort and government's resources:

$$x = (t^\rho + q^\rho)^{1/\rho}$$

The parameter ρ, that belongs to the interval $\rho \in [-\infty; 1]$, indicates the degree of substitutability/complementarity of the two inputs.

The marginal productivity of the individual's effort and of the government's resources is increasing, but at a decreasing rate. Both the first partial derivatives are positive and both the second negative:

- $\pi_t > 0$;
- $\pi_{tt} < 0$;
- $\pi_q > 0$;
- $\pi_{qq} < 0$.

The sign of the mixed second derivatives depend on the coefficient ρ:

- When $\rho < 0$ and $\rho = 1 \Rightarrow \pi_{tq} \, e \, \pi_{qt} < 0$;
- When $0 < \rho < 1/3 \Rightarrow \pi_{tq} \, e \, \pi_{qt} > 0$.

Both for the government and for the migrants, increasing the probability of integration is far from being a free process.

Government's resources are collected at a cost. In particular, we define as λ the marginal cost of public funds, which is a positive number. If migrants' effort and public resources are

substitutable (even to a minimum degree), is in the government's interest that migrants put the highest possible effort. This would allow it to cut down the public spending and to have integration at the lowest possible cost for native citizens. The fact that the effort is not observable could rise a problem of moral hazard. As a matter of fact, although it is also in the migrant's interest to integrate (once entered the labour market the migrant receives an exogenous amount of labour income W), to make an effort is costly for the individual. It is then in the migrant's interest to put the lowest possible level of effort and to exploit government's resources to increase the probability of getting a job.

To complicate further the analysis, we assume that the effort's cost is not equal among individuals. High skilled migrants struggle less when working, and so the disutility that comes from making an effort is lower with respect to the one of low skilled individuals. This fact, in a scenario in which the type θ is not observable by the government, rises also a problem of adverse selection.

Migrant's utility is indicated as $\overline{U}$ for the high skilled and $\underline{U}$ for the low skilled. Utility depends positively on consumption and negatively on the amount of hours dedicated to integration (the individual's effort).

Before defining the utility functions, it is necessary to spend few words on the consumption variable. Consumption, that quite surprisingly and innovatively we name A, is not a certain good. As a matter of fact, in a given period of time, two states of the world are possible. The best scenarios (B) happens with probability π, when migrants succeed in integration. With the remaining probability $(1 - \pi)$ instead, the state of the world with a failed integration, that we indicate with M, comes true.

In B, migrants' consumption is given by the exogenous labour income W, plus a government transfer C. While in M, migrants do not integrate, and cannot enjoy the income W. With probability $(1 - \pi)$, A is then simply equal to the government's transfer C.

The government's transfer C can be thought as a subsidy given on daily basis to migrants in order to provide to their basic needs. As q, every unit of C costs to the governments $(1 + \lambda)$.

While we assume that W is exogenous and constant for all the individuals, C is a control variable for the governments and could be differentiated by types. From now on, we will then use the label C_H to refer to the transfer for high productive migrants, and C_L to refer to the low productivity's one.

To briefly summarize with equations:

$$A_H = \pi_H A_H^B + (1 - \pi_H)A_H^M = \pi_H(C_H + W) + (1 - \pi_H)C_H$$

$$A_L = \pi_L A_L^B + (1 - \pi_L)A_L^M = \pi_L(C_L + W) + (1 - \pi_L)C_L$$

Given that there are two state of the worlds for the individual, also utility is an expected value. In particular, with probability π the migrant enjoy utility U^B; with probability $(1 - \pi)$ (s)he does not integrate successfully and consequently his/her utility is equal to U^M. Remember that utility differs according to types which in this case are indicated by the upper or lower bar ($\overline{U}$ and $\underline{U}$):

$$\overline{U} = \pi_H \overline{U^B} + (1 - \pi_H)\overline{U^M}$$

$$\underline{U} = \pi_L \underline{U^B} + (1 - \pi_L)\underline{U^M}$$

Utility in the best state of the world ($\overline{U^B}$ and $\underline{U^B}$) depends positively on the level of consumption A which comprehends C and W, and negatively on the amount of hours dedicated to integration activities, t: $\overline{U^B}(C_H, t_H, \theta_H, W)$ and $\underline{U^B}(C_L, t_L, \theta_L, W)$.

Utility in the bad state of the world ($\overline{U^M}$ and $\underline{U^M}$) depends in the same way from A and t; however A simply consists of C: $\overline{U^M}(C_H, t_H, \theta_H)$ and $\underline{U^M}(C_L, t_L, \theta_L)$.

As conventionally, we assume utility is concave in consumption (transfer):

- $\overline{U_c^{B/M}} > 0 \ e \ \overline{U_{cc}^{B/M}} < 0$;
- $\underline{U_c^{B/M}} > 0 \ e \ \underline{U_{cc}^{B/M}} < 0$.

Individual's effort instead is a cost and procure disutility to the individual:

- $\overline{U_t^{B/M}} < 0 \ e \ \overline{U_{tt}^{B/M}} < 0$;
- $\underline{U_t^{B/M}} < 0 \ e \ \underline{U_{tt}^{B/M}} < 0$.

Since utility is positive in C and negative in t, we can draw the indifferent curves of the individual as follow:
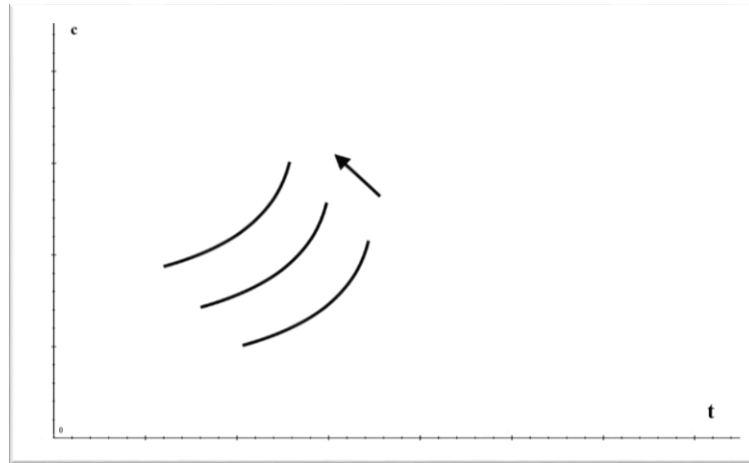
Figure 3.1: Migrant's indifference curve between transfer and hours of activities

As expressed in the figure, utility increases as we move up to the left.

3.3. The Setting

As mentioned, government's interest is to allocate resources (q and C) efficiently to H and L, and to make them work such that to maximize their integration's probability. The government is a risk neutral actor, while migrants are risk averse individuals.

We delineate two different situations.

At first, the problem is set assuming there is symmetry of information between the economic agents: the government observe the individuals' type θ and can provide q and C consequently, exploiting the maximum possible effort from each category. As we will see, when the adverse selection problem is absent, also moral hazard is impossible. The government knows exactly the amount of hours that a productive and less productive individual can dedicate to integration (t is informative). Once it is able to identify each individual as belonging to a certain type, it can force them to put t_H and t_L, through the control of q and C.

Successively, we will assume that the government is unable to observe migrants' type. This asymmetry of information could allow the high type individuals to mimic the low type, putting a level of effort lower than optimal (the one of symmetric information). To avoid bunching at the bottom, the government has built an incentive mechanism such that it will never be in the high type's interest to behave as a low skilled. Manipulating the migrant's choices through the use of the policy variable q and C, the government can arrive to a situation of equilibrium better than the one that would have occurred in the absence of any intervention.

The timing of the problem is as follow: nature decides the amount of migrants arriving to a country, if a migrant is H or L and the proportion of δ. The government, which is the uniformed party, moves first, offering migrants one or more contracts. Migrants choose the contract they prefer and the integration process begins. At the end, an outcome realizes and the migrant is either in the good or in the bad state of the world.

The contract offered by the government is a combination of C and t. The level of C and t could vary by type. However, as said, the uninformed party does not know the type of individual is dealing with. The government plays as in a Stackelberg model: the individual knows that the government is committed to the contracts offered and (s)he will choose consequently; the government has to anticipate the individual's behaviour and design contracts accordingly.

The sorting condition for the two groups resides in the marginal rate of substitution between C and t. As mentioned, for less productive individuals is more costly to make an effort. The behaviour of high and low skilled, then, will be different at the margin. Even if the individuals are forced to consume the same and to make an effort for the same amount of hours, the marginal rate of substitution in that point, for the two groups, is different. The amount of hours they are disposed to work more, in order to have more units of the transfer, is different. This means that their preferences are different, that the slope of the indifference curves of the individuals are not equal in every point, and that the government can exploit this diverse behaviour to screen and detect the true ability of individuals.

What we have just described, is asking for the Spence-Mirrlees or single crossing property condition. As the name suggests, the property assure that the indifference curves of different types of individuals cross only once. The Spence-Mirrlees property is guaranteed by agent monotonicity: the marginal rate of substitution between the transfer C and the amount of hours t is a decreasing function of the productivity type θ (Myles, 1995). This states that the slope of the indifference curve for high productive individuals is flatter than the one of the low skilled, as we can see in the following figure:
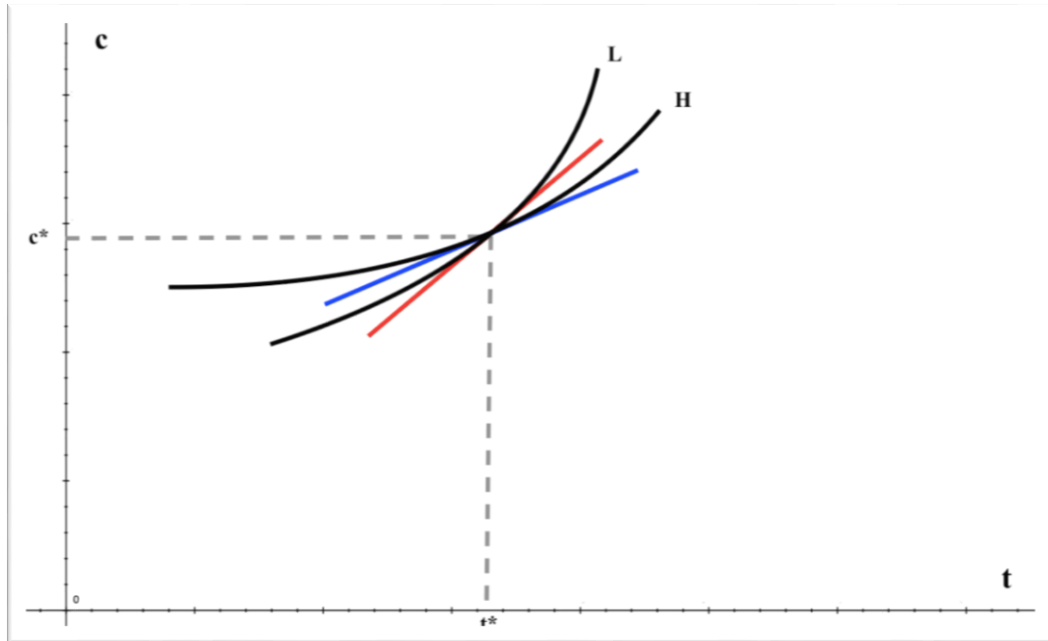
Figure 3.2: Slope of the indifference curves for individuals H and L

We can easily state this property through equations.

First, we compute the partial derivative of utility for high skilled individuals:

- $$\frac{\partial \overline{U}}{\partial t_H} = \frac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial t_H}$$

- $$\frac{\partial \overline{U}}{\partial C_H} = \pi_H \frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}$$

From these, we can compute the Marginal Rate of Substitution (MRS):

$$MRS_H = -\frac{\frac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial t_H}}{\pi_H \frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}}$$

For low skilled individuals instead the partial derivatives are:

- $$\frac{\partial \underline{U}}{\partial C_L} = \pi_L \frac{\partial \underline{U^B}}{\partial C_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial C_L}$$

- $$\frac{\partial \underline{U}}{\partial t_L} = \frac{\partial \pi_L}{\partial t_L}(\underline{U^B} - \underline{U^M}) + \pi_L \frac{\partial \underline{U^B}}{\partial t_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial t_L}$$

From which:

$$MRS_L = -\frac{\frac{\partial \pi_L}{\partial t_L}\left(\underline{U^B} - \underline{U^M}\right) + \pi_L \frac{\partial \underline{U^B}}{\partial t_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial t_L}}{\pi_L \frac{\partial \underline{U^B}}{\partial C_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial C_L}}$$

The single crossing property condition is guaranteed when:

$$-\frac{\frac{\partial \pi_H}{\partial t_H}\left(\overline{U^B} - \overline{U^M}\right) + \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial t_H}}{\pi_H \frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}} < -\frac{\frac{\partial \pi_L}{\partial t_L}\left(\underline{U^B} - \underline{U^M}\right) + \pi_L \frac{\partial \underline{U^B}}{\partial t_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial t_L}}{\pi_L \frac{\partial \underline{U^B}}{\partial C_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial C_L}}$$

That is equivalent to say that:

$$\frac{\frac{\partial \pi_H}{\partial t_H}\left(\overline{U^B} - \overline{U^M}\right) + \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial t_H}}{\pi_H \frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}} > \frac{\frac{\partial \pi_L}{\partial t_L}\left(\underline{U^B} - \underline{U^M}\right) + \pi_L \frac{\partial \underline{U^B}}{\partial t_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial t_L}}{\pi_L \frac{\partial \underline{U^B}}{\partial C_L} + (1 - \pi_L)\frac{\partial \underline{U^M}}{\partial C_L}}$$

Thanks to this condition, the government can design a menu of contracts that is incentive compatible and induce migrants to truthfully reveal their characteristics. The idea is to exploit optimally the available information, which regards individual' preferences and behaviours.

3.4. Symmetric Information

First of all, we write the government's objective function as:

$$F(q_H, q_L, t_H, t_L, C_H, C_L)$$
$$= \delta \pi_H + (1 - \delta)\pi_L - \delta k(1 - \pi_H) - (1 - \delta)k(1 - \pi_L) - (1 + \lambda)(q_H + q_L + C_H + C_L)$$

In this function, we can see the probabilities of integration that the government wants to maximize and also the cost related to failed integration and the cost of public funds. We have already inserted the government's budget constraint in this objective function.

However, the budget constraint is not the only one to operate.

In symmetric information, the government observe θ and can assign migrants to different integration paths without difficulties. It can use lump-sum transfers and exploit the maximum possible effort of the individuals, so that the amount of resources it has to provide to increase the probability of integration is minimum. However, even if not citizens of the host country, migrants are human beings. The government cannot operate avoiding completely any attention at migrants' wellness and utility.

For this reason the maximization of F, even in this context of symmetry, is not free.

We add two constraints to the problem. We ask the utility of type H and L individuals to be at least equal, if not greater, than a given amount U^*. U^* is a parameter in the model and represents the minimum level of utility a human being can experience to be called as such.

Given these premises, we can write the problem as follow:

$$Max_{q_h, q_l, t_h, t_l, C_H, C_L} \quad \delta\pi_H + (1-\delta)\pi_L - \delta k(1-\pi_H) - (1-\delta)k(1-\pi_L) - (1+\lambda)(q_H + q_L + C_H + C_L)$$

$$S.t. \quad \pi_H \overline{U^B} + (1-\pi_H)\overline{U^M} \geq U^*$$

$$\pi_L \underline{U^B} + (1-\pi_L)\underline{U^M} \geq U^*$$

We can solve it thorough Lagrange's method. Rewriting the constraints as:

$$-\pi_H \overline{U^B} - (1-\pi_H)\overline{U^M} + U^* \leq 0$$

$$-\pi_L \underline{U^B} - (1-\pi_L)\underline{U^M} + U^* \leq 0$$

We obtain the Lagrangian:

$$L\big(q_h, q_L, t_H, t_L, C_H, C_L, \mu, \beta\big)$$
$$= \delta\pi_H + (1-\delta)\pi_L - \delta k(1-\pi_H) - (1-\delta)k(1-\pi_L)$$
$$- (1+\lambda)(q_H + q_L + C_H + C_L) - \mu\big[-\pi_H \overline{U^B} - (1-\pi_H)\overline{U^M} + U^*\big]$$
$$- \beta\big[-\pi_L \underline{U^B} - (1-\pi_L)\underline{U^M} + U^*\big]$$

As mentioned above, it is clear to see that the government's aim is not to maximize migrants' utilities. These functions appear only in the constraints.

We can derive the first order conditions (FOC) of the Lagrangian function and interpret the results obtained. At first, we do not consider the input q in the problem and concentrate on the variable C and t.

The FOCs are:

$$\frac{\partial L}{\partial t_H} = \delta \frac{\partial \pi_H}{\partial t_H} + \delta k \frac{\partial \pi_H}{\partial t_H} + \mu \overline{U^B} \frac{\partial \pi_H}{\partial t_H} + \mu \pi_H \frac{\partial \overline{U^B}}{\partial t_H} - \mu \overline{U^M} \frac{\partial \pi_H}{\partial t_H} + \mu (1 - \pi_H) \frac{\partial \overline{U^M}}{\partial t_H} = 0 \tag{3.23}$$

$$\frac{\partial L}{\partial t_L} = (1 - \delta) \frac{\partial \pi_L}{\partial t_L} + (k - \delta k) \frac{\partial \pi_L}{\partial t_L} + \beta \underline{U^B} \frac{\partial \pi_L}{\partial t_L} + \beta \pi_L \frac{\partial \underline{U^B}}{\partial t_L} - \beta \underline{U^M} \frac{\partial \pi_L}{\partial t_L} + \beta (1 - \pi_L) \frac{\partial \underline{U^M}}{\partial t_L} = 0 \tag{3.24}$$

$$\frac{\partial L}{\partial C_H} = \mu \pi_H \frac{\partial \overline{U^B}}{\partial C_H} - \mu \pi_H \frac{\partial \overline{U^M}}{\partial C_H} + \mu \frac{\partial \overline{U^M}}{\partial C_H} = (1 + \lambda) \tag{3.25}$$

$$\frac{\partial L}{\partial C_L} = \beta \pi_L \frac{\partial \underline{U^B}}{\partial C_L} - \beta \pi_L \frac{\partial \underline{U^M}}{\partial C_L} + \beta \frac{\partial \underline{U^M}}{\partial C_L} = (1 + \lambda) \tag{3.26}$$

$$\mu [-\pi_H \overline{U^B} - (1 - \pi_H) \overline{U^M} + U^*] = 0 \tag{3.27}$$

$$\beta [-\pi_L \underline{U^B} - (1 - \pi_L) \underline{U^M} + U^*] = 0 \tag{3.28}$$

$$\mu \geq 0 \tag{3.29}$$

$$\beta \geq 0 \tag{3.30}$$

Adjusting we obtain:

$$\frac{\partial L}{\partial t_H} = (\delta + \delta k) \frac{\partial \pi_H}{\partial t_H} + \mu \frac{\partial \pi_H}{\partial t_H} (\overline{U^B} - \overline{U^M}) + \mu \pi_H \frac{\partial \overline{U^B}}{\partial t_H} + \mu (1 - \pi_H) \frac{\partial \overline{U^M}}{\partial t_H} = 0 \tag{3.23}$$

$$\frac{\partial L}{\partial t_L} = (1 - \delta + k - \delta k) \frac{\partial \pi_L}{\partial t_L} + \beta \frac{\partial \pi_L}{\partial t_L} (\underline{U^B} - \underline{U^M}) + \beta \pi_L \frac{\partial \underline{U^B}}{\partial t_L} + \beta (1 - \pi_L) \frac{\partial \underline{U^M}}{\partial t_L} = 0 \tag{3.24}$$

$$\frac{\partial L}{\partial C_H} = \mu (\pi_H \frac{\partial \overline{U^B}}{\partial C_H} - \pi_H \frac{\partial \overline{U^M}}{\partial C_H} + \frac{\partial \overline{U^M}}{\partial C_H}) = (1 + \lambda) \tag{3.25}$$

$$\frac{\partial L}{\partial C_L} = \beta (\pi_L \frac{\partial \underline{U^B}}{\partial C_L} - \pi_L \frac{\partial \underline{U^M}}{\partial C_L} + \frac{\partial \underline{U^M}}{\partial C_L}) = (1 + \lambda) \tag{3.26}$$

$$\mu [-\pi_H \overline{U^B} - (1 - \pi_H) \overline{U^M} + U^*] = 0 \tag{3.27}$$

$$\beta [-\pi_L \underline{U^B} - (1 - \pi_L) \underline{U^M} + U^*] = 0 \tag{3.28}$$

$$\mu \geq 0 \tag{3.29}$$

$$\beta \geq 0 \tag{3.30}$$

From the derivatives (3.23) and (3.24) is straightforward to notice that in the absence of the utility constraints, the government could exploit at maximum the individual's effort and productivity. It could bring the marginal productivity of t close to zero, and t close to infinity, while offering the lowest possible amount of q.

However, since migrants' utility matter in some form, in this problem, the government is constrained to guarantee the minimum level of utility U^*, but nothing more: at the optimum both the constraints are binding. This means that the expected utility of migrants of type H and type L are equal.

However, as we know $\overline{U}$ and $\underline{U}$ differ in their relationship with t. High skill migrants, since more productive, have a lower cost of effort (t) and, ceteris paribus, can spend more hours in integrating activities with respect to low skill individuals, maintaining the same level of utility. At the optimum then, $t_H > t_L$ without the need for the government to compensate such different effort. Since there is complete information, it can easily provide two different contracts tailored according to individual's productivity.

From equations (3.23) and (3.24) and (3.25) and (3.26), we can also compute the MRS for both types of migrants.

The marginal utilities of effort are:

○ $\dfrac{\partial \overline{U}}{\partial t_H} = -\dfrac{\partial \pi_H}{\partial t_H} \dfrac{(\delta + \delta k)}{\mu}$;

○ $\dfrac{\partial \underline{U}}{\partial t_L} = -\dfrac{\partial \pi_L}{\partial t_L} \dfrac{(1 - \delta + k - \delta k)}{\beta}$

While from equations (3.25) and (3.26) we have the marginal utility of transfers:

○ $\dfrac{\partial \overline{U}}{\partial c_H} = \dfrac{(1 + \lambda)}{\mu}$;

○ $\dfrac{\partial \underline{U}}{\partial c_L} = \dfrac{(1 + \lambda)}{\beta}$

MRS_H and MRS_L are then equal to:

$$MRS_H = \frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{(1 + \lambda)}$$

$$MRS_L = \frac{\partial \pi_L}{\partial t_L} \frac{(1 - \delta + k - \delta k)}{(1 + \lambda)}$$

3.5. Asymmetric Information

Now we imagine θ is private information. The government cannot offer the same transfer to individuals and ask for different level of effort. It is in fact in the interest and in the possibility of H to pretend to be less productive than what they really are and deviate from the equilibrium of symmetric information. The government has to offer two different contracts, one designed for the H type and one designed for the low skilled. However, to make sure H reveal truthfully their type and choose the contract was designed for them, the government needs to add another constraint to the problem. It must be that the utility of individual of type H when declaring the truth and accepting the contract designed for type H is at least equal, if not greater, than the utility of type H individual who pretend to be of the low type and accept the contract designed for type L. In order to achieve this result, the government has to exploit the sorting condition: the willingness to make an effort at the margin is different between H and L. The contract designed for L, must be unattractive to H.

This new constraint can be written as:

$$\pi_H \overline{U^B} + (1 - \pi_H)\overline{U^M} \geq \pi_L \widehat{U^B} + (1 - \pi_L)\widehat{U^M}$$

Where:

- $\widehat{U^B}(C_L, t_L, \theta_H, W)$ is the utility of individual of type H who mimics type L and succeed in integrating;

- $\widehat{U^M}(C_L, t_L, \theta_H)$ is the utility of individual of type H who mimics type L but do not integrate.

The expected utility $\widehat{U}$ has the same characteristics of $\overline{U}$ and $\underline{U}$:

- $\widehat{U_c^{B/M}} > 0 \ e \ \widehat{U_c^{B/M}} < 0$;

- $\widehat{U_t^{B/M}} < 0 \ e \ \widehat{U_{tt}^{B/M}} < 0$.

The Lagrangian can then now be rewritten as:

$$
\begin{aligned}
L\big(q_h, q_L, t_H, t_L, C_H, C_L, \gamma, \mu, \beta\big) \\
= \ & \delta \pi_H + (1 - \delta)\pi_L - \delta k(1 - \pi_H) - (1 - \delta)k(1 - \pi_L) \\
& - (1 + \lambda)(q_H + q_L + C_H + C_L) \\
& - \gamma\big[-\pi_H \overline{U^B} - (1 - \pi_H)\overline{U^M} + \pi_L \widehat{U^B} + (1 - \pi_L)\widehat{U^M}\big] \\
& - \mu\big[-\pi_H \overline{U^B} - (1 - \pi_H)\overline{U^M} + U^*\big] - \beta\big[-\pi_L \underline{U^B} - (1 - \pi_L)\underline{U^M} + U^*\big]
\end{aligned}
$$

And the FOCs as:

$$
\begin{cases}
\frac{\partial L}{\partial t_H} = (\delta + \delta k)\frac{\partial \pi_H}{\partial t_H} + \gamma\frac{\partial \pi_H}{\partial t_H}\big(\overline{U^B} - \overline{U^M}\big) + \gamma\pi_H\frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\gamma\frac{\partial \overline{U^M}}{\partial t_H} + \mu\frac{\partial \pi_H}{\partial t_H}\big(\overline{U^B} - \overline{U^M}\big) + \mu\pi_H\frac{\partial \overline{U^B}}{\partial t_H} + (1 - \pi_H)\mu\frac{\partial \overline{U^M}}{\partial t_H} = 0 & (3.33) \\[2mm]
\frac{\partial L}{\partial t_L} = (1 - \delta + k - \delta k)\frac{\partial \pi_L}{\partial t_L} + \gamma\frac{\partial \pi_L}{\partial t_L}\big(\widehat{U^M} - \widehat{U^B}\big) - \gamma\pi_L\frac{\partial \widehat{U^B}}{\partial t_L} - \gamma(1 - \pi_L)\frac{\partial \widehat{U^M}}{\partial t_L} + \beta\frac{\partial \pi_L}{\partial t_L}\big(\underline{U^B} - \underline{U^M}\big) + \beta\pi_L\frac{\partial \underline{U^B}}{\partial t_L} + \beta(1 - \pi_L)\frac{\partial \underline{U^M}}{\partial t_L} = 0 & (3.34) \\[2mm]
\frac{\partial L}{\partial C_H} = (\gamma + \mu)\left[\pi_H\frac{\partial \overline{U^B}}{\partial C_H} + (1 - \pi_H)\frac{\partial \overline{U^M}}{\partial C_H}\right] = 1 + \lambda & (3.35) \\[2mm]
\frac{\partial L}{\partial C_L} = -\gamma\pi_L\frac{\partial \widehat{U^B}}{\partial C_L} - \gamma(1 - \pi_L)\frac{\partial \widehat{U^M}}{\partial C_L} + \beta\pi_L\frac{\partial \underline{U^B}}{\partial C_L} + \beta(1 - \pi_L)\frac{\partial \underline{U^M}}{\partial C_L} = 1 + \lambda & (3.36) \\[2mm]
\gamma\big[-\pi_H \overline{U^B} - (1 - \pi_H)\overline{U^M} + \pi_L \widehat{U^B} + (1 - \pi_L)\widehat{U^M}\big] = 0 & (3.37) \\[1mm]
\mu\big[-\pi_H \overline{U^B} - (1 - \pi_H)\overline{U^M} + U^*\big] = 0 & (3.38) \\[1mm]
\beta\big[-\pi_L \underline{U^B} - (1 - \pi_L)\underline{U^M} + U^*\big] = 0 & (3.39) \\[1mm]
\gamma \geq 0 & (3.40) \\[1mm]
\mu \geq 0 & (3.41) \\[1mm]
\beta \geq 0 & (3.42)
\end{cases}
$$

To understand if the government distorts individuals' choices with respect to the situation in symmetry of information, we have to look at the MRS.

The derivatives are more complex since the optimization happens under three constraints. By assumption, we know the incentive compatible constraint is binding, meaning that the lagrangian multiplier γ is different from zero.

Also the β multiplier is different from zero: note that in equation (3.34) if β is equal to zero, we will have that:

$$
(1 - \delta + k - \delta k)\frac{\partial \pi_L}{\partial t_L} = \gamma\left[\frac{\partial \pi_L}{\partial t_L}\big(\widehat{U^B} - \widehat{U^M}\big) + \pi_L\frac{\partial \widehat{U^B}}{\partial t_L} + (1 - \pi_L)\frac{\partial \widehat{U^M}}{\partial t_L}\right]
$$

Since the right hand side of the equation is the partial derivative of $\widehat{U}$ with respect to t (which is negative) and since γ and $(1 - \delta + k - \delta k)$ are positive, it would mean that $\frac{\partial \pi_L}{\partial t_L}$ is negative. By definition, this is impossible.

We are then left with two possible cases.

Case 1: $\gamma, \beta, \mu \neq 0$

We compute the MRS of H and L. From (3.33) and (3.34) we obtain:

○ $\frac{\partial \bar{U}}{\partial t_H} = -\frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{\mu + \gamma}$;

○ $\frac{\partial \underline{U}}{\partial t_L} = -\frac{\partial \pi_L}{\partial t_L} \frac{(1 - \delta + k - \delta k)}{\beta} + \frac{\gamma}{\beta} \left[\frac{\partial \pi_L}{\partial t_L} \left(\widehat{U^B} - \widehat{U^M} \right) + \pi_L \frac{\partial \widehat{U^B}}{\partial t_L} + (1 - \pi_L) \frac{\partial \widehat{U^M}}{\partial t_L} \right] =$

$\frac{-\frac{\partial \pi_L}{\partial t_L}(1 - \delta + k - \delta k) + \gamma \frac{\partial \widehat{U}}{\partial t_L}}{\beta}$

While from equations (3.35) and (3.36) we have:

○ $\frac{\partial \bar{U}}{\partial c_H} = \frac{(1 + \lambda)}{\mu + \gamma}$;

○ $\frac{\partial \underline{U}}{\partial c_L} = \frac{(1 + \lambda)}{\beta} + \frac{\gamma}{\beta} \frac{\partial \widehat{U}}{\partial c_L}$

MRS_H and MRS_L are then equal to:

$$MRS_H = \frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{(1 + \lambda)}$$

$$MRS_L = \frac{(1 - \delta + k - \delta k) \frac{\partial \pi_L}{\partial t_L} - \gamma \frac{\partial \widehat{U}}{\partial t_L}}{1 + \lambda + \gamma \frac{\partial \widehat{U}}{\partial C_L}}$$

Case 2: $\gamma, \beta \neq 0$ and $\mu = 0$

In this case the partial derivatives of utility for H that we can derive from (3.33) and (3.35) are:

○ $\frac{\partial \bar{U}}{\partial t_H} = -\frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{\gamma}$;

○ $\frac{\partial \bar{U}}{\partial c_H} = \frac{(1 + \lambda)}{\gamma}$;

Leading to:

$$MRS_H = \frac{\partial \pi_H}{\partial t_H} \frac{(\delta + \delta k)}{(1 + \lambda)}$$

Looking at the low type, we can see that μ never enters in equations (3.34) and (3.36), leaving MRS_L unchanged.

For both types of individual, then, the marginal rate of substitution in case one is equal to the one in case two. What is interesting is to compare these marginal rates of substitution of H and L with the ones in symmetric information, in order to understand if and how the solutions have changed.

We can easily see that the marginal rate of substitution for high skilled individuals has not changed in asymmetry, meaning that individual's choices are not distorted. What has changed is the MRS_L. As we expected in this kind of adverse selection problem, to avoid mimicking, the government is forced to distort the choices of the low type. The high type has no incentive whatsoever to pretend to be someone else.

However, we are not able to determine the change in the size of the marginal rate of substitution. Remember that:

- With symmetric information: $MRS_L = \frac{\partial \pi_L}{\partial t_L} \frac{(1-\delta+k-\delta k)}{(1+\lambda)}$

- With asymmetries: $MRS_L = \frac{(1-\delta+k-\delta k)\frac{\partial \pi_L}{\partial t_L}-\gamma\frac{\partial \widehat{U}}{\partial t_L}}{1+\lambda+\gamma\frac{\partial \widehat{U}}{\partial c_L}}$

In the latter ratio than, the numerator is greater than in symmetry (since the marginal utility of the effort is negative), but greater is also the denominator, leaving us with an uncertain results.

To have a more complete picture, we try now to reflect on the initial input of resources that can complement or substitute the individual's hours of activities.

3.6. Maximization with the input q

In symmetric information, we can rewrite the FOCs as:

$$\begin{cases} \dfrac{\partial L}{\partial q_H} = \delta \dfrac{\partial \pi_H}{\partial q_H} + \delta k \dfrac{\partial \pi_H}{\partial q_H} - (1+\lambda) + \mu \overline{U^B} \dfrac{\partial \pi_H}{\partial q_H} - \mu \overline{U^M} \dfrac{\partial \pi_H}{\partial q_H} = 0 & (3.21) \\[2mm]
\dfrac{\partial L}{\partial q_L} = (1-\delta) \dfrac{\partial \pi_L}{\partial q_L} + (k-\delta k) \dfrac{\partial \pi_L}{\partial q_L} - (1+\lambda) + \beta \underline{U^B} \dfrac{\partial \pi_L}{\partial q_L} - \beta \underline{U^M} \dfrac{\partial \pi_L}{\partial q_L} = 0 & (3.22) \\[2mm]
\dfrac{\partial L}{\partial t_H} = (\delta + \delta k) \dfrac{\partial \pi_H}{\partial t_H} + \mu \dfrac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \mu \pi_H \dfrac{\partial \overline{U^B}}{\partial t_H} + \mu(1-\pi_H) \dfrac{\partial \overline{U^M}}{\partial t_H} = 0 & (3.23) \\[2mm]
\dfrac{\partial L}{\partial t_L} = (1-\delta+k-\delta k) \dfrac{\partial \pi_L}{\partial t_L} + \beta \dfrac{\partial \pi_L}{\partial t_L}(\underline{U^B} - \underline{U^M}) + \beta \pi_L \dfrac{\partial \underline{U^B}}{\partial t_L} + \beta(1-\pi_L) \dfrac{\partial \underline{U^M}}{\partial t_L} = 0 & (3.24) \\[2mm]
\dfrac{\partial L}{\partial C_H} = \mu(\pi_H \dfrac{\partial \overline{U^B}}{\partial C_H} - \pi_H \dfrac{\partial \overline{U^M}}{\partial C_H} + \dfrac{\partial \overline{U^M}}{\partial C_H}) = (1+\lambda) & (3.25) \\[2mm]
\dfrac{\partial L}{\partial C_L} = \beta(\pi_L \dfrac{\partial \underline{U^B}}{\partial C_L} - \pi_L \dfrac{\partial \underline{U^M}}{\partial C_L} + \dfrac{\partial \underline{U^M}}{\partial C_L}) = (1+\lambda) & (3.26) \\[2mm]
\mu[-\pi_H \overline{U^B} - (1-\pi_H)\overline{U^M} + U^*] = 0 & (3.27) \\[2mm]
\beta[-\pi_L \underline{U^B} - (1-\pi_L)\underline{U^M} + U^*] = 0 & (3.28) \\[2mm]
\mu \geq 0 & (3.29) \\[2mm]
\beta \geq 0 & (3.30) \end{cases}$$

We can see from equations (3.21) and (3.22) that:

- $\dfrac{\partial \pi_H}{\partial q_H} = \dfrac{(1+\lambda)}{(\delta - \delta k + \mu \overline{U^B} - \mu \overline{U^M})};$

- $\dfrac{\partial \pi_L}{\partial q_L} = \dfrac{(1+\lambda)}{(1-\delta+k-\delta k+\beta \underline{U^B} - \beta U^M)};$

- $\dfrac{\partial \pi_H / \partial q_H}{\partial \pi_L / \partial q_L} = \dfrac{(1-\delta+k-\delta k+\beta \underline{U^B} - \beta U^M)}{(\delta - \delta k + \mu \overline{U^B} - \mu \overline{U^M})}$

In asymmetric information instead, the FOCs are:

$$\begin{cases} \dfrac{\partial L}{\partial q_H} = (\delta + \delta k + \gamma \overline{U^B} - \gamma \overline{U^M} + \mu \overline{U^B} - \mu \overline{U^M}) \dfrac{\partial \pi_H}{\partial q_H} = (1+\lambda) & (3.31) \\[2mm]
\dfrac{\partial L}{\partial q_L} = (1-\delta+k-\delta k - \gamma \widehat{U^B} + \gamma \widehat{U^M} + \beta \underline{U^B} - \beta U^M) \dfrac{\partial \pi_L}{\partial q_L} = (1+\lambda) & (3.32) \\[2mm]
\dfrac{\partial L}{\partial t_H} = (\delta + \delta k) \dfrac{\partial \pi_H}{\partial t_H} + \gamma \dfrac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \gamma \pi_H \dfrac{\partial \overline{U^B}}{\partial t_H} + (1-\pi_H)\gamma \dfrac{\partial \overline{U^M}}{\partial t_H} + \mu \dfrac{\partial \pi_H}{\partial t_H}(\overline{U^B} - \overline{U^M}) + \mu \pi_H \dfrac{\partial \overline{U^B}}{\partial t_H} + (1-\pi_H)\mu \dfrac{\partial \overline{U^M}}{\partial t_H} = 0 & (3.33) \\[2mm]
\dfrac{\partial L}{\partial t_L} = (1-\delta+k-\delta k) \dfrac{\partial \pi_L}{\partial t_L} + \gamma \dfrac{\partial \pi_L}{\partial t_L}(\widehat{U^M} - \widehat{U^B}) - \gamma \pi_L \dfrac{\partial \widehat{U^B}}{\partial t_L} - \gamma(1-\pi_L) \dfrac{\partial \widehat{U^M}}{\partial t_L} + \beta \dfrac{\partial \pi_L}{\partial t_L}(\underline{U^B} - \underline{U^M}) + \beta \pi_L \dfrac{\partial \underline{U^B}}{\partial t_L} + \beta(1-\pi_L) \dfrac{\partial \underline{U^M}}{\partial t_L} = 0 & (3.34) \\[2mm]
\dfrac{\partial L}{\partial C_H} = (\gamma + \mu)\left[\pi_H \dfrac{\partial \overline{U^B}}{\partial C_H} + (1-\pi_H) \dfrac{\partial \overline{U^M}}{\partial C_H}\right] = 1+\lambda & (3.35) \\[2mm]
\dfrac{\partial L}{\partial C_L} = -\gamma \pi_L \dfrac{\partial \widehat{U^B}}{\partial C_L} - \gamma(1-\pi_L) \dfrac{\partial \widehat{U^M}}{\partial C_L} + \beta \pi_L \dfrac{\partial \underline{U^B}}{\partial C_L} + \beta(1-\pi_L) \dfrac{\partial \underline{U^M}}{\partial C_L} = 1+\lambda & (3.36) \\[2mm]
\gamma[-\pi_H \overline{U^B} - (1-\pi_H)\overline{U^M} + \pi_L \widehat{U^B} + (1-\pi_L)\widehat{U^M}] = 0 & (3.37) \\[2mm]
\mu[-\pi_H \overline{U^B} - (1-\pi_H)\overline{U^M} + U^*] = 0 & (3.38) \\[2mm]
\beta[-\pi_L \underline{U^B} - (1-\pi_L)\underline{U^M} + U^*] = 0 & (3.39) \\[2mm]
\gamma \geq 0 & (3.40) \\[2mm]
\mu \geq 0 & (3.41) \\[2mm]
\beta \geq 0 & (3.42) \end{cases}$$

In case 1, we obtain from equations (3.31) and (3.32):

- $\dfrac{\partial \pi_H}{\partial q_H} = \dfrac{(1+\lambda)}{(\delta + \delta k + \gamma \overline{U^B} - \gamma \overline{U^M} + \mu \overline{U^B} - \mu \overline{U^M})};$

- $\dfrac{\partial \pi_L}{\partial q_L} = \dfrac{(1+\lambda)}{(1-\delta+k-\delta k - \gamma \widehat{U^B} + \gamma \widehat{U^M} + \beta \underline{U^B} - \beta \underline{U^M})};$

- $\dfrac{\partial \pi_H / \partial q_H}{\partial \pi_L / \partial q_L} = \dfrac{(1-\delta+k-\delta k - \gamma \widehat{U^B} + \gamma \widehat{U^M} + \beta \underline{U^B} - \beta U^M)}{(\delta + \delta k + \gamma \overline{U^B} - \gamma \overline{U^M} + \mu \overline{U^B} - \mu \overline{U^M})}$

In case 2 instead, we will have:

○ $\dfrac{\partial \pi_H}{\partial q_H} = \dfrac{(1+\lambda)}{(\delta + \delta k + \gamma U^B - \gamma U^M)}$;

○ $\dfrac{\partial \pi_L}{\partial q_L} = \dfrac{(1+\lambda)}{(1 - \delta + k - \delta k - \gamma \widehat{U^B} + \gamma \widehat{U^M} + \beta \underline{U^B} - \beta \underline{U^M})}$;

○ $\dfrac{\partial \pi_H / \partial q_H}{\partial \pi_L / \partial q_L} = \dfrac{(1 - \delta + k - \delta k - \gamma \widehat{U^B} + \gamma \widehat{U^M} + \beta \underline{U^B} - \beta \underline{U^M})}{(\delta + \delta k + \gamma U^B - \gamma U^M)}$

With respect to the situation in symmetry, we can note that:

○ The marginal productivity of q_L is lower, since $\widehat{U^B}$ and $\widehat{U^M}$ are positive and $\widehat{U^M} < \widehat{U^B}$. This suggest that, if q and t are substitutable, the government in asymmetric information had to compensate with more resources to increase the probability of integration.

○ The marginal productivity of q_H depends on the value of the multipliers γ and μ. If μ is different from zero, then also $\dfrac{\partial \pi_H}{\partial q_H}$ is lower in asymmetry than in symmetric information. If instead, μ is equal to zero, the difference between the productivity depends on the different value of γ and μ.

CONCLUSIONS

At the beginning of this work, we have tried to understand what integration is, why is in the policy agenda, and how OECD countries deal with it.

From the general overview of measures described in chapter one, we have learnt what are the main problems and challenges that governments face worldwide. At the same time, we have seen some interesting solutions and good practises that are, or should be, applied. One, over which there seems to be consensus, is the idea of designing integration paths tailored to individuals' needs and characteristics, so that to exploit their full potential, to allocate resources efficiently and to improve the coordination and collaboration between the different actors involved in the integration process.

In the second chapter of this work, we tried to understand what the main characteristics of migrants coming to western countries were. In particular, the focus has been on migrants' abilities and on how different push and pull factors could have a role in determining migrants' self-selection along this dimension. Unfortunately, the literature both theoretically and empirically shows how precise, unique and definite criteria to understand migrants' abilities are hard to find. Looking at the reasons why they left, or at the countries from which they fled, is not sufficient to infer on their skills and competences. Their productivities remain unobservable to governments, and a proper mechanism to reveal them should be applied.

In the third and final chapter of this work, we tried to design such mechanism. We imagined that governments have to deal with two different types of migrants: the high skilled and the low skilled. Their objective is to maximize migrants' probability of integration, since not including them generates costs for the society. However, the process of integration is costly both for the governments, who have to subsidize migrants and give them public resources, and for individuals, who have to put an effort in the activities for integration. Detecting the effort migrants need to put according to their productivity, and assuring they are collaborating at their maximum potential, is what governments have to do to spend efficiently public resources.

We have described two possible situations. At first, there is symmetry of information between the economic actors and governments have no difficulties in designing tailored contracts (defined by the quantity of public transfers and individual efforts). Later on, migrants' productivity becomes private information. Due to this asymmetry, governments need to distort individual choices at the optimum to make sure there is no mimicking between the two types. In order to do so and to build an incentive compatible revelation mechanism, they have to

exploits the available information they dispose of: the sorting condition is represented by individuals' preferences towards the effort and the transfer they receive. Thanks to the different cost migrants perceive when making an effort, the government is able to construct an incentive compatible solution. At the optimum it is possible to observe that low skill migrants are the one whose choices are distorted with respect to the situation of symmetric information; high skilled instead at the margin maintain the same willingness to work, in order to receive a certain amount of subsidy.

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