The London School of Economics and Political Science

Student mobility policies in the European Union: the case of the Master and Back programme.

Private returns, job matching and determinants of return migration.

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Declaration

I certify that the thesis I have presented for examination for the M.Phil./Ph.D. degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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I confirm that Chapter 3 was jointly co-authored with Dr. Riccardo Crescenzi and Dr. Luisa Gagliardi and I contributed 60% of this work.

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Acknowledgments

Abstract

Student mobility policies have become a high priority of the European Union since they are expected to result in private and social returns. However, at the same time these policies risk leading to unwanted geographical consequences, particularly brain drain from lagging to core regions, as formerly mobile students may not return on completion of their studies. Accordingly, this thesis focuses on both the private returns to student mobility and the determinants of return migration. It is important to note that, currently, the literature about the mobility of students is scarce and provides mixed evidence regarding both these issues.

We contribute to the current academic debate in this field by doing a case study on the Master and Back programme, which was implemented since 2005 by the Italian lagging region of Sardinia. The programme is co-financed by the European Social Fund and consists of providing talented Sardinian students with generous scholarships to pursue Master's and Doctoral degrees in the world's best universities.

Concerning the private returns to migration, we evaluate the impact of this scheme on the odds of employment and net monthly income of the recipients. Moreover, we assess whether the scheme has been able to improve their job matching. To perform this analysis we access unique administrative data on the recipients and a suitable control group, complemented by a purpose-designed web survey.

In addition, we enquire into the determinants of return migration and the underlying decision-making process by using a mixed-methods approach, which is particularly well-suited for very complex phenomena like the one at hand.

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List of abbreviations

ATT: Average Treatment Effect on Treated
CEDEFOP: European Centre for the Development of Vocational Training
CEU: Council of the European Union
CIA   Conditional Independence Assumption
CRENOS: Centre for North and South Economic Research
CSC: Common Support Condition
EC: European Commission
ERASMUS: European Region Action Scheme for the Mobility of University Students
ERSA: European Regional Science Association
ESF: European Social Fund
EU: European Union
FMS: Formerly Mobile Students
FDI: Foreign Direct Investment
GDP: Gross Domestic Product
IV: Instrumental Variable
LM: Learning Mobility
M&B: Master and Back
NCPTS: Nucleo Regionale Conti Pubblici Territoriali Sardegna
NNM: Nearest Neighbour Matching
OLS: Ordinary Least Squares
PPP: Purchase Power Parity
PS: Propensity Score
PSM: Propensity Score Matching
R&D: Research and Development
SM: Student Mobility

Chapter 1. Theoretical framework, review of EU policies and case study

1.1 Introduction

This doctoral thesis is a monograph focusing on the consequences of Student Mobility (SM) and on the determinants of student return migration to European Union (EU) lagging regions[1]. As such, the target group of this study are Formerly Mobile Students (FMS) – i.e., individuals who have experienced SM, usually in their tertiary education. The interest in this sub-group of highly skilled individuals hinges on the fact that, despite the sharp increase in the number of international students over the last few decades (OECD, 2011), thus far very few academic studies have focused on them as a distinctive subset of migrants (King and Raghuram, 2013). This is somewhat surprising given the emphasis placed on them by European policy. In fact, the EU has launched a number of initiatives and schemes aiming to enhance the mobility of students, as this type of investment is expected to bring a raft of benefits to member states, including improved labour market efficiency and enhanced knowledge flows (European Commission (EC) 2009). However, these potential benefits do not come without risk. Specifically, increased SM could lead to unwanted geographical consequences, in particular *brain drain* – an issue that has been acknowledged both by the literature and by policy-makers (EC, 2001, Oosterbeek and Webbink, 2011).

Student mobility raises a number of interesting issues that should be explored in academic work: this thesis approaches three of these. First, it studies the effects of SM from the individual's perspective by examining whether it can increase personal success in the labour market, as proxied by the probability of finding employment and of increased earning potential. Secondly, it assesses whether SM can increase the likelihood of achieving a good *matching* between the skills required for a job and the skills possessed by the individual (henceforth just *job matching*[2]). Finally, through both quantitative and qualitative analysis, it explores the determinants of mobile students' return migration.

In order to shed light on these matters we build a case study on the Master and Back (M&B) programme, which is a scheme implemented by the lagging Italian region of Sardinia. The programme began in 2005 and was funded by resources granted by the

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[1] Student Mobility is an instance of Learning Mobility - i.e., every king of mobility for the purpose of learning.
[2] An individual who achieves a good matching is also said to be *matched*, while one who does not is also said to be *mismatched*.

European Union. Its purpose is to provide the best and brightest students resident in Sardinia with the opportunity to achieve postgraduate degrees in high quality universities across the globe.

This chapter aims mainly to frame this thesis in a suitable theoretical framework and to describe the case study used to answer the relevant research questions. The chapter is organised as follows. In Section 1.2 the key academic debates surrounding the focus of the thesis are briefly outlined. Section 1.3 focuses on student mobility in the framework of EU policies. In particular, it outlines the rationale underlying these policies, describes the various strategies and schemes carried out by the EU in this field and discusses the potential trade-offs in investing in SM for the EU. Section 1.4 identifies the main gaps in the literature and defines the research questions addressed in this work. Moreover, in Section 1.5 the case study is described in detail and framed in an appropriate socio-economic scenario. Finally, an identikit of the M&B recipients is provided.

1.2 Formerly mobile students: labour market outcomes, job matching and determinants of return migration

Human capital can be defined as "the stock of knowledge, skills and abilities embedded in an individual" (Becker, 1964, p. 10) and has become a key concept of modern economic theory. Its importance has reached the point that, according to Gary S. Becker, "this is the 'age of human capital' in the sense that human capital is by far the most important form of capital in modern economies" (2002, p.3).

There are various ways to increase individual levels of human capital, such as education, training, and mobility. All of these methods incur costs, be they direct costs, consumption costs or foregone earnings[3]. However, such costs are usually believed to be less than the benefits gained, which mainly consist of achieving better labour market outcomes. In fact, according to Human Capital Theory (Becker, 1964, Mincer, 1958,

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[3] "Much of what we call consumption constitutes investment in human capital. Direct expenditures on education, health and internal migration to take advantage of better job opportunities are clear examples. Earnings foregone by mature students attending school and by workers acquiring on–the–job training are equally clear examples. Yet, nowhere do these enter our national [income] accounts. The use of leisure time to improve skills and knowledge is widespread and it too is unrecorded. In these and similar ways the quality [emphasis in the original] of human effort can be greatly improved and its productivity enhanced. I shall contend that such investments in human capital accounts for most of the impressive rise in real earnings per worker" (Schultz, 1961, p. 1).

Schultz, 1961), individuals try to maximise utility and, with that purpose in mind, they estimate costs and benefits of investing in their human capital and carry out the investment only insofar as the expected benefits exceed the expected costs. The gains from such investment are also known as *private returns to* human capital.

If on the one hand human capital results in private returns, on the other it benefits society as a whole in the form of *social returns* (for a review see Psacharopoulos and Patrinos, 2004). The hypothesis that enhancing individual levels of human capital may lead to social benefits has been highlighted by Endogenous Growth Theory, particularly through the works of and Lucas and Romer. Lucas (1988) posits that the concentration of highly skilled individuals produces positive externalities (external human capital) leading to greater productivity and growth; Romer (1991) shows that there is a correlation between knowledge, human capital and economic growth (for a review of this literature, see Rodríguez-Pose, 2006). More recently, various academic studies have suggested that human capital externalities play a key role in boosting economic growth (Acemoglu and Angrist, 2001, Glaeser, 1999, Moretti, 2004b, Rodríguez-Pose and Vilalta-Bufí, 2005, Shapiro, 2005).

In part as a result of this academic work, countries and regions have started to compete with each other in order to attract the best and the brightest talents and to pursue policies that enhance their own nation's stock of human capital (Kuptsh and Pang, 2006, OECD, 2008). Usually, attraction policies for the highly skilled consist in providing fellowships, grants, tax benefits, subsidies and so on to targeted groups of individuals. Many countries have also created special visas to simplify and speed up the immigration process. Moreover, some countries have established special offices entrusted with the task of attracting highly skilled individuals (OECD, 2008).

However, it is worth noting that some sub-groups of highly skilled individuals are more inclined than others to be geographically mobile. In particular, there is evidence that young recent graduates tend to have particularly high levels of geographical mobility as compared to the population average (Plane, 1993). This trait is due to the fact that, upon completion of their studies, graduates go through a transition phase in which they try to reap their investment in education and, in order to achieve this objective, are more willing to make sacrifices, including undertaking geographical mobility (Schomburg and Teichler, 2011). Moreover, for these individuals the opportunity costs of staying in an inferior situation are relatively high and the risk of a move resulting in

an inferior outcome is low, as they have high information gathering skills (Faggian and McCann, 2009a). This propensity to mobility makes (former) students a particularly suitable group to study the interplay between human capital and geographical mobility. There is evidence of this in the growing number of academic articles which, to shed light on this issue, focus on this target group (Alberts and Hazen, 2005, Biagi et al., 2011, Faggian et al., 2013, Faggian and McCann, 2009c, Faggian et al., 2007b, Haapanen and Tervo, 2012, Jauhiainen, 2011, Messer and Wolter, 2007, Venhorst, 2012, Wiers-Jenssen, 2008).

To further clarify the concept of SM, consider that the experiences of SM can vary in length and intensity and, according to these characteristics, they are categorised by the literature (see King and Raghuram, 2013). In particular, a distinction is usually made between *credit mobility* and *degree mobility*: the former typically lasts less than one year and is part of a programme of study, which is only completed when the student returns to the home institution (e.g., ERASMUS programme); the latter usually lasts at least one year and consists of completing an entire programme of study such as a Bachelor's degree, Master's degree or Doctorate. This work focuses especially on *degree mobility*, since the case study on which the thesis concentrates concerns FMS who have experienced mobility to achieve degrees.

FMS deserve particular attention especially since their number has significantly increased in recent times in the wake of the rapid expansion of international education. According to the OECD (2011), over the past three decades the number of students enrolled outside their country of citizenship has risen from 0.8 million worldwide in 1975 to 3.7 million in 2009. It is worth stressing that these impressive figures can only in part be explained by the intensification of enrolment in tertiary education. In fact, according to UNESCO data, between 2000 and 2009 the number of mobile students has increased by 77% (from 2.1 to 3.7 million) while enrolment in tertiary education has only increased by 65% – from 100 million to 165 million (UNESCO Institute for Statistics, 2011, in OECD, 2011).

FMS also possess distinct characteristics as compared to their non-mobile peers. In particular, though both of them possess high levels of human capital as a result of their education, at least in theory, during their mobility FMS have accessed new cutting-edge knowledge, learnt foreign languages, become more culturally open and so on. In sum, they have acquired a particular type of human capital known as *mobility capital,*

which is a "sub-component of human capital, enabling individuals to enhance their skills because of the richness of the international experience gained by living abroad" (Murphy-Lejeune, 2002, p. 51). Interestingly, mobility capital is expected to be particularly appreciated by the labour markets and therefore to enhance individual chances of leading a successful career (see for instance Bracht et al., 2006, Konevas and Duoba, 2007, Rodrigues, 2012).

An important characteristic of FMS (as well as of other types of individuals with former mobility experience) is that they are expected to be more mobile later in life than their non-mobile peers. In particular, their prior migration experience reduces the costs of further migration as they have lower psychic and information costs, more social networks in alternative locations and so on (Faggian et al., 2007a, Parey and Waldinger, 2011, Rodrigues, 2012).

Unfortunately, SM may imply major drawbacks for the sending regions. In particular, it tends to trigger highly skilled migration from lagging to core regions (Di Pietro, 2012, Oosterbeek and Webbink, 2011, Parey and Waldinger, 2011), a phenomenon usually referred to as *brain drain* (Bhagwati and Hamada, 1974). This is a consequence of the fact that the best universities are often located in core cities/regions, which usually also host better labour markets than lagging regions. Given the favourable job market, once students have relocated from lagging to core regions for their studies, upon graduation they are likely to search for employment in proximity of their new location, at the peril of their original sending regions (Dotti et al., 2013, Faggian and McCann, 2006, Venhorst, 2013).

As we highlighted earlier, for the purposes of this work we are particularly interested in three major aspects of SM, which are described in the next sub-sections. First, in Sub-section 1.2.1, we study the impact of being mobile as students on individual labour market outcomes. In other words, from an individual perspective we examine whether the investment in SM can pay off. Second, in Sub-section 1.2.2, we investigate whether being mobile as students increases the chances of job matching. Finally, in Sub-section 1.2.3, since brain drain is a major drawback of SM, we study the determinants of mobile students' return migration.

As we summarise the literature in the next sub-sections, we set the theoretical framework to provide an overview of the current major academic debates; a more detailed theoretical discussion is provided in the next chapters. Since research into

FMS is an emerging field in migration studies, the theoretical framework of the thesis integrates literature explicitly focusing on FMS with more general migration literature. In so doing, we are able to provide a particularly rich and incisive analysis of our case study.

1.2.1 Student mobility and individual labour market performance

In the previous section we pointed out that student mobility enhances individual levels of human capital (Bracht et al., 2006, Konevas and Duoba, 2007, Murphy-Lejeune, 2002, Rodrigues, 2012) and spatial flexibility (Di Pietro, 2012, King and Ruiz-Gelices, 2003, Oosterbeek and Webbink, 2011). Therefore, since higher levels of human capital and spatial flexibility should improve individual labour market performance (Becker, 1964, Card, 1999, Glaeser and Maré, 2001, Ham et al., 2005, Pekkala, 2002), we expect FMS to achieve better labour market outcomes than their non-mobile peers. Nevertheless, the few empirical studies existing on this topic that focus explicitly on FMS provide mixed results (see for instance Messer and Wolter, 2007, Oosterbeek and Webbink, 2006, Rodrigues, 2013).

In this regard, there are also theoretical grounds for expecting SM to have a negative effect on labour market outcomes. For instance, Dual Labour Market Theory states that the smooth functioning of the labour market is hindered by social and institutional barriers (Massey et al., 1993). As a consequence of this, being endowed with high levels of human capital and with good spatial flexibility might not be sufficient conditions to have good careers. For instance, Constant and Massey (2005) show that, in Germany, given equal levels of human capital, local workers perform better than immigrant foreign workers.

Another potential explanation why SM might not lead to better labour market prospects is related to the quality of education. In fact, not all universities are equally prestigious and not all deliver equally high-quality education (Card and Krueger, 1992). For this reason, individuals endowed with the same level of education (i.e., degree) might easily achieve different returns (Hussain et al., 2009). Moreover, various studies have shown that human capital is place-specific (Friedberg, 2000, Wiers-Jenssen and Try, 2005, Zeng and Xie, 2004). This means that the best strategy to take advantage of one's own human capital is to work in the same location where it was acquired – i.e., in this case,

where one studied. Consequently, SM might be an unsuccessful strategy to improve individual career prospects.

A key debate in studies dealing with the geographical mobility of human capital concerns migration selectivity (Nakosteen and Zimmer, 1980). In fact, those who are more likely to achieve good labour market outcomes are also more likely to migrate. In this regard, labour market outcome differentials between mobile and non-mobile individuals do not only hinge on spatial mobility itself but also on other factors (social origin, individual ability and so on). The importance of this issue is highlighted by a growing number of academic studies (see for instance Lehmer and Ludsteck, 2011, Nakosteen and Westerlund, 2004, Nakosteen et al., 2008, Yankow, 2003). Also, regarding SM in particular, there is evidence that those who decide to undertake a study programme abroad (either in another country or another region) tend to constitute a selected group regarding social origin and individual ability (Messer and Wolter, 2007, Wiers-Jenssen, 2011).

1.2.2 Student mobility and job matching

In the last decades, the number of individuals completing tertiary education programmes has increased globally. However, the number of job vacancies requiring high skills has not increased at the same pace. This has led numerous new graduates to struggle to find suitable employment or to settle for positions for which they were mismatched (or overeducated) (Freeman, 1976). Mismatching can be vertical or horizontal: the former, referred to as overeducation, occurs when the employee possesses an higher level of education than that formally required for his/her job (McGuinness, 2006); the latter, also referred to as overskilling, is a situation in which an individual is not able to fully utilise his/her skills and abilities in the current job (CEDEFOP, 2010).

Different strands of literature have different opinions regarding the nature of overeducation. For instance, Human Capital Theory denies the existence of overeducation as a persistent problem, since it tends to overemphasise supply side factors and to neglect demand side factors of the labour market (Green and Zhu, 2010). It conceptualises overeducation as a temporary form of disequilibrium that will be offset automatically by the labour market after a transition period (Alpin et al., 1998). In contrast, Job Competition Theory sees overeducation as a persistent problem which results from the fact that the labour market sorts the job-seekers in a queue according

to their "trainability". Since the level of education is a proxy for "trainability", enhancing the average levels of education does not reduce the crowding of the queue and therefore does not solve the overeducation problem. In fact, according to Job Competition Theory overeducation is not a supply-side problem but a demand-side problem (Alpin et al., 1998, McGuinness, 2006). Persistent overeducation is also consistent with Assignment Theory, according to which it results from the interaction between job and individual characteristics: individuals with particular characteristics tend to self-select into particular employments and sectors (McGuinness, 2006). Of course, imperfections in the matching mechanisms might lead to persistent overeducation.

Various studies have compared the predictions of different theories to explain overeducation, often by challenging neo-classical economics (see for example Chevalier, 2000, Duncan and Hoffman, 1982, Green and McIntosh, 2007, McGuinness, 2002, McGuinness, 2003, Sicherman, 1991).

As a matter of fact, individuals located in small and depressed labour markets are more likely to become overeducated, as the number of available jobs matching their skills is lower (Jauhiainen, 2011, Tselios, 2013). A key trait to overcome overeducation is spatial flexibility. In fact, through mobility a job-seeker can access a higher number of employment positions and, as a result, increases the chances of achieving a good matching (Büchel and Battu, 2003, Frank, 1978, Hensen et al., 2009, Jauhiainen, 2011, McGoldrick and Robst, 1996, Tselios, 2013, van Ham et al., 2001).

Like we acknowledge the risk of market failures with regard to the assignment of skills to jobs — as has been done by Job Competition Theory and Job Assignment Theory — we should also acknowledge the need to contrast it through public intervention. Unfortunately, so far very little empirical evidence has been collected on the effectiveness of public policies to contrast overeducation. To the best of our knowledge, the only example of this type of study was provided by McGuinness (2002), who assessed a training scheme implemented in Northern Ireland to contrast the (supposed) lack of business and management skills through postgraduate training and subsequent job placement assistance. He found that while the training had an adverse effect on overeducation, job placement assistance had a significant positive effect. Therefore, he concluded that policies of higher education likely swell the problem of overeducation if they do not take into account the structure of the labour market.

1.2.3 Determinants of student return migration

Earlier we mentioned that student mobility can lead to brain drain – i.e., it can generate unbalanced regional flows of highly skilled individuals from lagging regions to core regions (Di Pietro, 2012, Oosterbeek and Webbink, 2011, Parey and Waldinger, 2011). In other words, students undertake mobility to improve their human capital but often, upon completion of their studies, decide to find employment in the host region, thus resulting in a loss of capacity in the sending region (Venhorst et al., 2011). In this regard, understanding what determines return migration after the completion of student mobility experiences is particularly critical, especially for lagging countries/regions as these are the most affected by the net loss of human capital due to non-return of FMS.

Usually, the literature tends to distinguish between two main drivers of the location decision: economic factors and amenities (Biagi et al., 2011, Graves and Linneman, 1979, Greenwood and Hunt, 1989, Kemeny and Storper, 2012, Rodríguez-Pose and Ketterer, 2012, Storper and Scott, 2009). In short, the key academic debate is between whether highly skilled individuals migrate for economic reasons – better jobs, higher earnings and so on – or to pursue quality of life – pleasant climate, green spaces, nice entertainment facilities, tolerant people, etc. In the words of Storper and Scott the main question is, "do jobs follow people [amenities are dominant] or do people follow jobs [economic factors are dominant]?" (2009, p. 147)

If location decisions are driven by economic factors, we would expect individuals who have studied in economically buoyant regions to search for employment in these same regions. This especially holds true if they come from lagging locations with scarce job opportunities. Therefore, since the best universities are usually located in rich cities/regions, economic motivations might be a major driver of mobile students' non-return (Faggian and McCann, 2009b, Venhorst et al., 2011, Venhorst, 2013).

However, if amenities are dominant, we would expect formerly mobile students to locate in places endowed with locational characteristics which suit their preferences. Usually highly skilled individuals are expected to be attracted by places with warm climates, green spaces and so on (Knapp and Graves, 1989). As far as the literature regarding this topic is concerned, the work of Richard Florida deserves a special mention (Florida, 2002a, Florida, 2002b, Florida, 2004, Florida et al., 2008) as it has become particularly influential among both the readers (Glaeser, 2005a) and the policy-makers (Peck, 2005). His key points are that innovation and growth occur where the

highly skilled locate – the *creative class*, in Florida's words – and that the latter are attracted by places with high levels of tolerance, cultural and ethnic diversity and "cultural industries". Therefore, a corollary of Florida's thought is that by investing in these kinds of amenities regions can boost innovation and economic growth.

However, these factors just mentioned are not the only drivers of highly skilled locational decisions. In fact, the spatial distribution of individual social networks also plays an important role (Constant and Massey, 2003, Dahl and Sorenson, 2010b, King, 2002, Massey et al., 1993). We see that FMS not only build social networks in their host regions but also maintain extant social networks from their sending region (Geddie, 2013). As a result, their final locational decision depends on the relative strength and importance of these alternative social networks.

Social networks are crucial to opening up opportunities that would otherwise remain inaccessible (Granovetter, 2005), both in the home and host locations. For instance, family and friends in the home region can provide support in finding clients in case of self-employment, while social networks in the host region (professors, fellow students and so on) can signal job opportunities and provide references to access them. Yet, at the same time social networks, especially in the form of personal relations, can also constrain mobility. For instance, marriage can hinder mobility as couples must balance the needs of the whole family when they make a locational decision (Bielby and Bielby, 1992).

Another important debate related to the locational decision of highly skilled individuals concerns the workings of the underlying decision-making process. Many studies focus on *why* individuals decide to relocate, but few concentrates on *how* this occurs (see Carlson, 2013). For instance, Human Capital Theory tends to assume that the highly skilled make their locational decisions rationally, through a careful assessment of potential costs and benefits of alternative locations. This rationality may be based on employment opportunities or amenity characteristics, like those noted by Florida's notion of the "creative class" which tends to migrate towards places endowed with a specific set of universal characteristics. To overcome these potential limitations in the current literature, recent academic contributions have tried to decipher how the decision-making process unfolds, thereby offering a deeper and less mechanical picture of migration (Carlson, 2013, Geddie, 2010, Mosneaga and Winther, 2012, Waters and Brooks, 2010).

In summary, the mobility of students is related to numerous interesting issues that deserve closer academic scrutiny. However, as has already been noted, this topic is not only a matter of academic debate. In fact, policy-makers have become ever more convinced of the idea that increasing mobility via policy will pay economic dividends and have thus set out to stimulate it artificially – i.e., through public policies. This goal is the focus of the next section, where the role of SM in EU policies is discussed.

1.3 Student mobility and the European Union

Student mobility policies belong to the larger family of policies known as, in the European jargon, Learning Mobility (LM) policies. In this text we follow the European LM nomenclature to discuss the rationale underlying the EU geographical mobility policies directed at students and other categories of individuals that move for the purpose of learning. The EC defines LM as "transnational mobility for the purpose of acquiring new skills" (2009, p. 2) – i.e., as a period of time purposefully organised to acquiring knowledge, skills and competences in a country other than one's own. According to the EC such time should always lead to the acquisition of "qualifications or credits in an appropriate form" (2008b, p. 13). In other words, LM should always be framed in formal settings, leading to the release of a recognised title.

LM is considered to be a central goal in EU policies, since it is expected to bring significant benefits to member states. As such, it has long been incentivised through a number of initiatives and official documents (for a review see EC, 2009). In fact, according to the EC, LM should "deepen the sense of European identity and citizenship within its youth generation", while it should simultaneously "strengthen Europe's competitiveness, building its knowledge-intensive society" (2008b, p. 5). The first objective has to do with European cultural integration and the building of a shared identity, while the second refers to the economic sphere of EU integration and should boost competitiveness, knowledge creation and circulation (for a comprehensive discussion see Papatsiba, 2005, Papatsiba, 2006). However, according to King and Ruiz-Gelices (2003), over time the first objective has become much less important than the second one.

Regarding the economic dimension, the main focus of this research, the EC seems to have very precise expectations which are nicely summarised by the "Green paper – Promoting the learning mobility of young people":

"[LM] is one of the fundamental ways in which individuals, particularly young people, can strengthen their future employability as well as their personal development. Studies confirm that learning mobility adds to human capital, as students access new knowledge and develop new linguistic skills and intercultural competences. Furthermore, employers recognise and value these benefits. Europeans who are mobile as young learners are more likely to be mobile as workers later in life. Learning mobility has played an important role in making education and training systems and institutions more open, more European and international, more accessible and efficient. It can also strengthen Europe's competitiveness by helping to build a knowledge-intensive society, thereby contributing to the achievement of the objectives set out in the Lisbon strategy for growth and jobs. […] the mobility of learners should form part of a renewed drive to build Europe's skills and ability to innovate and compete at international level. It can also help to overcome the immobility paradox whereby even today, during a severe crisis, there are unfilled vacancies in some countries and sectors, due to skills shortages" (2009, p. 2).

This quotation reveals a clear resonance with the academic debate outlined in the previous section.

In first instance we see that the EC believes that LM enhances *employability*. In fact, it "adds to human capital, as students access new knowledge and develop new linguistic skills and intercultural competences" (EC, 2009). In other words, the EU puts forward the idea that individual success in the labour market depends on individual levels of human capital and that the latter can be enhanced through LM.

Secondly, the Commission posits that LM increases an individual's propensity to be mobile in the future, another trait which is also expected to enhance employability since spatially flexible people can chose between a higher number of geographically distributed jobs; therefore, such individuals are more likely to find employment which matches their expectations (Büchel and van Ham, 2003). This notion is consistent with the literature reviewed in the previous section (Faggian et al., 2007a, Parey and Waldinger, 2011, Rodrigues, 2012).

Thirdly, the Commission stresses the contribution of LM to the knowledge economy. On this subject, LM leads to the generation of knowledge flows, as individuals carry

with them their embodied knowledge when they move from one place to another (Blackler, 1995) and they use and develop their social networks in different locations to generate knowledge flows (see for instance Coe and Bunnell, 2003). Both instances, LM and subsequent labour mobility, make knowledge circulate. This is seen as core to the EU economy as a whole, as it is said to stimulate innovation and aid in the pursuit of the objectives of the Lisbon Strategy (EC, 2002).

A fourth aspect, which deserves attention, is that LM should also lead to the creation of *more and better jobs*. This consequence follows logically from the higher employability of formerly mobile individuals. In fact, it is said that LM generates exactly the kind of human capital that is required by modern labour markets, characterised by high levels of knowledge and international openness. Moreover, as formerly mobile individuals are also more spatially flexible, LM should also contribute to overcome the so called *immobility paradox*[4] *,*according to which, there is a regional mismatch between the employment demand for human capital and the local supply of skilled labour.

Finally, though it does not emerge explicitly in the quotation above, it is worth mentioning that LM is also expected to increase individual equality of opportunities. In fact, freedom of movement of workers across member states is an individual right established by the Treaties and, therefore, "it is the Commission's responsibility to ensure that the freedom of movement of workers between Member States […] is guaranteed and operates in reality" (EC, 2002, p. 6). Moreover, favouring access to labour markets is expected to overcome problems of social exclusion. For instance, according to the Council of the European Union (CEU), "it is essential for skills to develop and evolve in order to improve adaptability and competitiveness and combat social exclusion" (2000), furthermore, "paid employment for women and men offers the best safeguard against poverty and social exclusion" (2001a).

To sum up, this brief account of the rationale of LM policies in the EU underlines strong convergences between policy-making and academic theory. This convergence, though not particularly surprising, makes us confident that our theoretical framework is a good approximation of the reasoning followed by the EU in boosting the geographical mobility of individuals for the purpose of learning.

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[4] This definition was coined by Malmberg (1997, pp. 21-22).

1.3.1 Learning mobility policies in the EU: a review

EU LM policies have targeted highly skilled individuals in three different domains: Research and Innovation, Education, and Cohesion Policy. For each domain, the rationale for investing in LM and the main schemes that have been implemented by the EU will be reviewed.

1.3.1.1 Research and Innovation

The most important EU objective in the field of Research and Innovation is known as European Research Area (ERA). It was launched by Commissioner Busquin in 2000 (EC, 2000) and became one of the main priorities of the Lisbon Strategy. It encompasses a range of different but complementary policies aiming to turn the EU into a single Knowledge System (Corvers and Nijkamp, 2004) and thus boost its innovation and competitiveness worldwide.

One of the most important premises of the ERA was that the EU knowledge system could be made more dynamic and interconnected by increasing researchers' mobility. For this reason, implementing a single market for researchers became one of the six axes of the ERA (EC, 2007). Recently, the ERA Vision 2020 recognised the free circulation of researchers as an important part of the "fifth freedom" – the free movement of knowledge (CEU, 2008). In fact, enhanced mobility and interaction among researchers is expected to improve career opportunities, scientific performance, technology transfer, network creation and productivity (OECD, 2000; OECD, 2002 and European Commission, 2001; in Fernandez-Zubieta and Guy, 2010). In this scenario, brain circulation is stimulated through resources of the Framework Programmes[5]. In 2008, the EC (2008a) Communication *Better careers and more mobility: a European partnership for researchers* proposed a set of actions to ensure that researchers across the EU benefit from the right training, attractive careers and removal of barriers to their mobility; while the EC (2010e) Conclusions of 2 March 2010 on *European Researchers' mobility and careers* proposed concrete suggestions to improve researcher mobility and identified several areas for action.

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[5] In the next programming period the current 7th Framework programme is going to be replaced by the Horizon 2020 programme. The new programme will also replace the Competitiveness and Innovation Programme and other EU innovation initiatives.

A very well-known EU mobility scheme which seeks to help develop Europe as a single knowledge system is the Marie Curie Fellowship, which provides European placements for pre- and post-doctoral researchers (up to the age of 35) and for experienced researchers. Within this scheme fellowships are made available in any scientific discipline that contributes to the objectives of the Framework Programme. This scheme also provides a mechanism to encourage beneficiaries from lagging regions to return on completion of their Ph.D. or research project through the so called *re-integration grants* (CEU, 2001b). Recently, a new initiative has also been launched, the EURAXESS[6]. It consists of a network of more than 200 centres located in 35 European countries assisting mobile researchers in the preparation of a research period abroad (EC, 2010b, p. 20).

1.3.1.2 Higher Education

Although Higher Education is not formally an EU competence, in practice the EU's influence in this field has grown steadily over time. It was greatly boosted by the launch of the Lisbon Strategy in 2000, which identified Education as one of the key areas in which urgent intervention was needed and paved the way to entrust the European Commission with a political mandate in this field. The European Commission has approached this mandate with the view that research and Higher Education are two sides of the same coin and should therefore be treated together. As noted by Keeling, "the Commission has co-opted the Bologna Process as a necessary mechanism for maximising the socio-economic returns to EU investment in research" (2006, p. 211). As a matter of fact, today LM is an important priority both in Research and Innovation and in Education policies (van der Hijden, 2012).

SM is the main undoubted goal of the Bologna process. In particular, major endeavours have been made both to make Europe more attractive for extra-European students and to enhance European internal mobility. Accordingly, European Higher Education was restructured so that member states had broadly similar degree programmes. Moreover, a credit system was established in order to make degrees from different member states comparable. (Schomburg and Teichler, 2011). In the *Budapest-Vienna Declaration* (2010) the European Higher Education Area (EHEA) was formally created, allowing

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[6] http://ec.europa.eu/euraxess/

compatibility and comparability between the higher education systems of the signatory states, as well as spurring student circulation.

The first and most famous EU LM scheme is the European Region Action Scheme for the Mobility of University Students (usually referred to as the ERASMUS programme), which was launched in 1987 and targets students in tertiary education. In practice, it allows undergraduate students to have a temporary study experience in another European country (usually 6 to 9 months). Over the years it has gained importance and today it is the LM scheme which involves the highest number of recipients in Europe. In fact, approximately 150,000 students benefit from ERASMUS mobility each year (van Vught, 2009), for a total of about two million students since the programme's inception (EC, 2009). Nevertheless, it is still far from meeting a constantly increasing demand (van Vught, 2009). For this reason, in December 2007 "the European Commission's Lisbon Report called for ERASMUS-type mobility to become a standard part of university education" (EC, 2009, p. 3).

For the next programming period very important endeavours have been made by the EU to further stimulate LM. In this regard, the flagship initiative "Youth on the move" (EC, 2010e) is of particular interest, since its explicit goal is to "enhance the performance and international attractiveness of Europe's higher education institutions and raise the overall quality of all levels of education and training in the EU, combining both excellence and equity, by promoting student mobility and trainees' mobility, and improve the employment situation of young people" (EC, 2010a, p. 13). In addition, another initiative has recently been launched by the EC which consists in activating an ERASMUS Master's Degree Mobility Scheme. In other words, the EU will provide postgraduate students wishing to take a Master's in another European country with a European-level student loan guarantee (EC, 2011b). All of this reflects a strong belief, inside the Commission, that LM is largely a positive sum game for member states.

1.3.1.3 Cohesion Policy

Cohesion Policy is one of the most important policies of the EU and aims to favour a balanced regional development (Barca, 2009, Molle, 2007). Like the policies mentioned in the previous sub-sections (i.e., Research and Innovation Policy and Education Policy), Cohesion Policy also finances LM.

Within Cohesion Policy, LM is financed by the European Social Fund (ESF)[7], which has traditionally aimed to provide EU citizens with a minimum level of appropriate skills in order to improve their employability and thus avoid poverty and social exclusion (Theodoropoulou, 2010). Employment is still a top priority of this fund, and this importance is reflected in the fact that the ESF represents the main source of funding of the European Employment Strategy (EC, 2012b). Under the support of the ESF, LM schemes have been implemented in initiatives aimed at both increasing the levels of human capital in the EU (EC, 2010d) and improving labour mobility in the EU (EC, 2010b).

Usually, LM schemes consist of providing students and researchers with scholarships or grants to pursue study or research experiences in another country (EC, 2010b, p. 41). For example, in the 2000-2006 programming period several EU member states (France, Lithuania, Portugal, Spain, Belgium and Italy) stimulated LM through number of schemes which, not surprisingly, have especially been implemented in lagging regions. In fact, Cohesion Policy has traditionally targeted these regions with the purpose of supporting them recuperate their disadvantage with respect to more affluent regions. The rationale underlying LM schemes in lagging regions is that the recipients would come back at some point and apply their knowledge there[8]. Often, twin schemes of return mobility have also been implemented, consisting of providing economic incentives to stimulate return migration by the recipients of LM schemes. Furthermore, it is worth noting that, though most LM schemes address international mobility, in some cases they target internal mobility since innovation and knowledge gaps can also be extremely deep between regions of the same country (for a detailed review of these schemes see EC, 2010b, EC, 2010d).

Since this work focuses on Italy and, more specifically, Sardinia, it is important to examine how this country implemented LM policy. In 2000-2006 Italy supported researcher mobility by means of six different programmes: one national and 5 regional. Three different measures were used ("third level and academic training", "researchers'

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[7] The ESF is part of the EU Structural Finds and has been devised to provide EU lagging regions with better skills and job perspectives (EC, 2012).
[8] More rarely these schemes also rely on the expectation that even if the recipients do not return they might still benefit the sending regions by exchanging knowledge with its population and stimulating FDI.

improvement" and "improvement of human resources in the research sector") and, overall, more than 30,000 researchers benefited.

In particular, the Italian region of Sardinia financed a mobility programme called Master and Back, providing local students with the possibility to pursue internships, Master's and Ph.D. degrees outside of Sardinia, and then to return to their region to work (EC, 2010c). The Master and Back programme is particularly important as it has been considered a best practice by other Italian regions, to the degree that both Puglia (Regiona Puglia, 2013) and Liguria (Regione Liguria, 2013) have introduced very similar schemes. Furthermore, it has recently been argued that Master and Back is a success story that should be replicated by other Italian regions (Milio et al., 2012, p. 37). The Master and Back is discussed more extensively in later sections of this work since it is the base for the case study on which this research relies.

Unfortunately, thus far no comprehensive information is available on EU LM schemes for the current programming period (2007-2014). This is due to the fact that the Commission typically collects this type of information at the end of each programming period. However, what can be extrapolated from the programming documents submitted by member states and regions is that the number of programmes in this field will likely increase (EC, 2010b, p. 41). With regards to the next programming period (2014-2020), even less information is available. However, since mobility is perfectly consistent with the new approach to Cohesion Policy, i.e., Europe 2020 (McCann and Ortega-Argilés, 2013), a further increase of LM expenditure by the ESF should be expected.

1.3.2 Space-neutral Vs place-based policies

In the previous sub-sections we explained that the EU has financed SM through very heterogeneous policy tools, spanning very different rationales. In particular, while EU research and education policies are considered *space-neutral* (or *people-based) policies*, since they pursue European economic development without worrying too much about potential geographical implications, the Cohesion Policy is a *place-based policy* and aims to boost economic development in specific regions, usually characterised by unfavourable socio-economic conditions (Barca et al., 2012). The aim of this sub-section is to discuss the potential implications and drawbacks of financing SM through each of these two policy strategies.

The space-neutral approach mainly relies on new economic geography (see Krugman, 1991) and has recently been supported by the highly influential World Development Report 2009 (World Bank, 2009) and, at the European level, by the Sapir report (Sapir, 2004). This category encompasses all those "policies that are designed without explicit consideration to space" (World Bank, 2009, p. 24). It stresses the central role of agglomeration forces in economic growth, which make investments in cities much more rewarding than in peripheral areas. From a space-neutral perspective the agglomeration of economic factors (including human capital) in core geographical areas is crucial, since agglomeration enhances the productivity of the production factors and, as a result, the overall efficiency of the economic system (Barca et al., 2012).

On the other hand, the place-based approach, which draws on institutional economics (Acemoglu et al., 2005, Storper, 1997), has a long intellectual history (Barca et al., 2012) and has recently been brought back to the forefront by the Barca Report (Barca, 2009) as well as by two OECD (2009a, OECD, 2009b) reports. This approach challenges the assumption made by space-neutral policies that agglomeration is the only way to economic development and growth, maintaining that every place has unexpressed potential which can be untapped by carefully taking local characteristics into consideration. In other words, development policies must be tailored around specific social, cultural and institutional needs, all of which are place-specific (Barca et al., 2012).

As far as the space-neutral approach is concerned, SM is always suitable since it leads to future labour mobility and therefore favours better geographical allocation of human capital which, in turn, is expected to enhance productivity, knowledge and, as a result, aggregate growth (World Bank, 2009, pp. 77 and 135). Moreover, at the individual level, these policies are also expected to provide the recipients with more opportunities to improve their economic and social conditions, irrespective of where they were born, their gender, social background, and so on. In other words, SM can enhance individual equity. This is why space neutral policies have also been referred to as people-centred policies (Gill, 2010) or people-based policies (Barca et al., 2012).

Insofar as place-based policies are concerned, the role of SM is more problematic. By investing in SM, on the one hand lagging regions can improve individual equity, since a higher number of individuals, especially disadvantaged ones, would be endowed with

the opportunity to enhance their employability; on the other, because of brain drain they could be unable to reap the social returns of their investment, which instead would most likely be reaped by more affluent regions, towards which usually brain drain takes place. Naturally, this effect would have adverse economic consequences on the underlying objective of Cohesion Policy – namely, untapping the unexpressed potential of every region. In other words, brain drain could reduce the regional stock of human capital, which is possibly the most important asset needed to trigger local economic development and, therefore, might lead to further regional polarization (Fratesi and Riggi, 2007).

In this regard, Ackers (2005a) maintained that by financing SM the EU is trying to reconcile different and potentially overlapping objectives and – he concludes – in the pursuit of one objective it should make sure not to undermine the other. Similar criticisms have been expressed by other authors (Altbach and Knight, 2007, van Vught, 2009).

Also, the EU acknowledges the potential threats for lagging regions that are implicit in SM policies. For instance, the EC – in its possibly most important document on this subject, the *Action Plan for Skills and Mobility* – first acknowledges that SM might lead to excessive migration from lagging to affluent regions, and then specifies that the measures to trigger highly skilled mobility must "be developed in the context of promoting sustainable growth and development in the less advantaged regions" (EC, 2002).

Therefore, while the spatial drawbacks of SM are less relevant as far as space-neutral policies are concerned, they become very important when the source of funding is the Cohesion Policy, which is a place-based policy, especially since brain drain could aggravate regional economic polarisation in the EU (Dotti et al., 2013).

1.4 Gaps in the literature and research questions

In the previous two sections we reviewed respectively the theoretical debate underlying SM and the role of SM (or learning mobility in EU terminology) in EU policies. We pointed out that there are strong convergences between the rationale underlying EU LM policies and academic theory.

Unfortunately, there are major gaps in the literature with respect to these issues which do not allow policy-makers to be conscious of the full implications of their policies. In fact, despite the increasing number of international students and their economic importance, very few studies to date have focused on this sub-group of highly skilled migrants, leaving in gaps in our understanding which include the three issues outlined in the previous section:

1) the impact of student mobility on individual labour market outcomes;

2) the impact of student mobility on job matching;

3) the determinants of mobile students' return migration.

For each of these issues we first outline the main gaps in the literature and their implications for policy-making, and then we identify the research questions on which this thesis is going to focus.

1.4.1 Impact of student mobility on individual labour market outcomes

Different strands of theoretical literature provide different explanations of how student mobility can influence individual labour market performance, as mentioned in Sub-section 1.2.1. Usually, SM is expected enhance individual labour market outcomes since it increases individual levels of human capital (Bracht et al., 2006, Konevas and Duoba, 2007, Murphy-Lejeune, 2002, Rodrigues, 2012) and spatial flexibility (Di Pietro, 2012, King and Ruiz-Gelices, 2003, Oosterbeek and Webbink, 2011), both of which are expected to be positively correlated to labour market outcomes (Becker, 1964, Card, 1999, Glaeser and Maré, 2001, Ham et al., 2005, Pekkala, 2002).

However, other strands of literature predict a correlation in the opposite direction. This is based on the grounds that there are social and institutional barriers in labour markets (see for instance Constant and Massey, 2005), that human capital is not geographically transferable (Friedberg, 2000, Wiers-Jenssen and Try, 2005) and so on. Indeed, the existing empirical studies focusing explicitly on the impact of SM on individual labour market outcomes provide mixed evidence and therefore do not unambiguously support any of the theories reviewed earlier (see for instance Messer and Wolter, 2007, Oosterbeek and Webbink, 2006, Rodrigues, 2013).

From a policy-making viewpoint, in Section 1.3 we explained that in supporting SM the EU adopts a rationale which mirrors Human Capital Theory. By looking at its policy documents and pronouncements we see a EC that firmly expects individuals who have been mobile as students to have acquired higher levels of human capital and spatial flexibility (employability) and, therefore, to be more likely to find *more and better jobs*. Accordingly, the first set of research questions for this thesis concerns whether being mobile as students improves individual chances of being successful in the labour market. In particular, we want to find out:

1) whether student mobility increases individual odds of employment;

2) whether it increases individual average income.

Naturally, the answers to these two questions will contribute to the current academic debate on the impact of SM on the individual labour market outcomes. Furthermore, we expect them to also provide useful insights for the EU, which has already made significant investments in this field, based on expectations which have not yet been sufficiently tested.

1.4.2 Impact of student mobility on job matching

As mentioned in a previous section, according to neo-classical economics (i.e., Human Capital Theory) overeducation is not an issue (or at worst is a temporary issue), while alternative theories identify it as a persistent problem (Job Search Theory and Assignment Theory). Many authors have compared the explanatory power of different theories with respect to overeducation, often by challenging the assumptions of neo-classical economics (see for example Chevalier, 2000, Duncan and Hoffman, 1982, Green and McIntosh, 2007, McGuinness, 2002, McGuinness, 2003, Sicherman, 1991).

As a matter of fact, individuals placed in dense labour markets (agglomeration) are less likely to become overeducated (McGoldrick and Robst, 1996, Tselios, 2013). In contrast, those who are located in places where job opportunities are scarce can try to avoid overeducation through spatial flexibility (Büchel and Battu, 2003). Various studies showed that high levels of spatial flexibility are associated to high levels of job matching (Büchel and van Ham, 2003, Frank, 1978, Hensen et al., 2009).

At the European level, mobility has been stimulated in various ways, including through the EU learning mobility policies described in Section 1.3. These aim to enhance the

spatial flexibility of the recipients in order to improve their chances of achieving a good matching. Recall that at the European level student mobility has also been stimulated through various sources of funding, some pursuing the efficiency of the EU economy as a whole (Research and Innovation Policy and Education Policy) while others the development of less favoured regions (Cohesion Policy).

Unfortunately, the lack of empirical evidence on the impact of LM policies on overeducation does not permit the assessment of the effectiveness of EU SM schemes. In addition, it is unknown whether LM schemes work against the underlying objectives of Cohesion Policy due to the well-known risk of brain drain.

Accordingly, the second set of research questions concerns whether LM schemes can contrast mismatching problems and their geographical implications. More precisely, we want to discover:

1) whether learning mobility policies enhance the individual chances of job matching in the labour market;

2) whether the improved matching can benefit lagging regions.

The answers to these questions are potentially useful to both the academic community and policy-makers. The answer to the first question can advance our theoretical and empirical knowledge of the impact of learning schemes on job matching. The answer to the second one can provide some useful insights to EU policy-makers, particularly with regard to the appropriate source of funding for these policies. In fact, if SM programmes do not favour better matching in the sending region, their financing through place-based policies might be problematic.

1.4.3 Determinants of mobile students' return migration

As mentioned in Sub-section 1.2.3, there is a heated debate in the literature on what drives highly skilled locational choice. In fact, some scholars tend to stress the role of economic factors, others that of amenities, still others that of social networks. However a shared understanding of this issue has not been achieved yet, particularly with regard to FMS where the literature is particularly scarce (Marinelli, 2011b). Moreover, while most studies so far have investigated *why* individuals locate in particular places, very few have investigated *how* the decision-making process leading to the location decision unfolds (Carlson, 2013).

Understanding the determinants of student location choice is also very important for effective policy-making, as it can help design better attraction policies for the highly skilled and thus help increase the national/regional stock of human capital. With regard to the EU, SM has been stimulated as it is expected to lead to number of benefits including, but not limited to: enhanced employability, the creation of more and better jobs and overcoming the immobility paradox. Nevertheless, the risk that this could lead to brain drain in lagging regions, thus augmenting the traditional regional polarization in Europe, has also been acknowledged (EC, 2001). In this regard, understanding what determines mobile students' return migration could yield insights on how to contrast brain drain, one of the major drawbacks associated to SM.

Accordingly, the third set of questions on which this work focuses are:

1) what determines formerly mobile students return migration;

2) how the decision-making process leading formerly mobile students to make locational decisions unfolds?

Like the other issues to be studied, answering these questions would not only improve the existing academic knowledge, but could also benefit the design of better attraction policies for the highly skilled. This effect would be particularly important for EU lagging regions, which could counteract more effectively the brain drain associated to SM policies.

1.5 Master and Back: a case study

In order to answer the research questions introduced in the previous section, we focus on a case study: the Master and Back (M&B) programme. As briefly outlined earlier, this is an example of a LM policy that is co-financed by the ESF and has been implemented by the Italian lagging region of Sardinia since 2005. The M&B programme consists in providing outstanding students resident in Sardinia with generous scholarships to achieve postgraduate education in the world's best universities (either in Italian regions other than Sardinia or abroad). In the following text, the socioeconomic scenario of Sardinia is outlined, in order to frame this study in appropriate context. Then, the genesis of the scheme, its rationale and its workings are described in detail.

1.5.1 Sardinia: the socio-economic scenario

Sardinia is the second-largest island in the Mediterranean Sea (after Sicily). It is a scarcely populated Italian region: just 68 inhabitants per square kilometre, compared to the Italian average of 199. It belongs to the *Mezzogiorno* of Italy – i.e., the most deprived group of Italian regions, located in the south of the country. In 2009 Sardinian GDP per capita at current prices corresponded to 77.3% of the Italian average and to 112.6% of the Mezzogiorno's average. Moreover, according to EUROSTAT data for 2009, Sardinian GDP per capita at Purchase Power Parity (PPP) was equal to 80% of the EU-27 average (Ministero dello sviluppo economico, 2012). It is also interesting to note that in recent years the Sardinian rate of economic growth has been consistent with the Italian average, but much lower than the average of European regions with similar income (CRENOS, 2010).

Sardinia's economy has been traditionally rural in character. However, since the 50s the relative weight of agriculture has decreased steadily, especially in favour of the service sector, which has developed boosted by the growth of the public sector[9] and the tourism sector[10]. As far as industrial economics are concerned, before World War II Sardinia was almost completely devoid of any industrial system. However, after the war one was created from scratch boosted by massive public investments in the framework of national policies for the development of the *Mezzogiorno*. This led to the construction of large industrial plants, later nicknamed "cathedrals in the desert" since they were placed in a context where hardly any of the necessary conditions for them to grow and prosper existed. As a result, when public financial support was reduced after the 70s, these plants fell into crisis and the relative weight of the regional industrial system decreased significantly, despite the concurrent growth of the construction sector (Bottazzi, 1999)

Today, the weight of the industry sector (10.9%) is smaller than at the national level (18.5%) and also than in the Mezzogiorno (12.2%). The Agriculture sector accounts for

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[9] In Sardinia, especially after the creation of the Regions in the 70s, the weight of the public sector increased significantly. According to CRENOS (2012), in 2012 the public expenditure was among the highest in Italy: 1,076 euro per capita and according to the Centro Studi dell'Unione Sarda (2013), in Sardinia one out of four employees works in the public sector, compared to the Italian average of one out of six.

[10] Sardinia has a good vocation to tourism which has resulted in an increase of employment in this sector, though still far below its actual potential (NCPTS 2009, p. 19).

10.2% of the regional GDP, which is exactly equal to the Mezzogiorno's average, while the Italian average is almost 2% smaller. Finally, the service sector accounts for 78.9% of the regional GDP, more than the national average (73.2%) and also more than the Mezzogiorno's (77.6%) (Ministero dello sviluppo economico, 2012).

As far as the average levels of education are concerned, in 2010 the percentage of the population who had completed tertiary education was only 15% of the active population. This figure was lower than the EU27's average (30%), than the Italian average (18%) and even than the Mezzogiorno's average (17%). Moreover, in the period 2006-2010 the increase of this indicator was of just 1.8% – lower than the EU27's average, than the Italian average and equal to the Mezzogiorno's average (CRENOS, 2012). Finally, if we look at the percentage of graduates aged 30 to 34 out of the total population[11], we see that in 2010 in Sardinia this figure was equal to 16%, 1% higher than the Mezzogiorno's average, but 4% lower than the Italian average. It is important to note that Italy as a whole fares much worse than the rest of Europe in this aspect: just 20% as opposed to 27% (CRENOS, 2013). In light of these figures, it is clear that as far as education is concerned the Region is lagging behind both the European and the national averages.

Another aspect important for this study relates to the attractiveness of the Sardinian labour market for the highly skilled. This factor is conditioned by the level of innovation, since there is evidence that highly skilled individuals are attracted by innovative firms and locations (Faggian and McCann, 2009b); by the rates of unemployment and the average salaries of Sardinian employees, as the ease of finding an employment and the potential economic returns to education are both key attractors for the highly skilled; finally, by the level of openness of the economy, an aspect which is particularly important to attract talents from outside, since individuals with international experiences are especially valued by firms with high levels of internationalisation (Teichler, 2007).

Regarding the first issue, innovation, unfortunately also in this field Sardinia lags behind most other Italian regions. In 2011 the share of R&D members of staff out of the overall members of staff was just 0.9% – smaller than the Italian average (1.5%) and also than the Mezzogiorno's average (1.0%). Similarly, the rate of researchers (0.4%)

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[11] According to the EU objectives, by 2020 Italy should achieve a percentage of graduates aged 30 to 34 of 26-27%.

was smaller than both the Italian average (0.7%) and the Mezzogiorno's average (0.5%) (Banca d'Italia, 2013). Also R&D investment in 2007 was low: just 0.5% of the regional GDP, while in the rest of Europe the average was 0.64% (CRENOS, 2010). The level of private investment in R&D was even lower and very close to zero (0.08%): lower than in Bulgaria, Poland, Greece, Romania, Lithuania and Latvia (CRENOS, 2010). In short, in Sardinia there do not seem to exist the right conditions to attract nor to absorb large numbers of highly skilled individuals[12].

Concerning the second issue, average unemployment rate and average earnings, Sardinia performs better than the Mezzogiorno but worse than Italy overall. The attractiveness of the regional labour market has been significantly worsened by the economic crisis, which hit Sardinia very hard. In 2007, before the crisis, the unemployment rate was 9.9% (compared to the Italian average at 6.1%). Since then, and especially since 2008, it began to rise and by 2012 it reached 15%. In the same year the Italian average was 10.7% and the Mezzogiorno's average was 17.2% (CRENOS, 2013). It is also worth noting that the economic crisis especially impacted younger cohorts of individuals. For instance, in 2012 youth unemployment (15-24 years old) in Sardinia reached 47%, while the Italian average was 35.3% (CRENOS, 2013). The cohort of 25- to 34-year-olds was also very severely affected[13]: in Sardinia from 2011 to 2012 unemployment rate in this cohort jumped from 19.2% to 23% (almost +5% in one year!), compared to the Italian average which climbed from 12% to 15% (+3%) over the same time period (CRENOS, 2013).

We know that the opportunity to achieve high earnings is an important determinant underlying the location decision of the highly skilled, so a few figures on the average earnings in Sardinia are presented here. In 2012, the net average salary was 1,191 euros per month, a figure almost equal to the Mezzogiorno's average (1,173 euros), but significantly lower than the Italian average (1,254 euros). Further, the average hourly salary (8.8 euros) was also almost equal to the Mezzogiorno's average but

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[12] Probably, the low private investments in R&D and the consequent low absorption capacity of highly skilled individuals is also related to the small firms' size: on average each Sardinian firm has 3.7 members of staff. Firms with up to 2 members of staff represent 64% of the total and account for 27% of the overall members of staff. 83% of firms have up to 4 members of staff and just 4% have more than 10 members of staff, accounting for 34% of overall members of staff (NCPTS, 2009).
[13] Consider that this cohort is particularly relevant insofar as this research is concerned, since most of the recipients of the Master and Back scheme belong to this cohort.

much lower than the Italian average[14] (Banca d'Italia, 2013). Another interesting figure concerns the returns to tertiary education, which in Sardinia are higher than the Italian average. In fact, controlling for observables covariates, graduates earn roughly 20% more than those with only secondary-level education, while the Italian average is only 18%. (Banca d'Italia, 2013).

Concerning the third issue, internationalisation, the Sardinian economy is characterised by very low export rates: just 8.6% of the regional GDP[15], almost equal to the *Mezzogiorno*'s rate (8.7%) and much smaller than the Italian average (20.3%). This places the region near the bottom of the national ranking: 18th place out of the 21 Italian regions (NCPTS, 2009, p. 19). Of course, these figures suggest that international workers – or workers with international experience – might not be highly valued by the local labour market, which might discourage immigration.

In summary, Sardinia belongs to the Mezzogiorno of Italy but fares relatively well in this sub-group. The low levels of innovation and R&D make finding suitable jobs hard for many graduates. As far as salaries are concerned, they are lower than the Italian average, though degree holders do earn relatively higher salaries there than in other Italian regions. Finally, the low levels of international openness reduce the attractiveness of the region for international job-seekers and for individuals with international experience.

1.5.2 Genesis and rationale of the programme

The Master and Back programme was designed by Regional Budget *Assessore* Francesco Pigliaru and, in 2005, it was endorsed by the centre-left regional government led by Renato Soru. As shown by the flowchart below, the scheme consists of two steps: the *Master* and the *Back*. The Master provides applicants who get selected with the possibility to receive grants to undertake postgraduate education in the most prestigious universities outside of Sardinian – be they in Italy or abroad (*Higher Education* part of the programme), or to pursue internships in prestigious non-

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[14] Over the period 2008-2012, the mean salary per hour in Sardinia was about 4% lower than in the other Italian regions. According to the *Banca d'Italia* (2013) this difference is only partly explained by observable covariates (education, age, firm's size, citizenship, gender and sectoral workforce composition). In fact, after controlling for these covariates, the differential is still high and significant: -3.4%.

[15] Moreover, it must be noted that most of this percentage refers to a single plant operating in the refining sector.

Sardinian organizations (*Internships* part of the programme). Upon completion of their study experiences or internships, the Back grants economic incentives to the recipients of the Master[16] to lure them back to work in Sardinia, where it is hoped they will apply and diffuse their new knowledge.

Despite the fact that the scheme is divided into 3 sub-schemes, this work focuses on just one of them: *Higher Education outside Sardinia* (or, more simply, *Higher Education*). This decision was in part forced by the fact that suitable data were only available for this part of the scheme, and in part consciously taken to narrow the research focus.

Figure 1.1 – Structure of the Master and Back programme and research focus
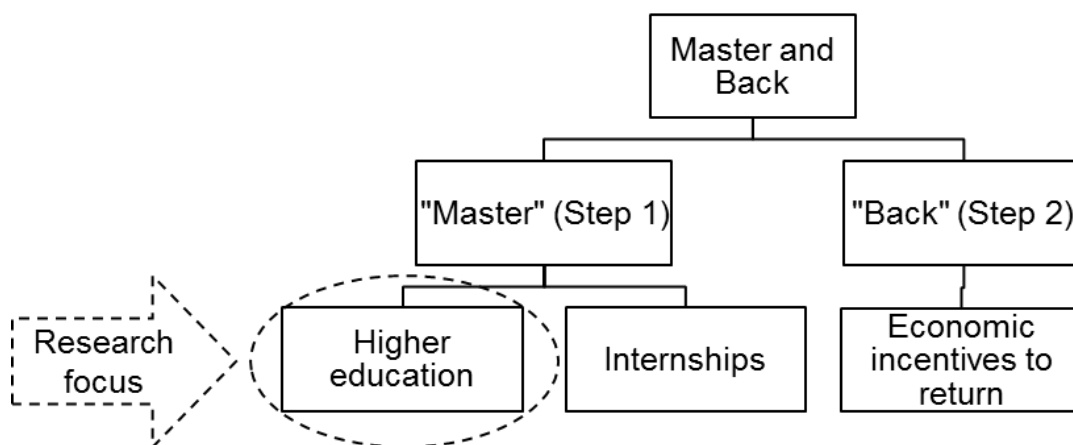
So far, according to a conservative estimate by the Banca d'Italia (2013, p. 45), more than 100 million euros have been spent by the regional government on the scheme. The calls have been released regularly from 2006 to present, but in this thesis we only focus on the calls between 2006 and 2009 (overall 4) since, when the data for this study were collected, the calls after 2009 were too recent to be evaluated.

The rationale of the scheme emerges in part from the official documents and in part from the accounts provided by the policy-makers who introduced it, particularly

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[16] Also who has not participated to the "Master" part of the programme but has achieved postgraduate education or has done internships outside Sardinia is eligible to the programme. However, in practice very few application of this kind have been submitted.

Francesco Pigliaru. According to the official documents the M&B programme aims to raise the indicators of education and training of the Sardinian population up to the European average. The programme is expected to strengthen, diversify and make more accessible postgraduate education as well as vocational training in order to provide young Sardinian graduates with the possibility to study in world-class universities and to pursue internships in firms and organizations of great reputation outside Sardinia. Furthermore, the programme is also expected to favour the return of recipients upon completion of their studies and their placement in the regional labour market[17]. The official documents make it very clear that the scheme is meant to be coherent with the Lisbon Strategy, in particular with the strategic goal of filling the gap between Europe and its global competitors in the levels of training and education: two key elements to generate knowledge and stimulate innovation[18].

Given these characteristics, M&B can be considered a classic EU LM policy. Its underlying objectives, consistently with Human Capital Theory, postulate a great deal of trust in education and training as key assets for better careers and to escape exclusion traps. Moreover, it aims to encourage the recipients of the scheme to return to their sending region upon completion of their studies. In other words, M&B is a win win policy which simultaneously aims to improve the efficiency of the European labour market, consistently with the Lisbon Strategy, and to support virtuous processes of local economic development in lagging regions by increasing the local stock of human capital.

Yet, there is also another reason underlying the introduction of the scheme, which though not explicitly mentioned by the official documents, emerges from other sources: the rationalising of ESF expenditure. According to Francesco Pigliaru, interviewed by a local newspaper, before M&B began significant shares of ESF resources were spent to implement highly inefficient vocational training courses (Pinna, 2010). They were specifically allocated to institutes of vocational training selected with little transparency

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[17] Source: Call M&B 2006.
[18] "Gli orientamenti comunitari inseriscono le politiche dell'istruzione e della formazione al centro della creazione e della trasmissione delle conoscenze, in quanto elemento determinante delle potenzialità d'innovazione della società.
I segnali d'allarme sulla situazione dei sistemi d'istruzione e formazione europei e sulle loro debolezze strutturali sottolineano l'urgenza di riforme e interventi che portino l'Europa a riassorbire i divari accumulati in termini di investimenti nella società della conoscenza rispetto a competitors come Stati Uniti e Giappone, nonché la necessità di perseguire in modo più deciso la Strategia di Lisbona" Source: Call M&B 2006.

and characterised by very bad value for money: M&B was supposed to overcome these shortcomings. In fact, Pigliaru stated that M&B is worth more than "one thousand incentives to the enterprises and more than one thousand or ten thousand vocational training courses" (Logosardigna, 2010).

The introduction of the scheme was also prepared by the Regional Operative Programme mid-term review which, probably influenced by the debate on the necessity to support the Lisbon objectives also by means of Cohesion Funds (Begg, 2010, Mendez, 2011), pushed the managing authority of the scheme to modify the Regional Operative Programme in a consistent way with the Lisbon Strategy. In fact, according to the official document providing advice on how the Regional Operative Programme was to be reviewed, in Sardinia there was "elevated demand of high level specialization which had to be fulfilled as soon as possible by the ESF" (ISRI, 2003).

1.5.3 Description of the programme: official documents and calls

The M&B scheme was introduced in 2005 by the Giunta Regionale (2005a) deliberation n° 27/13 (dated 21.06.2005). This document that provided the rationale for the policy and formed the basis for future calls. Therefore, this deliberation is used as a reference point.

Various actors were involved in the management of the scheme. Specifically, the Department of Labour[19] (in agreement with the Department of Education[20]) and the Department of Budget[21] were in charge of the programme. However, its concrete implementation was assigned to other subjects. First of all, a Management Committee, comprised of the directors of each of the just mentioned Departments, acted as operative coordinator. Second, a Technical-Scientific Committee was entrusted with the tasks of deciding the selection criteria of the calls and identifying the priority sectors[22]. Finally, the Regional Employment Agency[23] and Sardinia Researches[24] were both entrusted with the concrete implementation of the scheme – drafting the calls,

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[19] Assessorato al Lavoro, Formazione Professionale, Cooperazione e Sicurezza Sociale.
[20] Assessorato alla Pubblica Istruzione, Beni Culturali, Informazione, Spettacolo e Sport
[21] Assessorato alla Programmazione e Bilancio.
[22] That is, the sectors to which most of the resources were to be allocated, since they were considered particularly important for the economic development of Sardinia.
[23] Agenzia Regionale per il Lavoro.
[24] Sardegna Ricerche.

selecting the applicants, delivering the financial resources and carrying out all administrative procedures. More precisely, the Regional Employment Agency was entrusted with the Higher Education and Back parts of the programme, whereas Sardinia Researches was in charge of the Internships sub-scheme; however, since 2008 the Regional Employment Agency has also taken over this final task from Sardinia Researches.

To be eligible for the programme, candidates were required to be resident in Sardinia for at least 3 years, be younger than 35 (40 for those employed) and have a First-level degree or a Specialist degree[25] depending on the type of programme – with a final mark of at least 105/110. Later, since 2007, the maximum age was raised to 36 (41 for those employed) and the minimum final mark was reduced to 100/110. These requirements did not change afterwards.

According to the deliberation 27/13, the Higher Education part of the programme[26] had to provide financial support for 6 different types programmes: higher education in arts and music[27], specialisation courses at Italian universities[28], academic diplomas in arts and music[29], doctoral degrees[30], training experiences of excellence in arts and music[31], education during the second year of specialist degrees[32], university masters[33] and masters of high professionalization[34][35].

In calls 2006 to 2008 the applicants were accepted on a first come first served basis, though applicants had to have a rather high graduation mark in order to be eligible. In

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[25] In Italy there are 2 levels of graduation: First-level degree and Specialist degree. The former usually takes 3 years and the latter usually 2 and can be taken only after having achieved a First-level degree. The Italian double level graduation was introduced in the late 90s: degrees taken before the reform (so called *Laurea vecchio ordinamento*) are equated to Specialist degree.

[26] Programmi di Alta Formazione

[27] Alta formazione artistico musicale.

[28] Corsi di specializzazione universitaria italiani.

[29] Diplomi accademici artistico musicali.

[30] Dottorati di ricerca.

[31] Esperienze formative di eccellenza in campo artistico musicale.

[32] Formazione durante il secondo anno di laurea specialistica

[33] Master universitari

[34] Master di alta professionalizzazione

[35] The distinction between university masters and masters of high professionalization is typically Italian. While university masters are delivered by universities, masters of high professionalization are delivered by other types of organisations and are more job-oriented than university masters, in that they typically aim to provide students with high levels of professional skills to favour their transition from education to work. Nevertheless, both these types of Masters' require "Specialist degrees". This annotation is important since "First level Masters" (*Master di primo livello*), which require only First-level degree, were excluded from financing through the M&B programme.

other calls a deadline was set and the applicants were ranked and financed according to their position. In any case, both procedures were meant to select the brightest students in Sardinia.

Table 1.1 shows the funding figures for the Higher education part of the programme over the period of interest (2006-2009). While in total the initial budget allocated for the various calls only amounted to 27.75 million euros, it was later increased substantially (+127% on average) thus reaching a total expenditure of 63 million euros.

Table 1.1 – Budget of the calls

Call	Initial budget (million euros)	Final budget (million euros)	Budget increase (%)
2006	10.5	21	+100
2007	8.5	10	+18
2008	2.25	16	+611
2009	6.5	16	+146
Total	27.75	63	+127

Source: Regional Employment Agency and official documents.

Despite the fact that the deliberation 27/13 established that the calls were to be published by the 30th of March each year and that they had to remain open for one year[36], in practice – as can be seen from Table 1.2 – the publication date changed every year and the time windows for the submission of the applications were significantly shortened. However, as shown by the last column of the Table, degree programmes which had already been started when the calls were published were considered eligible and, therefore, could be financed.

Table 1.2 – Timing of the calls

Call	Starting time to submit applications	Deadline to submit applications	Time windows to submit applications (months)	Starting date of eligible education programmes
2006	01/01/2006	31/12/2006	12	01/10/2007
2007	07/07/2007	31/10/2007	4	01/01/2007
2008	04/02/2008	19/04/2008	2.5	01/10/2007
2009	07/07/2009	15/09/2009	2	01/07/2009

Source: M&B official calls

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[36] Or at least until the exhaustion of available financial resources, which were awarded to the recipients on a first come, first served basis.

The assessment criteria changed from year to year, however the main patterns remained consistent. Application strength was quantified through a formula that split desired qualities into two main categories with roughly the same weight: university of destination and Curriculum Vitae (CV) of the student. The university of destination referred to the university where the candidate was to go study; the candidate was required to have already been accepted into the education programme of interest. The university was assessed based on its position in the world rankings[37]. The CV of the candidate was the second assessment criteria of the application. In this category scores were a function of the final graduation mark, the number of years over the undergraduate programme length required to complete the degree, and having carried out additional study and vocational training experiences – masters, internships and so on. Moreover, having previous work experience and scientific publications were also sources of additional score.

To be eligible for financing, the proposed study programmes had to last from a minimum of 6 months to a maximum of 3 years[38] and had to be held by universities or other accredited organizations operating outside Sardinia.

According to the deliberation 27/13, the grants were valued as follows. Living expenses were covered up to 800 euros a month for students in Italy and 1,000 for the ones abroad. Moreover, tuition fees up to 12,000 euros were also covered, with the exception of programmes run by universities ranked among the first 50 worldwide for which there was no cap on the tuition expenses. In addition, travel costs were reimbursed for up to 1,000 euros a year. However, these amounts were increased over time by the various calls: the call 2006 increased the living costs to 1,000 in Italy and 1,200 abroad; the call 2007 further increased the living costs to 1,200 euros in Italy and 1,500 euros abroad; the call 2008 also increased the allowance for living expenses up to 1,300 in Italy and 1,700 abroad; finally, the call 2009 raised the living allowance to 1,700 euros in Italy and 2,000 abroad, but eliminated the reimbursement of travel costs that had thus far been available.

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[37] The Times Higher Education Ranking was usually taken as a benchmark: the higher the rank, the higher the score of the university of destination. If the university of destination did not appear in the world rankings it was assessed by a special committee.

[38] The maximum refers to doctoral programmes. Doctoral programmes longer than 3 years were also eligible, but the scheme only covered fees and living costs for the first three years.

Moreover, if the scholarship was not sufficient to fully cover the expenses, since 2005 the students could also require a supplementary loan at a subsidized rate for up to 400 euros per month in Italy and up to 600 abroad. All the information concerning the maximum value of the grants is summarised in the Table 1.3.

Table 1.3 – Value of M&B Higher Education grant by call

Call	Cost in euros
Deliberation 27/13	800 in Italy, 1,000 abroad
2006	1,000 in Italy, 1,200 abroad, plus tuition fees up to 12,000 and 1,000 travel costs
2007	1,200 in Italy, 1,500 abroad, plus tuition fees up to 12,000 and 1,000 travel costs
2008	1,300 in Italy, 1,700 abroad, plus tuition fees up to 12,000 and 1,000 travel costs
2009	1,500 in Italy, 2,000 abroad, plus tuition fees up to 12,000

Source: M&B official calls

An interesting aspect of the programme is that the deliberation 27/13 established that the resources would be concentrated in priority sectors that were expected to become strategic in the future decades for the social and economic development of Sardinia[39] (Giunta Regionale, 2005b). The priority sectors were identified starting in 2007. Table 1.4 shows the priority sectors for the calls in 2007 and 2008 and their relative share of the programme's total budget. As can be seen, the categories "Engineering, technology, mathematics, informatics, physics, biomedicine" (30%) and "Economics and Management" (20%) were the sectors identified as top priority and were thus granted the largest shares of resources (50% of total).

In 2009, the priority sectors did not change significantly. Nevertheless, the distribution of funds for that call is not included in Table 1.4 as a few categories were merged with each other and labelled in a different way.

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[39] Original text in Italian: "la Regione Autonoma della Sardegna intende orientare le scelte dei giovani laureati verso percorsi di alta formazione, stage, e percorsi di rientro, relativi ad aree disciplinari e settori di attività che nei prossimi decenni saranno strategici per la crescita sociale ed economica regionale" (Giunta Regionale, 2005b).

Table 1.4 – M&B priority sectors 2007 and 2008

N.	Priority sector	Share of the budget (%)
1	Engineering, technology, mathematics, informatics, physics, biomedicine	30
2	Architecture, urban and regional planning	15
3	Natural, agrarian and medical sciences, geography and geology	15
4	Economics and management	20
5	Low and social sciences	10
6	Arts and design	5
7	Communication and Information Sciences, languages and philology	5

Source: M&B official calls

To conclude, it must be noted that not all the policy tools defined by deliberation n. 27/13 were actually implemented. In particular, according to the deliberation the recipients of the Higher education part of the scheme were to be lured back to Sardinia on completion of their studies through economic incentives to work either in an existing firm/organization/university or to start a new business. However, while the first type of incentive has been implemented since the beginning of the scheme, through what we called the Back part of the programme, no incentives have ever been provided to recipients willing to become self-employed in Sardinia.

1.5.4 The recipients: some descriptive statistics

The analysis of the M&B programme by this research work was made possible by the availability of administrative data, collected and kept by the Regional Employment Agency. Based on these data, this sub-section aims to define a profile of the recipients of the scheme by providing some descriptive statistics on their demographics, education and the types of education programme that were financed (topic, location, etc.).

Consider that the sample under scrutiny only concerns the recipients of the Higher education part of the M&B programme from 2005 to 2009: a total of 2,026 recipients. Most of them are female: 57%, while 43% are male. Figure 1.2 shows their age distribution when they started the programme (line with dots) compared to their current age (line with triangles). From the plot we can see that their ages when they started the

programme ranged from 20 to 40, though the mode is 28. Currently their ages range from 25 to 45 and the highest densities can be observed at 33-years-old.

Figure 1.2 – Age of the recipients when they started the treatment and their current age
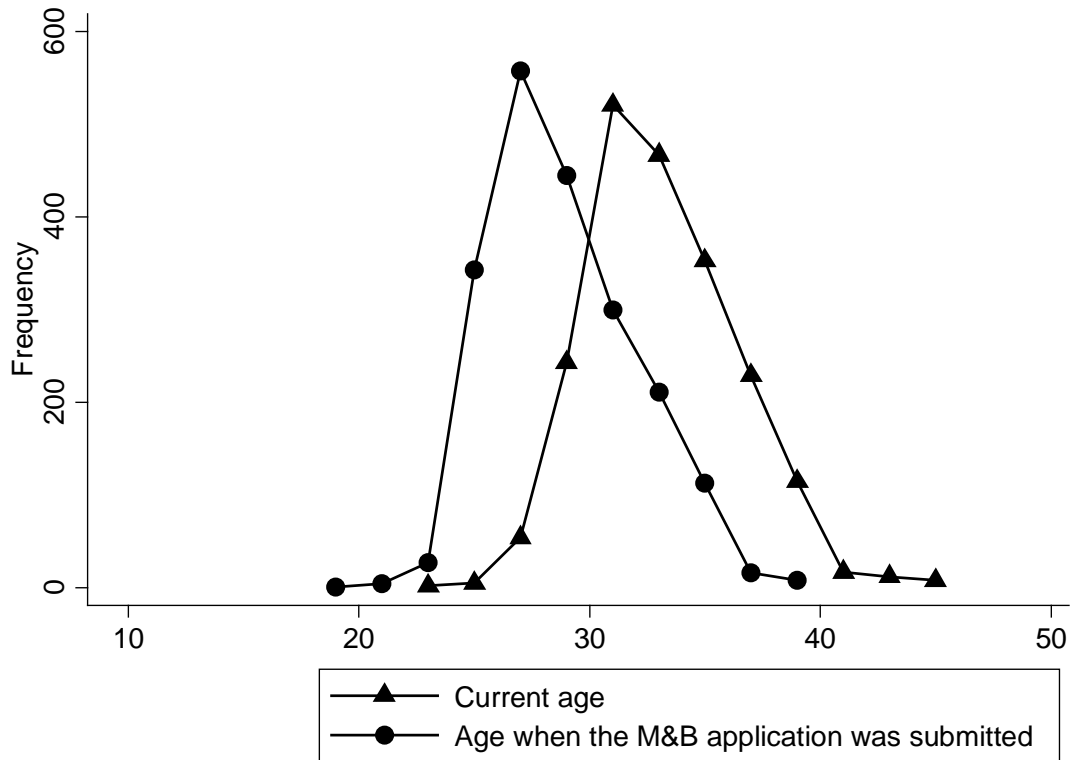
Source: Author's elaboration on Regional Employment Agency's data.

Their final undergraduate degree mark is quite high (108.6/110, on average), most likely a consequence of the programme's selection criteria – individuals with final undergraduate degree marks lower than 100/110 were not eligible and higher marks were rewarded with higher programme scores. On average the participants completed their undergraduate studies 1.5 years late (*anni fuori corso*) –this factor was also used in the calculation of the scores.

In the previous sub-section the types of degrees that got financed by the Higher education part of the programme were described, while Table 1.5 below reports the frequency and percentage of recipients for each type of degree. The data shows that University masters are the mode (48%), followed by Masters of high professionalization (27%) and Doctoral degrees (18%).

Table 1.5 – Number and fraction of applications financed from 2006 to 2009, grouped by type of degree

Degree type		N°	%
University masters		968	48
Masters of high professionalization		546	27
Doctoral degrees		358	18
Education in arts and music[40]		79	4
Specialisation courses at Italian universities		75	4
	Total	2,026	100

Source: Regional Employment Agency

Most recipients completed their undergraduate studies in Sardinia (80%), while just 19% graduated in other Italian regions and less than 1% abroad. The prevalence of recipients who completed undergraduate studies in Sardinia is obviously a consequence of the eligibility criteria of the scheme, according to which applicants had to be resident in Sardinia for at least three years. The large majority (84%) of the recipients who graduated in Sardinia studied in the University of Cagliari, the largest Sardinian university.

Table 1.6 – Topics of the undergraduate degrees of the recipients

Topic		N°	Percent
Arts and humanities		431	21
Engineering		353	18
Social and Political Science		305	15
Economics and Statistics		161	8
Law		123	6
Linguistics		123	6
Psychology		123	6
Geology and Biology		114	6
Architecture		79	4
Science		56	3
Medicine		44	2
Chemistry and Pharmacy		43	2
Agrarian		37	2
Teaching		23	1
	Total	2,015[41]	100

Source: Regional Employment Agency

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[40] This category includes: higher education in arts and music, academic diplomas in arts and music and training experiences of excellence in arts and music.
[41] There are 9 missing values.

Table 1.6 reports the topics in which the recipients achieved their undergraduate degree, sorted by frequency. It shows that Arts and Humanities is the top-ranking topic (21%), followed by Engineering (18%), Social and Political Sciences (15%), Economics and Statistics (8%) and so on.

Despite the fact that most top-ranking world universities are located abroad, most recipients chose to locate to other Italian regions for their studies. In fact, out of the 2,026 recipients, only 756 opted to study abroad (37%), while the rest attended universities in other Italian regions (1,270 individuals, corresponding to 63% of the sample).

As shown in Table 1.7, among the Italian regions, the most attractive are Lazio (33%), Tuscany (21%) and Lombardy (21%), all regions endowed with large and high-quality universities, compared to the Italian average. On the contrary, few individuals studied in the south of the country, whose universities are often of lower quality.

Table 1.7 - M&B location in Italian regions

Region	N°	%
Lazio	426	33
Tuscany	268	21
Lombardy	263	21
Emilia Romagna	73	6
Piedmont	54	4
Veneto	52	4
Marche	34	3
Sicily	29	2
Friuli-Venezia Giulia	16	1
Trentino Alto-Adige	13	1
Abruzzi	11	1
Puglia	9	1
Liguria	8	1
Umbria	7	1
Campania	7	1
Total	1,270	100

Source: Author's elaboration on Regional Employment Agency's data

Table 1.8 reports the location of the recipients who studied abroad. Most individuals chose to study in other European countries (91%), while just 9% opted in extra-European countries. In Europe, Spain is by far the most attractive location (36%), followed by the United Kingdom (29%), France (10%) and Germany (4%). As far as

non-European countries are concerned, the largest share of recipients went to the US (9%), followed by Switzerland (4%) and South Africa (2%).

Table 1.8 - M&B location in other countries

Country	N°	%
EUROPEAN COUNTRIES	**686**	**91**
Spain	275	36
United Kingdom	221	29
France	72	10
Germany	27	4
Belgium	21	3
Netherlands	20	3
Austria	13	2
Ireland	13	2
Sweden	7	1
Other European Regions	17	2
EXTRA-EUROPEAN COUNTRIES	**70**	**9**
United States	28	4
Switzerland	17	2
South Africa	4	1
Australia	4	1
China	3	0
Argentina	3	0
Brazil	3	0
Other extra-European countries	8	1
Total	**756**	**100**

Source: Author's elaboration on Regional Employment Agency's data

Further information on the characteristics of the recipients of the scheme is provided in later chapters.

1.6 Thesis outline

Based on the theoretical framework and on the case study discussed in the previous sections of this chapter, in this section the structure of the thesis and the content of the next chapters is briefly outlined.

The thesis is divided in three chapters, plus this Introduction and the Conclusion chapter. The following chapter – number 2 – focuses on the labour market outcomes of the recipients of the M&B scheme. As previously mentioned, a priority objective of the European Union is to create "more and better jobs" by increasing individual

employability. However, especially due to a substantial lack of studies focusing on the labour market outcomes of FMS, there is no agreement in the literature on whether student mobility can actually improve individual career prospects (see for instance Messer and Wolter, 2007, Oosterbeek and Webbink, 2006, Rodrigues, 2013). Since SM enhances individual levels of human capital (Bracht et al., 2006, Konevas and Duoba, 2007, Murphy-Lejeune, 2002, Rodrigues, 2012) and spatial flexibility (Di Pietro, 2012, King and Ruiz-Gelices, 2003, Oosterbeek and Webbink, 2011), we also expect it to improve individual performance in the labour market. However, other strands of literature challenge this expectation, on the grounds that there are structural barriers at play in the labour markets (Constant and Massey, 2005), that human capital is not geographically transferable (Wiers-Jenssen and Try, 2005) and so on.

In order to contribute to this academic debate, we proxy more and better jobs through odds of employment and net monthly earnings, respectively, and compare the outcomes of the recipients of the M&B scheme to those of a suitable control group. The comparison is performed by Propensity Score Matching (Rosenbaum and Rubin, 1983), a technique which allows us to isolate the impact of the programme from other confounding factors and to identify its causal effect.

Chapter 3 focuses on the impact of SM schemes on the job matching of the recipients. There is evidence that more spatially mobile individuals are more likely to achieve a good job matching since they can access a larger number of spatially distributed job vacancies – especially if they access the dense labour markets of large urban areas (Büchel and Battu, 2003, Frank, 1978, Hensen et al., 2009, Jauhiainen, 2011, McGoldrick and Robst, 1996, Tselios, 2013, van Ham et al., 2001). However, there is a major gap in this literature concerning the extent to which better job matching can be achieved by artificially stimulating geographical mobility.

Therefore, Chapter 3 aims to contribute to this academic debate by assessing whether the recipients of the M&B programme are more likely than the control group to achieve a good job matching. We measure the level of both vertical and horizontal matching trough two proxies. Vertical matching is measured by comparing the individual level of education with that required for the employment at the time of our observation; horizontal matching is proxied by the individual satisfaction with the matching between the subject's skills and job tasks.

In order to minimise the potential self-selection bias we rely on an Instrumental Variable (IV) approach, where the unobserved heterogeneity is controlled for by using mother's level of education. Moreover, we control for current location in order to investigate whether the sending region (i.e., Sardinia) has been able to reap the returns to its investment in the M&B programme by achieving a good job matching of the recipients who return to Sardinia.

Both the literature and the EU acknowledge that SM can lead to brain drain from lagging to core regions (EC, 2001, Oosterbeek and Webbink, 2011). As a result, SM can lead lagging regions to lose an important asset for their development and economic growth: human capital (Fratesi and Riggi, 2007). Therefore, understanding what determines return migration to lagging regions by FMS would be extremely useful.

This issue is related to the academic debate on the determinants of highly skilled individuals' location decision, for which diverging opinions exist. Part of the literature maintains that highly skilled migration is mainly driven by economic factors; in contrast, another strand of literature tends to support the idea that amenities are the most dominant factors (exemples of this debate are Clark et al., 2002, Florida, 2002a, Glaeser, 2005b, Kemeny and Storper, 2012, Rodríguez-Pose and Ketterer, 2012, Scott, 2010, Storper and Scott, 2009). Yet other studies have emphasised the importance of social networks in different locations (Constant and Massey, 2003, Dahl and Sorenson, 2010b, Geddie, 2013, King, 2002, Massey et al., 1993, Vertovec, 2002).

Yet another related aspect which has recently started to be investigated by the academic community concerns the nature of the decision-making process leading to the location decision (Carlson, 2013, Geddie, 2010, Mosneaga and Winther, 2012, Waters and Brooks, 2010).

Accordingly, Chapter 4 studies the determinants of M&B recipients' location choice through the analysis of quantitative and qualitative data. First, relying on quantitative data, the impact of returning to Sardinia on the income of formerly mobile students is tested through an OLS regression. This analysis provides an assessment of the extent to which migration can be convenient from an economic viewpoint. Second, still using quantitative data, different potential drivers of location choice (economic factors, amenities and social networks) are regressed on a dummy accounting for return to Sardinia in order to detect their potential trade-offs and complementarities. Third, switching to the qualitative data, we explore the nature of the decision making process

(i.e., *how* the location decision occurs). In practice, the last empirical chapter relies on a mixed-methods approach, on the grounds that quantitative and qualitative methods are complementary and can provide a more comprehensive picture of a very complex phenomenon like the one at hand.

However, before we start off with the empirical chapters of this thesis, two remarks deserve to be made concerning the generalizability of our estimates and how the economic crisis might have influenced our results.

Concerning the first issue, Sardinia is characterized by very unique features and thus the results that have been observed in this study cannot be generalised to other contexts. In particular, Sardinia is an island and, therefore, its underlying patters of brain circulation are unique: its residents are less spatially flexible than those of other regions, inward highly skilled migration is more unlikely – as the psychic and economic costs to relocate in an island are very high – and so on. However, this does not imply that our research does not provide insights that can be useful for other regions managing similar programmes. In contrast, we believe that many problems identified in Sardinia are also relevant to other contexts, particularly other lagging regions engaged in the implementation of SM schemes. In this regard, the M&B programme can be considered an instance of a broader family of similar cases.

Concerning the second issue, we acknowledge that our findings may have been influenced by the **economic crisis**. In fact, recall that data collection was carried out between December 2011 and January 2012, coinciding with one of the worst economic crisis ever, similar in size only to the great recession of the 30s. The economic crisis, also known as the Great Recession, started in 2007 and peaked in 2009. However, after this phase, most European countries (particularly Italy) were hit by a second wave of recession, caused by government debts, which reached its peak in 2011-2012 – when the data for this work was collected. The potential impact of the crisis on the results of this research work is further discussed in the following chapters.

Chapter 2. **Do student mobility grants lead to "more and better jobs"?**

2.1 Introduction

Student Mobility (SM) is valued and supported by the European Union (EU) through various schemes aimed at favouring the circulation of students among European regions (for example, consider the ERASMUS programme, Marie Curie fellowships, and so on). One of the reasons why the EU invests in SM is that it is expected to enhance individual employability – i.e., individual chances of finding a job and achieving a good career (for further details on this issue see Chapter 1).

The rationale according to which SM should have a positive impact on individual labour market performance is that individuals with previous study experience outside their home region broaden their horizon and enhance their human capital in a manner that could not be achieved by geographically static students (Messer and Wolter, 2007). Moreover, past migration experience (including SM) should enhance "spatial flexibility" in job search (van Ham et al., 2001), which should in turn have a positive impact on individual labour market outcomes.

However, there is no agreement in the literature on the impact of migration on individual labour market outcomes. For instance, according to Dual Labour Market Theory, success in the labour market does not depend on the levels of human capital of the jobseeker but on the institutional structure of the labour market. In this regard, enhancing the levels of human capital and spatial flexibility through SM could be ineffective in enhancing individual labour market outcomes (see for instance Constant and Massey, 2005, Kogan, 2004). Other studies show that human capital is not transferable between locations (Friedberg, 2000, Wiers-Jenssen and Try, 2005, Zeng and Xie, 2004). This fact hampers the opportunities of being successful in the labour markets of both the sending and the receiving regions. Indeed, former mobile students on the one hand have acquired human capital in the sending region which cannot be exploited in the receiving region; on the other hand, they have developed human capital in the receiving region which cannot be employed in the sending region.

In light of this unresolved academic debate, one of the main objectives of this study is to evaluate the impact of SM schemes financed by the EU on the labour market outcomes of the recipients. It must be noted that very few studies exist in this field of research (Bracht et al., 2006, Cammelli et al., 2008, Maiworm and Teichler, 1996, Messer and Wolter, 2007, Rodrigues, 2013, Teichler et al., 2001), since the literature has only started to focus on this topic in recent times, in the wake of the steady

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increase of financial resources devoted to SM schemes by the EU (see Chapter 1 for further details on this issue).

One of the main challenges of these studies concerns the role of "migration selectivity", which occurs when the sample of those who migrate is systematically different from the sample of those who do not. The problem for empirical analysis is that, insofar as these differences are correlated to the outcomes of interest, they could lead to endogeneity and therefore to biased results[1].

Migration selectivity depends on both the fact that the individuals who wish to participate in these schemes are systematically different from who do not (self-selection) and on the fact that, among the applicants, the rules of the calls tend to select individuals endowed with particular characteristics (selection). In both cases, the (self-)selection of the recipients could lead to endogeneity, since the sample of the individuals who participate in the programme would most likely be different from the sample of non-participants. Unfortunately, except Messer and Wolter (2007) and Rodrigues (2013), all the existing studies focusing on the microeconomic impact of SM schemes tend to downplay the importance of selectivity, therefore their estimates are most likely biased. As such, the second contribution of this chapter is to take this issue in due account.

In short, we want to investigate whether graduate students who have been mobile through European Union programmes achieve better or worse labour market outcomes (proxied by odds of employment and net monthly income) as compared to if they had not participated.

To answer this question, we build a case study on a programme called *Master and Back* (henceforth also referred to as "M&B" or the "treatment"), whose objective is to provide outstanding students resident in Sardinia (an Italian lagging region) with the opportunity to complete graduate and post-graduate studies in other Italian regions or abroad by granting scholarships covering tuition fees and costs of living.

This is a good case study for the research question at hand since we partially know what determines selection into the M&B programme. In fact, we have been granted

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[1] It must be noted that this kind of problem corresponds to what Heckman (1979) calls "sample selection bias".

access to administrative data documenting how the recipients were selected, which of course allows us to (statistically) control for these factors. Additionally, the raw data has been complemented by a purpose-designed web survey (response rate 44%) to acquire further insight into the applicant characteristics which likely determined self-selection into the program, including the applicant's abilities and motivating factors. The questionnaire can be found in Appendix 2.1. It is in Italian but the most relevant questions have been translated into English.

In this study the impact of the programme is evaluated by comparing the labour market outcomes of recipients (henceforth also referred to as "treated group" or just "treated") to the outcomes of non-recipients (henceforth also referred to as "control group", "untreated group", or just "untreated"). In order to isolate the impact of the programme from other numerous possible confounding factors, the treated and untreated sample groups are chosen such that they are as similar as possible in all monitored factors, with the exception of the individuals' participation in the programme. The control sample was drawn from the University of Cagliari's student population, where most of the recipients studied, and is composed of individuals who were eligible to participate in the M&B programme but either did not apply (the bulk) or were not selected (very few); it must be noted that the control group was also asked to complete an identical web survey.

Comparing the treated and control groups is complicated by potential biases. In particular, the fact that the group of recipients is self-selected into the programme, rather than a random sample of students, introduces a bias into the study. To work around it, we employ Propensity Score Matching (PSM) (Rosenbaum and Rubin, 1983), which is a statistical technique that estimates the impact of the "treatment" by matching each recipient of the scheme with one or more non-recipients, based on their estimated pre-treatment propensities to participate to the programme (propensity scores).

This chapter is structured as follows. Section 2.2 reviews the relevant academic literature. In Section 2.3, the case study is explained along with a description of the sampling and data collection procedures and some descriptive statistics about both treated and control groups. Afterwards, in Section 2.4, the focus shifts to the methodology: the choice of the PSM is justified and its main characteristics and assumptions are outlined. In Section 2.5 the concrete steps to implement the PSM

using the available data are described: choice of the matching algorithms, justifications of the explanatory variables and so on. Finally, Section 2.6 reports the results of the study, while Section 2.7 discusses and presents the conclusions drawn.

2.2 Student mobility: theoretical background and empirical evidence

In this section we explain the theoretical framework that underlies this study on the microeconomic impact of student mobility programmes. SM is a specialized form of mobility/migration and, as such, can be framed in more general theories of migration. Therefore, the theoretical frameworks most relevant to this study are reviewed in Sub-sections 2.2.1 and 2.2.2. In particular, the first sub-section reviews the theories explaining the determinants of migration which, in our opinion, are particularly suited to explaining SM; while the second sub-section focusses on the main theoretical contributions that explain the impact of spatial mobility on individual labour market outcomes.

It is important to note that the determinants and consequences of migration are tightly interdependent, since depending on what determines migration, also the consequences of migration might change. For instance, if who migrates through the programme M&B is more able than who does not, we expect the labour market outcomes of the former to be better than those of the latter, since ability is positively correlated to individual labour market performance (Card, 1995). This issue, in migration studies, is usually referred to as *migration selectivity* and is the focus of Sub-section 2.2.3.

Finally, Sub-section 2.2.4 reviews the existing empirical research work on the effect of participating in SM programmes (co-)financed by the EU on individual labour market outcomes (for a review of such programmes see Chapter 1). Particular attention is devoted to discussing their main weaknesses, thus identifying the existing gaps in the literature and motivating the contribution of this work.

2.2.1 Migration theories

Traditionally, neo-classical economics has explained migration as resulting from wage differentials between regions. Based on this principle, individuals would tend to migrate from where wages are low to where they are high (Hicks, 1963). However, this theory has been criticised for being unable to provide a credible representation of the real

world and for relying on unrealistic assumptions (see Mosneaga and Winther, 2012). For instance, it assumes full employment and flexible wages which change according to supply and demand. These assumptions have been considered a potential source of bias which can be corrected by taking into account the probability of finding employment in the destination country (Harris and Todaro, 1970, Isserman et al., 1987). Another weakness in the theory is the omission of migration costs (Armstrong and Taylor, 2000). In this regard, important progress has been made through the application of Human Capital Theory. Larry Sjaastad (1962) was the first to apply Human Capital Theory to migration studies. According to him migration is an investment decision, where the potential migrant chooses a destination whose discounted benefits exceed the discounted costs[2] of migrating there.

Human Capital Theory relies on a disequilibrium model, since the very possibility of achieving higher levels of utility through migration rests on the assumption that different locations are endowed with different opportunities of utility[3]. This assumption contrasts with the equilibrium models which are reviewed later.

One of the main critiques made to Human Capital Theory concerns the assumption that potential migrants have perfect information on the characteristics of alternative labour markets – a situation made especially improbable by the fact that economic opportunities evolve over time. To address this weakness we turn to Job Search Theory (Lippman and McCall, 1976), which extended the economic theory of migration specifically regarding the role of information (see the work by Miron, 1978, p. 520). In short, Job Search Theory claims that a job-seeker receives multiple job offers over time; for each offer, the seeker chooses between accepting and continuing the search. According to the theory, the decision depends on information cost. Therefore, job offers get accepted when the wage offered is higher than the "reservation wage" – i.e., when the marginal cost of additional search exceeds the expected incremental utility (Mortensen, 1986). Based on Job Search Theory, we can infer that a higher reservation wage implies, on the one hand, a higher real wage for individuals who find employment; on the other, a lower probability of finding employment.

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[2] The costs to which Sjaastad refers are not only pecuniary but also psychic.
[3] However, though migration is triggered by geographical disequilibria, the mobility of factors in the long-run should lead to equilibrium, since wages and unemployment rates should both tend to converge.

In contrast to the disequilibrium models reviewed earlier, according to which migration results from the economic differentials between locations, equilibrium models acknowledge that non-economic location characteristics can also be very relevant in influencing migration behaviour (Graves, 1980, Graves and Linneman, 1979, Knapp and Graves, 1989). In short, besides economic characteristics of a location, equilibrium migration models consider amenities, which are "anything that shifts the household willingness to locate in a particular location" (Partridge, 2010, p. 518). Non-economic amenities can in turn be distinguished between natural amenities, like weather and landscape, and manmade amenities, like healthcare, infrastructure, public safety and so on (Cushing and Poot, 2003).

Therefore, equilibrium models maintain that individuals do not migrate to maximise income, as claimed by disequilibrium models, but to pursue quality of life. Since quality of life depends on number of factors, both economic and non-economic, in their view focusing only on the economic ones would be inadequate. Though providing a detailed description of equilibrium models is beyond the scope of this work, their basis is that an individual's choice of location depends on personal preferences for the different mixes of amenities offered by each possible destination. The equilibrium is contingent on the fact that different mixes of location characteristics can be equivalent for different individuals in search of quality of life, depending on their personal preferences.

It must be noted that recent studies have explicitly attempted to reconciliate economic factors and amenities, equilibrium and disequilibrium models into single frameworks. For instance, Faggian and Royuela (2010) take into account quality of life along with more traditional economic variables, such as employment opportunities, income and wage levels. On a similar vein, Biagi et al. (2011) find that in Italy long distance migration is well explained by a disequilibrium model, whereas short distance migration largely reflects an equilibrium model of migration. Finally, both equilibrium and disequilibrium models agree that the perception of the attractiveness or repulsiveness of different location characteristics (economic or non-economic) changes depending on individual characteristics.

The literature has focused on an array of different individual characteristics, but probably the most studied of which is human capital. In this regard, both Human Capital Theory and Job Search Theory agree that migrants tend to be endowed with

higher levels of human capital than non-migrants, though they achieve this conclusion through different reasoning[4].

However, besides human capital, also the effect of other individual characteristics on migration behaviour has been scrutinised by the literature: gender (Faggian et al., 2007b, Markham and Pleck, 1986), unemployment (DaVanzo, 1978), age (Becker, 1964), family status (Mincer, 1977) and so on. However, for the purpose of this work, one of these factors is particularly relevant: previous migration experience. In fact, individuals with previous migration experience (e.g., like formerly mobile students) have more information about the labour markets in their former locations, which makes their subsequent migration to these very locations more likely (DaVanzo, 1981, Haug, 2008, Herzog and Schlottmann, 1981).

In addition to information availability, there are other reasons why previous migration experience increases the odds of future migration. For instance, individuals who have already been mobile have lower psychological costs to migrate again. (Farber, 1978, Herzog and Schlottmann, 1981). Furthermore, they own "place-specific capital", namely factors that "tie" a person to a particular place (e.g., homeownership, job-related assets such as an existing clientele, knowledge of an area, friendships, etc.), which could act as an attractor for future migration (DaVanzo, 1981, p. 47).

To understand how the interaction between location characteristics and individuals traits works, the so called *push-pull framework* can be of great help (De Haas, 2010). It is an individual choice equilibrium model, quite similar to neo-classical economics micro models. It relies on the work of Everett S. Lee (1966) who, almost 50 years ago, made the point that the migration decision depends on the characteristics of both the areas of origin and destination. Some location features repel individuals away from a region while others attract them, giving them the names *push* and *pull* factors, respectively. In this framework, the migration decision depends on the relative influence and strength of these counteracting forces.

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[4] According to Human Capital Theory, the returns of migration are positively associated with individual levels of human capital since, on average, the highly skilled are more productive. As a consequence, people who are more skilled are also more likely to migrate (Greenwood, 1975). On the other hand, according to job search theory individuals with a higher skill level are better able to process information about geographically scattered job offers, thus resulting in higher probabilities of finding (good) jobs (Herzog et al., 1993).

Lee posits that migration is selective since, depending on their individual traits, people tend to respond differently to the same push and pull factors. An important case of this interaction appears between skill levels and economic location factors. For instance, in his seminal work George J. Borjas (1988) shows that the earnings of the immigrant population to the US depend on the interplay between their education and the economic characteristics of their new destination. In a paper published in 1992 he and his co-authors note that highly skilled individuals tend to migrate to labour markets characterised by a high skill premium, whereas lowly skilled individuals are attracted by places characterized by low skill premium (Borjas et al., 1992). This migration tendency is, of course, reflected in the observed earning levels. Other authors have focused on the importance of agglomeration forces. For instance Giannetti (2001, 2003) states that highly skilled individuals tend to locate close to their peers in order to benefit from agglomeration externalities. Indeed, this geographical proximity allows them to exploit the complementarities among their respective skills.

Yet other studies, particularly relevant to this research as they focus on graduate students, have stressed the role of innovation and universities. According to them, innovative firms, universities and highly skilled individuals tend to locate in the same places. For example, Faggian and McCann (2006), while focussing on Great Britain, show that the primary role of universities in triggering innovation at the regional level is not to generate knowledge flows toward the surrounding economic fabric, but to attract high quality human capital, which in turn is a key asset for innovation and regional development. In addition, by focusing on Scottish and Welsh students, Faggian et al. (2007a) confirm that the location of higher education and employment are correlated. Moreover, they also detect the effects of institutional factors as they show that the propensity to migrate of Welsh-domiciled students is higher than that of Scottish-domiciled students due to differences between their respective national education systems, as well as to broader institutional and cultural differences.

In another study linked to education, Dotti et al. (2013) use a gravity model while focussing on Italy to show that universities can act as an attractor to generate inward flows of highly skilled individuals, who often stay after graduation. Incidentally, an important implication of this finding is that, since good universities are usually placed in economically strong regions, brain drain student migration could lead to further regional polarization. Similarly, Venhorst (2013), while focusing on the Netherlands, finds evidence that upon graduation students tend to locate close to their universities,

especially when the latter are placed in regions endowed with vibrant labour markets. On the other hand, when the universities are located in more peripheral regions students tend to return to their sending regions attracted by what he calls "regional familiarity", which is an attachment to everything familiar (parents, relatives, knowledge of the language, labour market, cultural and so on)[5].

Another influential migration theory is the Dual Labour Market Theory. This theory relies on institutional factors and has been proposed and developed by number of authors (for a review see Arango, 2000, Leontaridi, 1998, Massey et al., 1993). An influential version has been presented by Michael J Piore (2011) – see also Doeringer and Piore (1971) on this subject – according to whom labour markets of advanced industrial societies are divided into two sectors (or segments): a capital-intensive primary sector and a labour intensive, low-productivity, secondary sector. The former is characterised by good jobs (high wages, high status, stability etc.), while the latter by bad jobs (low wages, low status, instability, etc.). Given this segmentation of the labour market, migration is stimulated as locals shun bad jobs and employers have to rely on migrants to those vacancies. Migrants are willing to accept bad jobs as they still offer better standards of living than in their home country. In other words, Dual Labour Market Theory maintains that migration depends on labour demand rather than on labour supply and that migrants accept bad jobs due to huge inequalities between the economic conditions of receiving and sending countries. Dual Labour Market Theory denies that wage differentials could explain migration, since labour conditions are not determined by market forces but by institutional/social forces: industrial organisation, product market and technological conditions, systems of labour market regulation and so on.

By relying on a structural theory of migration, Saskia Sassen (1990, 2001) also comes to similar conclusions. She developed the concept of the *global city*, which is a theoretical framework where the growth of cities is explained by the clustering of corporate headquarters, financial centres and so on. Moreover, structural forces push cities to cluster in the global market, while they become more and more disconnected from their surroundings. Similarly to Piore's argument, the labour market described by

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[5] It must be noted that this is a very similar idea to DaVanzo's concept of "location specific capital" reviewed earlier.

Sassen is characterised by a proper polarisation between high income and low income workers. In this framework, migration results from the exploitation of certain countries over others and benefits the receiving country which needs cheap labour to fill out the vacancies in the bottom of the labour market's hierarchy (cleaners, waiters etc.). It occurs from the periphery to the core (i.e., to the global cities) and is more likely between places with prior colonial relationships, shared language, presence of communication, transport links and so on (Massey et al., 1993, Sassen, 1990, Sassen, 2001). Naturally, since this theoretical framework depicts migration as a type of exploitation of labour by capital, it is not consistent with rationales predicting positive returns to migration.

2.2.2 Theoretical studies on the private returns to migration

While the previous sub-section focused on the mechanisms underlying migration, this one focuses on its consequences on the labour market outcomes of those who migrate. As discussed in Chapter 1, mobility/migration, along with education and training, has traditionally been considered a key form of investment in human capital, since individuals undertake migration when they expect the benefits of migration to exceed the costs (Schultz, 1961). In this regard, we would expect a positive impact of migration on individual labour market outcomes. This expectation is also justified by the fact that individuals with former migration experiences should be more culturally open, should know languages and so on. In short, they should be endowed with that particular kind of human capital which has been named *mobility capital* by Murphy-Lejeune (2002) and which is particularly appreciated by the labour markets (see for instance Bracht et al., 2006, Konevas and Duoba, 2007, Rodrigues, 2012).

Moreover, spatial flexibility in job search should increase the chances of finding an employment by giving access to a higher number of job offers (Schwartz, 1976), as well as of earning more. In this regard, almost 40 years ago, Mincer (1977) observed that married women earned less than single ones. He explained this difference by the fact that women were "tied movers" which tended to search for a job in smaller area, coinciding with the area surrounding where their husbands were employed[6]. On the

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[6] Here, we do not mean to claim that males are always the breadwinners nor that women always travel shorter distances, since there is evidence that this is not always the case (Hanson and Pratt 1995; Smits, Mulder et al. 2003). We merely want to stress the importance of spatial flexibility in job search and Mincer's (1977) paper is a seminal work in this respect.

other hand, various recent studies – which are reviewed in Sub-section 2.2.3 – have found evidence of such a positive correlation (see for example Glaeser and Maré, 2001, Ham et al., 2005, Pekkala, 2002).

Notwithstanding the studies suggesting the positive outcomes of migration, there are also theoretical reasons to expect that migration could worsen individual labour market outcomes. As previously mentioned, migration is costly, and such costs increase proportionally to distance – higher distances can lead to higher psychological (Brennan, 1965) and information costs (Schwartz, 1973). Therefore, to compensate for these costs the job-seeker (and potential migrant) tend to increase the reservation wage proportionally to distance, thereby reducing their chances of finding employment (Shumway, 1993). For instance, while focusing on France, Lemistre and Moreau (2009) find evidence that returns to migration tend to decrease with distance.

Worse labour market outcomes for those who are geographically mobile are also consistent with equilibrium models, according to which labour market outcomes of migrants might be null or even negative since the aim of migration is not to achieve higher labour market outcomes, but to achieve better quality of life (Greenwood, 1985, Hunt and Mueller, 2004).

Furthermore, Dual Labour Market Theory (or Labour Market Segmentation Theory) is also consistent with negative labour market returns to migration. In fact, according to the theory high levels of human capital in large and buoyant labour markets are not a sufficient condition to achieve good labour market outcomes. The reason is that accessing the segment of the labour market endowed with good jobs could be hindered by discrimination and other barriers. Dual Labour Market Theory expects disadvantaged social groups – women, immigrants, young people, unskilled, etc. – to be absorbed by bad segments (Reich et al., 1973, Waldinger and Lichter, 2003). In this regard, by focusing on the US labour market, Hudson (2007) finds strong evidence of polarisation and of low levels of mobility between segments. Moreover, such mobility is significantly lower for disadvantaged social groups (particularly, minorities and women). According to him this duality is rising, pushed by the substitution of nonstandard work with traditional wage and salary employment in full time jobs and restrictions on worker mobility due to citizenship status.

In the Dual Labour Market framework migrating also does not guarantee good career prospects since it could lead to being trapped in the wrong segments (Gordon, 1995,

Reich et al., 1973). For example, Constant and Massey (2005) provide evidence that in Germany guest workers are less able to translate their human capital into good first jobs than homeworkers, and that such gap tends to widen over time due to low occupational mobility. However, while looking at the EU as a whole Rodríguez-Pose and Tselios (2010) do not find any evidence of discrimination. They study the differentials in economic returns to education between migrants and non-migrants, while controlling for individual factors, household, regional and supra-regional externalities. Their findings confirm the paramount importance of education as a key determinant of economic gains. However, no evidence is found of discrimination between migrants and non-migrants.

Another way in which migration could reduce the chances of being successful in the labour market has been exposed by studies focusing on the geographical portability of human capital. For instance, Friedberg (2000) makes a net distinction between country-specific and general human capital. He shows that in Israel the human capital acquired abroad is much less valued than the human capital acquired domestically, and that this different valuation fully explains the earnings disadvantage of immigrants relative to comparable natives in Israel.

Similar findings emerged from the work by Zeng and Xie (2004), who investigated the causes of earnings differentials in the US between Asians and white Americans with the same level of education. They compare US-born whites, US-born Asian-Americans, US-educated Asian immigrants, and Asian immigrants who completed education prior to immigration; they find that the only statistically significant earnings gap is negative and concerns Asian immigrants who completed education prior to immigration. In other words, according to their findings the earnings gap do not depend on discrimination, as claimed by Dual Labour Market Theory, but on the fact that the human capital acquired before immigrating into the US is different from that required to be successful in the US labour market (language skills, cultural proximity and so on).

In similar research, Wiers-Jenssen and Try (2005) while focussing on Norway found that, on average, domestically educated students are more likely to find a job upon completion of their degrees, even though foreign graduates will likely earn more. The authors explain the smoother transition from education to work by local graduate students on the grounds that those who study abroad tend to lose their social networks at home (see also Wiers-Jenssen, 2008, Wiers-Jenssen, 2011).

Yet another issue that affects the impact of SM on individual labour market outcomes is the quality of higher education institutions towards which students tend to migrate. According to the studies focusing on this matter, SM leads to higher labour market outcomes only when it is directed towards high-quality universities (Solmon, 1973, Weisbrod and Karpoff, 1968). Along this strand of research, much scholarly attention has been dedicated to two major issues: the measurement of college quality (Black and Smith, 2006, Zhang, 2005) and the selectivity of students at elite colleges, which could lead to sample selection bias (Brand and Halaby, 2006, Loury and Garman, 1995). In general, most of these studies find evidence that higher college quality leads to better labour market outcomes, although some dissenting opinions exist (Hussain et al., 2009).

2.2.3 Migration selectivity and implications for individual returns to migration

As mentioned in the first sub-section, individuals tend to self-select into migration depending on their personal characteristics and on the push and pull factors of alternative locations. This issue is relevant not only to identify the determinants of migration, but also to study its impact on individual labour market outcomes. In this regard, isolating the impact of mobility can be very difficult since the outcomes we observe among the migrants can be a consequence not only of migration itself, but also of the individual characteristics of the migrants, which might be systematically different from those of the non-migrants. This issue is known as migration selectivity and is the focus of this sub-section.

As mentioned previously, highly skilled individuals are attracted by places with better economic conditions (Borjas et al., 1992) and with higher concentrations of their peers (Giannetti, , 2001, 2003). In agreement with this position, Glaeser and Maré (2001) pointed out that being located in cities leads to higher earnings, probably due to more efficient labour markets, but also since proximity stimulates knowledge spillovers and learning. In this regard, Pekkala's (2002) work is particularly interesting. She analysed Finnish panel data and, by using a treatment effect sample selection model, investigated the correlations between pre-migration earnings and geographical factors. In particular, she showed that people who migrate to richer regions tend to have higher pre-migration income than those who move to poorer regions, indicating a positive selection effect. Another interesting example of a study dealing with migration

selectivity was published by Détang-Dessendre et al. (2004). They focussed on France and found positive selection effect for highly educated migrants. Moreover, they found that the selection effect is higher for men who migrate to Paris than for those who migrate to other provinces. In other words, the highly educated are more likely to both migrate in general and particularly to migrate to major urban agglomerations – probably due to the higher concentration of job offers and to the larger size of the labour market of these locations.

To detect self-selection in migration studies, "treatment effect" methodologies have become increasingly popular since they are particularly efficient at isolating the effect of the explanatory variable of interest, usually referred to as the "treatment", from alternative explanatory variables. Applications of this kind of methodology can be categorised based on whether self-selection is controlled for by relying on "unobservables" or "observables".

To rely on unobservables, both Heckman selection models (Heckman, 1979) and Instrumental Variables (IV) (Angrist et al., 1996) have been used. For instance, Nakosteen et al. (2008), while focussing on Sweden, used a Heckman model to find evidence of self-selection with regard to both unmeasured traits and measured pre-migration earnings. They find strong evidence of self-selection; however, while unobserved factors drive self-selection for both genders, pre-migration earnings drive it only for females. In contrast, Caliendo et al. (2013) used an IV approach. The authors used German administrative data and tested whether supporting mobility among the unemployed might be effective in reducing unemployment in depressed regions. In their work, two schemes are assessed: the first provides commuting assistance, while the second provides relocation assistance. They used the treatment intensity by a local employment agency as an IV to estimate causal treatment effects and found that relocation assistance reduces unemployment duration, enhances wages and job stability, while commuting assistance leads to mixed effects.

Conversely, treatment effect approaches that rely on observables to control for self-selection usually tend to rely on the Propensity Score Matching. This method consists in estimating the effect of migration by matching individuals who migrate to ones that do not, based on their estimated migration propensity. An example of an application of this technique is in the work by Ham et al. (2005): the authors, while focussing on US internal migration, assess the impact of geographic mobility on different education

groups. In order to do this, they match who to change job relocates with who does not and find that geographical mobility has a significant positive effect on the wage growth of college graduates, a marginally significant negative effect on high school dropouts and no significant effect on other educational groups.

Finally, McKenzie et al. (2006) presented a study of the relative effectiveness of different quasi-experimental designs by comparing their estimates to those obtained through a randomised experiment (i.e., the most reliable approach in impact evaluation studies). To perform this comparison, the quasi-experimental designs were implemented by using the same data which had been used for the randomised experiment. Therefore, the closer the estimates of each quasi-experimental technique were to those of the randomised experiment, the better they had fared. In their study the authors found that a good Instrumental Variable method works best; in addition, bias-adjusted Propensity Score Matching performs comparatively well.

2.2.4 Empirical studies on the impact of student mobility on individual labour market outcomes

As Formerly Mobile Students (FMS) are the focus of this thesis, this section is completely devoted to reviewing the empirical evidence concerning whether there is a link between student mobility and its subsequent labour outcomes. These studies are particularly relevant since they analyse the same problem as this research work. However, they exhibit major weaknesses, which are explained in this chapter along with possible solutions.

Early evaluation works on EU SM programmes date back to the evaluation of the ERASMUS programme in the early 90s. These works, which were requested by the EC, mainly consisted of surveys targeting former ERASMUS students. The first round of surveys targeted students who had participated in the programme in the 1988/89 academic year (Maiworm et al., 1991, Maiworm and Teichler, 1996, Teichler, 1994). From a methodological point of view, it is interesting to note that these studies do not use a control group, despite the fact that they define themselves as impact evaluations. Therefore, their conclusions usually rely on descriptive statistics and comparisons of the labour market outcomes of the same individuals at different points in time.

A control group was used for the first time in late 1990s, thanks to the dataset collected through the so-called CHEERS (Careers after Higher Education: A European Research

Study) (Teichler et al., 2001), although it was only used for descriptive purposes rather than for making causal inferences. This study showed that the ERASMUS programme could facilitate the transition from education to work. In fact, whereas on average finding a job took a little more than 5 months for former ERASMUS students, it took as much as 7 months for other students. As for gross annual income, on average mobile students earned as much as 2,600 euros more than non-mobile students: 32,000 vs. 29,400 euros per year.

Later, in 2006, another evaluation of the ERASMUS programme was performed: the VALERA (Value of ERASMUS Mobility) study. It focused on students who participated in the ERASMUS programme during the academic year 2000/2001. The study was based on the participants' perceptions of the impact of the ERASMUS programme on their careers. It found that the ERASMUS programme was perceived as important to find and employment, but it was not perceived to have helped increase earnings (Bracht et al., 2006).

In addition to these large studies commissioned at the European level, further studies have also been carried out at the local level. For instance, Cammelli et al. (2008) performed a study that is particularly relevant to this work since it focuses on Italy. The authors analysed a large dataset provided by Almalaurea[7] and aimed to assess the impact of international education experience on the labour market outcomes of Italian graduates. The study looked at three groups of students: those who participated in some EU foreign study programme; those who had other study abroad experiences; those without any study abroad experience. It compared their labour market outcomes (odds of employment and income) at three different points in time: at one, three, and five years after graduation. While the study prepares a potentially useful scenario, it unfortunately is unable to extract any clear pattern from the data. The reason may lie in some major methodological deficiencies. For instance, the authors did not apply any statistical technique to minimise the influence of pre-treatment individual factors. Thus, no credible causal claims can be made.

Another important academic contribution to this research problem was provided by Messer and Wolter (2007) who, for the first time, tried to overcome the methodological

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[7] http://www.almalaurea.it/

limitations of previous studies by relying on more advanced statistical techniques to isolate the impact of the study programme from other confounding factors. Their work focussed on ERASMUS students from Switzerland and took advantage of micro survey data on both a sample of ERASMUS recipients and a control group. In order to assess the impact of the scheme, the authors used an Instrumental Variable (IV) approach and instrumented the treatment through mother level of education – a standard instrument which is associated to labour outcomes but not to selection into the treatment. This technique allowed the authors to overcome self-selection bias and, as a result, to make causal inferences. First, by using a simple Ordinary Least Squares (OLS) estimation, the authors found that the impact of an exchange semester on salary is statistically significant, though not particularly strong. However, when they computed the instrumented second stage regression, the correlation disappeared. This observation meant that the effect had no causal nature but, rather, it depended on individual ability proxied by mother level of education.

Finally, the article most similar to the analysis on which this chapter concentrates is by Rodrigues (2013). She focussed on 16 European countries by using data collected through 2 different surveys: REFLEX (Research into Employment and professional FLEXibility) and HEGESCO (Higher Education as a GEnerator of Strategic Competences). She was interested in assessing the impact of SM on a number of different outcomes, including the transition from education to work and earnings. In her work, she applied PSM and concluded that SM significantly decreases the probability of finding the first job within one year after graduation. Moreover, though this negative effect was not significant for those spending less than 3 months abroad, it tended to increase in magnitude with the time spent abroad. She also found that SM leads to a wage premium of 5%.

In summary, SM is expected to increase labour market outcomes of the recipients by reducing migration costs. Nevertheless, so far very little empirical evidence has been provided to support such theoretical expectation – a situation that is further deteriorated, as highlighted by the review of the literature provided above, by the fact that most of existing studies failed to use suitable control groups and specific statistical techniques to control for migration selectivity.

Therefore, this work's contribution to the literature consists in providing further evidence on whether graduate students who have been mobile through economic

incentives (co-)financed by the EU are more likely to achieve higher labour market outcomes (as proxied by odds of employment and net monthly income) than would have been possible had they not participated in such schemes. This goal is achieved by overcoming some of the main weaknesses of previous studies on this specific issue. In fact, unlike previous studies, this one relies on a suitable control group and applies a statistical technique, the PSM, that is able to control for migration selectivity.

2.3 Data collection and description

In order to tackle the research question set out above, we are going to do a case study on the Master and Back programme, which was discussed in Chapter 1. In brief, the programme provides selected graduate students, resident in Sardinia, with financial support to pursue Master's and Doctoral degrees of their choice in the world's best universities (either in Italy or abroad). The programme relies on objective selection criteria meant to select the best and the brightest students. Moreover, part of the scholarship recipients has also been granted an additional economic incentive to encourage them to return to Sardinia upon completion of their studies (the so-called *Back* part of the programme). Although this part of the programme is beyond the scope of this thesis, it is relevant to the empirical analysis carried out in this chapter, for reasons provided later in the text.

The M&B programme provides a good context to study the impact of SM schemes on individual labour market outcomes, since all its beneficiaries acquire study experiences outside of their home region (Sardinia) lasting on average more than one year (i.e., the average length of the programme). This duration ensures that the participants have enough time to get reasonably familiar with the destination region, to get information about the local labour market, to build social networks there and so on. In other words, their migration experience should have enhanced their spatial flexibility, as predicted by the literature. Therefore, we would expect them to achieve better labour market outcomes than if they had not participated to the programme.

Furthermore, there is another reason why the Master and Back provides a good case study for the purpose of this research. The fact that the recipients are chosen according to known selection criteria allows us to control (at least in part) for the determinants of selection into migration and, as a result, to achieve more reliable estimates of the impact of the programme.

We acquired a dataset from the Regional Employment Agency, that contains information on all Master and Back applicants. More specifically, for each participant the dataset provides personal data, previous education, university of destination, name and topic of the financed programme, phone number, email address, work experience, etc. Performing a reliable impact evaluation also requires a suitable control group. For the purpose of this study, we selected controls from the a set of graduates of the University of Cagliari who were eligible for the programme, but that either did not apply or applied but for some reason did not get selected. It is important to note that this is the same university from which most of the programme participants graduated. The University of Cagliari graciously provided the second dataset used in this study, which contains information on all its graduates from the period 2000-2010. This dataset has a large number of records, though they contain less information than the ones in the programme dataset. Specifically, for each graduate the dataset contains: name, surname, place of residence when the student applied to the university, faculty, final mark, phone number, and email address.

To supplement these datasets, further information was collected through a web questionnaire designed specifically for this study. Two almost identical questionnaires were presented to the treated and control groups. The only difference consisted in a few additional questions in the control group's version inserted to gather bits of information that were provided by the Regional Employment Agency dataset (treated) and not by the University of Cagliari dataset (control). Both surveys were conducted from November 2011 and March 2012.

It must be noted that study groups were constructed in two phases. First, the treated group was identified. Then, based on its features, a control group as similar as possible to the treated group was assembled. Both phases are explained in more detail in the next two sub-sections.

2.3.1 Treated group

The sampling frame used to conduct the web survey for the treated group was comprised of 2,440 records, corresponding to all applicants to M&B in the years from 2005 to 2009. Over this period, 4 calls of the programme were made: 2006, 2007, 2008 and 2009. The Table 2.1 shows all the applicants divided by call and by whether their application was successful or unsuccessful.

Table 2.1 – Ratio of successful applications by call

Call	Unsuccessful		Successful		Total	
	N°	%	N°	%	N°	%
2006	13	2	786	98	799	100
2007	76	19	333	81	409	100
2008	175	27	461	73	636	100
2009	150	25	446	75	596	100
Total	414	17	2,026	83	2,440	100

Source: Author's elaboration on data from the Regional Employment Agency.

The data shows that very few applicants failed to obtain the scholarship: the minimum number is 13 in 2006 (corresponding to 2%), while the maximum is 175 in 2008 (corresponding to 27%); the overall average corresponds to 17% of the applicants (i.e., 414 applicants out of 2,440).

The Table 2.2 shows the number of respondents to the web survey out of the total number of recipients, for each call. Overall, the response rate is almost 40% for the participants from the calls in 2006 and 2007, whereas it is higher than 50% for the calls in 2008 and 2009.

Table 2.2 – Response rate by call

Call	Non respondent		Respondent		Total	
	N°	%	N°	%	N°	%
2006	479	61	307	39	786	100
2007	205	62	128	38	333	100
2008	225	49	236	51	461	100
2009	222	50	224	50	446	100
Total	1,131	56	895	44	2,026	100

Source: Author's data.

As outlined in Chapter 1, the rules of the programme calls changed over time, thus making it preferable to avoid analysing the data from different calls together. For most calls, their evaluation has indeed been kept separate. However, due to low sample sizes it proved necessary to merge together the data from the calls in 2007 and 2008. We do not expect this decision to have biased the results, since these two calls were temporally contiguous and relied on similar selection rules. In particular, the priority sectors to earmark available resources were exactly the same (see Chapter 1). Therefore, the sample encompassing the calls in 2007 and 2008 is hereafter referred to as call "2007&2008".

The M&B programme provided financial support for 6 different types of postgraduate studies (see Chapter 1 for a description). However, since these categories are very different from each other, some of them have been discarded to make the "treatment" more homogeneous. For this reason, "education during the second year of specialist degrees" has been discarded, since it requires a lower level of education than most of the others programmes: first-level degree compared to a specialist degree. Moreover, "academic diplomas in arts and music", "higher education in arts and music" and "training experiences of excellence in arts and music" have been discarded for the same reason highlighted above as well as in that the topic (arts and music) was not coherent with the other categories taken into account. Overall, 154 observations out of 2,026 have been discarded, reducing the sample to 1,872 observations. The Table 2.3 lists the final degree categories on which the analysis focusses, with annexed web survey response statistics.

Table 2.3 – Response rate by programme type

M&B postgrad type	Non respondent		Respondent		Total	
	N°	%	N°	%	N°	%
University masters	528	55	440	45	968	100
Masters of high profess.	301	55	245	45	546	100
Ph.D.	204	57	154	43	358	100
Total	1,033	55	839	45	1,872	100

Source: Author's data.

From the Table 2.3 we see that the response rate is roughly the same in all the categories: 45%, corresponding to 839 interviewees. It is worth noting that Master's-level programmes are divided into 2 sub-categories, since the Italian academic system distinguishes between Master's degrees granted by universities (University masters) and master's diplomas granted by organizations other than universities (Masters of high professionalization). However, in the analysis the treatment is modelled as a binary variable; therefore, in the impact evaluation no distinction is made between these three categories.

As well as the observations discarded because of the category of study, a few more have been eliminated because they had not yet completed their programme-supported education at the time the data were collected. Obviously, for those still "under treatment" no impact evaluation can be performed. For this reason, 51 observations out of 839 who received the treatment and responded to our questionnaire have been

discarded, reducing the number of respondents of the treated group to 788 observations.

Moreover, special attention has been paid to those recipients who, in addition to the scholarship for their studies, were also awarded the incentive for returning to work in Sardinia through the Back part of the programme – or just Back (for further information on the Back see Chapter 1). Naturally, the outcomes of this sub-group might be anomalous as compared to the rest of the sample, particularly for those subjects who were participating in the Back when their interviews were conducted.

The Table 2.4 reports the incidence of the sub-programme Back among the recipients of M&B for Higher Education, by call. The rows represent the calls while the columns the status of the M&B Higher Education recipients with regard to the so called Back part of the programme The first column reports the number (and percentage) of recipients of M&B Higher Education who have not done the "Back", the second one of those who have done and concluded it and the third one of those who have done but not concluded it (i.e., it was still in progress when the web survey was conducted), finally the last column represents the total, corresponding to all the recipients of the programme M&B Higher Education.

Table 2.4 – Prevalence of the Back among the recipients of M&B Higher Education

Call	No Back		Back concluded		Back in progress		Total=Recip. M&B H.E.	
	N°	%	N°	%	N°	%	N°	%
2006	145	53	85	31	44	16	274	100
2007&2008	185	57	34	10	107	33	326	100
2009	168	89	1	1	19	10	188	100
Total	498	63	120	15	170	22	788	100

Source: Author's data.

The Table 2.4 shows that, by far, the highest number of Backs in progress originated from the call 2007&2008, while the lowest from 2009[8]. Overall, out of 788 recipients who responded to our questionnaire, 290 (37%) have also been awarded the grant for the Back; of these, 170 (22% of the full sample) were currently participating in the Back

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[8] In 2009 the incidence of both Backs concluded and in progress is so low since when the interviews were conducted these recipients had only recently concluded their studies; therefore, most individuals had not had the opportunity to participate in a call for the Back yet.

when the interview took place while 120 (15% of the full sample) had already concluded it. In order to minimise potential bias, we discarded all those that were participating in the Back when the interviews took place, since both their odds of employment and their income (the outcomes of interest for this chapter) would likely be biased. Indeed, by definition, those participating in the Back are always employed and their income is determined by the economic incentives provided by the regional government. In short, this issue further reduced the size of the treated group to 618. On the other hand, subjects who participated in the Back part of programme but concluded it before their interview have not been eliminated since, at that time, they were not receiving any public support.

2.3.2 Control group

As outlined earlier, the control group for this study has been assembled based on the features of the treated group. Arguably, the best control group to assess the impact of M&B would have been comprised of the applicants who did not pass the selection process, since selection into the treatment would have been exogenous. In other words, since all the applicants can be assumed to have similar propensity to participate in the programme (unobservables), the outcome of the selection process would depend entirely on the access criteria for the programme (observables). Unfortunately, for our study, very few applicants were not approved for the programme: only 414 out of 2,440 (17%). For this reason, an alternative control group was composed using the sampling frame of the graduates from the University of Cagliari, on the grounds that most M&B recipients had graduated from that same university.

The University of Cagliari's dataset consists of all the graduates from the years 2000 to 2010 and is comprised of 43,913 records. To select the control group from this dataset, two screening steps were required. The first step was to eliminate all the graduates who had been awarded a M&B Higher Education scholarships; this was necessary to avoid representing the same individual in both our study groups. The second step was to discard the graduates who did not meet the minimum M&B participation requirements, since these individuals would have had different pre-treatment features as compared to the recipients. Thus, graduates who did not meet the following required criteria were eliminated:

• those with a final degree mark lower that 100/110 since, to be eligible, a final mark higher than 100/110 was required;

• those who did not possess a "Specialist degree" (or a *laurea vecchio ordinamento*) since, as we saw earlier, postgraduate programmes requiring lower levels of education were discarded from the treated group.

After these filtering steps, the final size of the control group was 23,839, out of which only 8,142 (34%) had an email address and could therefore be surveyed. Out of those, only 1,761 actually participated in the web survey (a 22% of response rate).

It is important to note that the control group does not need to be representative of the population of the graduates from the University of Cagliari, since this research only aims to generalize the results to the treated group (Average Treatment Effect on Treated – ATT). For these, as we mentioned earlier, the sampling frame is much more comprehensive and the response rate significantly higher.

Another important issue that deserves attention concerns the level of education of the control group as compared to that of the treated group. The treated group is comprised of individuals with postgraduate degrees, since the very treatment consisted of helping individuals achieve such levels of education. On the contrary, not all the members of the control group achieved the same levels of education. Instead, as can be seen in the Table 2.5, most of them (60%) did not achieve postgraduate education.

It is not within the scope of this work to disentangle the effect of education level, though this topic would be interesting and could be the focus of future research. Rather, the goal is to assess the impact of the programme in general, an objective that is further discussed in later sections.

Table 2.5 – Current level of education by treatment status

	Untreated		Treated	
Education level	N°	%	N°	%
Undergraduate Degree[9]	1050	60	0	0
Master's	484	27	510	83
Ph.D.	227	13	108	17
Total	1,761	100	618	100

Source: Author's data

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[9] Here "Undergraduate degree refers to individuals who did not achieve a level of education higher than "Specialist degree".

In summary, the sample construction procedure produced a control group that is very similar to the treated group. However, despite being eligible for the M&B Higher Education programme, most of the control individuals decided not to apply[10]. This is indicative of a significant level of self-selection, which represents a potential bias in our study. Therefore, the next section describes the further steps that have been taken to overcome this problem and ensure the validity of the study.

2.4 Isolating the impact of the programme

To deal with the self-selection bias, we have relied on counterfactual analysis. It consists in comparing the outcomes of the programme participants with the outcomes they would have achieved had they not participated to the programme. In these terms, the evaluation problem becomes a missing data problem, since we can only observe individuals that are in either the state where they participate in the programme or in the state where they do not, but never in both (Rubin, 1974). More formally, $Y_i(0)$ represents the outcome that individual i would attain in absence of the treatment. Similarly, $Y_i(1)$ represents the outcome that individual i would attain if exposed to the treatment. Thus, the effect of the treatment on the outcome for individual i is:

Eq. 2.1 $$\tau_i = Y_i(1) - Y_i(0)$$

As previously mentioned, among the various parameters that can be estimated through impact evaluation, this study focuses on the Average Treatment Effect on the Treated (ATT) – i.e., the programme effect on its current participants, their gain by the programme (Smith, 2000). This value is given by:

Eq. 2.2 $$T_{ATT} = E(T|D=1) = E[Y(1)|D=1] - E[Y(0)|D=1]$$

where *T* is the effect and *D* the treatment.

In general, the "gold standard" of impact evaluation is considered the social experiment (or randomized experiment), whose key to success is in the random assignment of units of analysis to groups. In fact, when groups are created through random assignment, they can be assumed to be probabilistically equivalent, or equivalent within known probabilistic ranges. However, since M&B scholarships are not granted

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[10] The adjective "most" here refers to the fact that the individuals who applied to the scheme without, for various reasons, passing the selection are included in the control group.

randomly, evaluating the impact of the programme by randomised experiment becomes impossible. Therefore, we selected an alternative technique for this task called Propensity Score Matching (PSM) (Rosenbaum and Rubin, 1983). It is able to overcome the self-selection bias by relying on observables. In our case, this capability is ideal since it allows us to exploit the rich cross-sectional data collected through the web survey that was administered to participants.

2.4.1 The Propensity Score Matching (PSM)

The PSM is an evolution of another statistical technique called matching. In contrast to matching, which relies on the idea that, conditional on a vector of covariates X, potential outcomes are independent of treatment, PSM relies on a balancing score summarising a vector of covariates. The PSM was introduced by Rosenbaum and Rubin (1983), who demonstrated that if potential outcomes are independent of treatment conditional on covariates X (matching) they are also independent of treatment conditional on a balancing score they named Propensity Score (PS). This is a significant advancement in impact evaluation since the PSM can overcome one of the main problems related to traditional matching techniques: the so called "curse of dimensionality", namely the impossibility of matching when the number of variables is high – a problem that is minimised when the matching takes place on a single variable, like the PS.

The PS is defined as the conditional probability of treatment exposure, given the observed covariates X, and is expressed as:

Eq. 2.3 $$p(X) = P(D = 1|X)$$

where D is a binary variable, set to 1 if treatment is received and 0 otherwise, and X is a vector of observable covariates.

Like all observational studies, the PSM relies on assumptions. The first assumption that is made is the Conditional Independence Assumption (CIA), or strong ignorability assumption, expressed by:

Eq. 2.4 $$(Y_1, Y_0) \perp D|X$$

However, if the goal is only to estimate the ATT, the CIA can be relaxed as follows:

Eq. 2.5 $$(Y_0) \perp D|X$$

The CIA implies that given a set of observable covariates X, which are not affected by treatment, potential outcomes are independent of treatment assignment (Lechner, 1999). In other words, the observables must account for all the differences in the outcomes of the treated and control groups. As a consequence of the CIA, to be credible the PSM estimator, requires a rich dataset. In fact, the evaluator needs to be confident that all the variables affecting both participation and outcome are observed. When this is not the case, the CIA is violated since the programme effect is partially accounted for by information which is not available to the evaluator (unobservables) (Bryson et al., 2002)

The second assumption made by PSM is referred to as Common Support Condition (CSC), or overlap, and is expressed by:

Eq. 2.6 $$0 < Pr(D = 1|X) < 1$$

As for CIA, if the goal is only to estimate the ATT the assumption can be relaxed; specifically, the CSC assumption can be weakened too (Caliendo and Kopeinig, 2008):

Eq. 2.7 $$Pr(D = 1|X) < 1$$

The CSC ensures that persons with the same X values have the same probability of being both participants and nonparticipants. As can easily be inferred from Eq. 2.7, if there are values of X such that individuals have the certainty of participating – i.e., *Pr(D=1|X) = 1* – then those individuals do not comply with the CSC. Eventually, all the units of the treated group must be matched with some unit of the non-treated group, while obviously the opposite is not required.

The rich information that has been collected is particularly suitable to evaluate the M&B programme through the PSM. To begin with, information on applicants' selection process by the administrators is available. According to Sianesi (2004), the availability of this information to the evaluator strongly improves the quality of the matching. Furthermore, PSM requires a vast sampling frame, since for each unit in the treated group there should be at least one matched unit in the control group; in the case of this study, a vast sampling frame to draw the control group is available. Moreover, part of the data has been collected through a custom-made survey designed to ensure that the resulting dataset includes sufficient variables to comply with the CIA. Finally, according to Heckman et al. (1999), data for participants and nonparticipants should be

drawn from the same sources in order to avoid the same variable to be measured in different ways. Since the questionnaires for treated and control group were almost identical, this condition is also fulfilled.

2.4.2 Model specification to calculate the Propensity Score (PS)

In order to satisfy the CIA, it is essential to specify an appropriate model to calculate the PS. Fortunately, the literature provides some guidance concerning the selection of appropriate timing, quantity and types of covariates to be included in the analysis.

Regarding selecting suitable timing, the literature on impact evaluation recommends excluding from the analysis all the covariates affected by the treatment, since they can introduce "post-treatment bias" (Rosenbaum, 1984). In brief, all the observations subsequent to when the treatment was performed might be affected by the treatment itself, and so should be considered outcomes rather than covariates. Therefore, in order to avoid post-treatment bias this study has eliminated all post-treatment observations: for instance, education titles achieved after the starting date of the treatment have been removed.

Concerning the quantity of variables, the literature presents diverging opinions. According to some scholars as many control variables as possible should be included in the model, since this strategy lowers the likelihood of unintentionally excluding relevant covariates (Rubin and Thomas, 1996). On the other hand, other scholars remark that over-parameterised models should be avoided, especially for these two reasons: first, since extraneous variables in the participation model might exacerbate complying with the Common Support Condition (i.e., finding good matches between treated and control group); second, since the inclusion of insignificant variables may unduly increase the variance of the estimates (Bryson et al., 2002). According to Ho et al. (2007), the choice should be made based on the relative size of the control group as compared to the treated group. That is, if the pool of potential control units is significantly larger than the pool of treated units, as in this study, the over-parameterised model is to be preferred since the gains in bias reduction will overcome efficiency reduction. Following this suggestion, an over-parameterised model has been applied in this study.

Finally, the model specification remains as an issue to be addressed. Unlike regression analysis, whose model specification rely on explanatory variables presumably

correlated to the dependent variable, the explanatory variables to estimate the PS must be associated to both selection into the treatment (in this case M&B) and to the outcome of interest (in this case odds of employment and net monthly income). In fact, the final objective is to keep the pre-treatment differences between the treated and the controls from biasing the estimates. In practice, in order to specify the model to calculate the PS we need to know exactly what determines selection into the treatment. This information is required to avoid what Heckman (1979) calls "sample selection bias", which is defined as the bias deriving from using selected samples to estimate behavioural relationships. He describes two possible sources of sample selection bias: the existence of self-selection by the individuals being investigated, and the selective nature of decisions taken by someone else. In the case of the Master and Back programme, sample selection bias comes from both potential sources. On the one hand, the applicants self-select in that they decide freely to apply; on the other, the selection of the individuals who are granted the scholarship, out of all those who apply, is taken by a board according to pre-set selection criteria. Therefore, the fact that in the case of this study we partly know what factors determined selection into the programme (i.e., the official selection rules as summarised in Chapter 1) is an advantage as we can statistically control for these factors, although determining what motived the recipient's decision to apply remains an open issue.

Below, the factors correlated to selection into the Master and Back programme (those belonging to both sources of sample selection bias) and to the outcomes of the recipients are briefly reviewed.

One of the most important variables is likely level of education. It has been proxied by three dummies identifying the highest level of education of the interviewees: "Higher= Undergrad. Degree", "Higher=Master's" and "Higher=Ph.D.". Depending on the case, the level of education can have a persuasive or dissuasive effect. Indeed, while on the one hand individuals who have already advanced their education to the highest levels have fewer incentives to advance it further, on the other the causal link between levels of education and labour market outcomes has been broadly acknowledged by the literature (Becker, 1964, Card, 1999, Mincer, 1974).

For similar reasons, and based on the same strand of literature, having previous work experience should also be associated to both selection into the treatment and to labour market outcomes. In fact, on the one hand previous work experience should reduce the

need to acquire further human capital through education; on the other, it should increase individual labour market outcomes. Previous work experience has been proxied by the dummy variable called "No job experience", which takes the value 1 if the interviewee has no pre-treatment work experience.

It must also be noted that both level of education and work experience were M&B selection criteria: the higher the levels of education or the longer the work experience, the higher the applicant's score.

Another key determinant of selection into the programme is undergraduate degree topic. In fact, different topics tend to have different payoffs in the labour market. Moreover, since the call 2007 the available resources of the scheme have been earmarked by topic, according to pre-set quotas. Therefore, applicants with degrees favoured topics were more likely to obtain scholarships, proportionally to the size of the corresponding quota. The variable undergraduate degree topic can take four values: "science and technology", "economics and statistics", other "social sciences" and "arts and humanities".

Gender is another important factor in this analysis. All other things being equal, women strive more to succeed professionally than men (Blau and Kahn, 1992, Blinder, 1973, Oaxaca, 1973). Moreover, the correlation between gender and propensity to be mobile is acknowledged by the literature, despite the lack of conclusive evidence on the sign of this correlation (Faggian et al., 2007b, Markham and Pleck, 1986). To identify gender of individuals in our analysis we have used a proxy called "Male", which takes the value 1 if the interviewee was male and 0 otherwise.

Further, another factor that might affect selection into the programme is marital status. Of course, individuals in a stable relationship would be less likely to want to participate in the programme, as it would entail either being physically separated from their partner for long time spans or for the partner to be willing/able to move with the recipient. Marital status has been proxied by a dummy called "Married or unmarried partner" which takes the value 1 if the interviewee was married or had a stable partner just before the programme.

Another arguably key source of bias is the ability of applicants. In fact, if more able people select into the treatment, the labour market outcomes of the recipients will most likely be positively biased. In order to control for ability, we have relied on three

variables: "Father university", "Final mark: 110/110 or higher" and "Graduation more than one year late". The first variable is a dummy taking the value 1 if the father of the interviewee holds a university degree; 0 otherwise. The second one is a dummy taking the value 1 if the individual's final graduation mark is 110/110 or 110/110 cum laude. The third one is a dummy which takes the value 1 if the length of time the individual required to complete the degree programme is more than one year longer than its expected length. It is interesting to note the variables "final mark" and "graduation late" were also used in the scholarship selection criteria, which is not particularly surprising since, as mentioned in Chapter 1, the M&B scheme aimed to select the best and brightest students in Sardinia.

Another factor that is likely to affect both selection into the treatment and labour market outcomes is previous migration experience. As previously discussed in the literature review, individuals with previous migration experience are more likely to migrate again, since they have lower psychic and information costs and higher location-specific capital (DaVanzo, 1981, Herzog and Schlottmann, 1981, Messer and Wolter, 2007). Therefore, it is important to include this factor in the model, which has been proxied by a dummy called "ERASMUS" which takes the value 1 if the interviewee had participated in the ERASMUS programme and 0 otherwise.

The final factor considered, which complies with the requirements of the PS model specification, is motivation. This factor is important since strong motivation makes achieving higher returns to education more likely. Despite its importance, this factor has almost never been considered in impact evaluation analyses due to lack of data – a notable exception being the study by Gerfin and Lechner (2002). In contrast, thanks to the purpose-designed survey, this study has access to such information. In particular, we have proxied motivation by using a dummy called "Ideal job – High earnings" which takes the value 1 if the interviewees have declared that a key characteristic of their ideal job was achieving high earnings. We consider this variable a proxy for high motivation since we expect individuals looking for jobs with good earning potential to be more likely to achieve good labour market outcomes than others.

2.4.3 Outcomes

As explained earlier in this chapter and in Chapter 1, SM schemes like M&B are expected to enhance the employability of the recipients – i.e., their potential to enter and be successful in the labour market. To measure how employability was affected by

this programme, this abstract concept has been operationalized through two proxies: odds of employment and net monthly income. The next paragraph explains how these two proxies have been constructed in practice and provides some descriptive statistics.

2.4.3.1 Odds of employment

The estimation of odds of employment relies on a dummy variable, called "Employment status" which takes the value 1 if the interviewee was employed when the interview was conducted and 0 otherwise. This variable is extracted from a question about employment status whose results are summarised in the Table 2.6.

Table 2.6 – Employment status by treatment status[11]

Employment status	Dummy Employment Status	Untreated		Treated		Total	
		N°	%	N°	%	N°	%
Student/trainee	Discarded	179	11	55	9	234	10
Unemployed	0	227	14	106	17	333	15
Internship	0	46	3	24	4	70	3
Employed	1	1,222	72	419	69	1,641	72
Homemaker	Discarded	13	1	5	1	18	1
Total		1,687	100	609	100	2,296	100

Source: Author's data.

As can be seen in Column 2 (Dummy Employment Status), all of those belonging to the category "employed" were coded as 1, while all of those belonging to the categories unemployed and internship were considered unemployed and coded 0. Finally, the observations belonging to the categories homemaker and student/trainee were discarded.

It is important to note that in principle internships should not be considered unemployment, since interns are likely not to be actively searching for work. Furthermore, in many European countries internships are short (usually about 6 months) and remunerated, at least to cover the intern's expenses – e.g., lunch, transportation, etc. However, the Italian case is quite anomalous, since internships are usually not remunerated and sometimes last for very long time spans. On average, the interviewees had completed 1.7 internships lasting overall more than 15 months! The

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[11] There are 9 missing values among the treated units and 74 among the untreated units. For this reason the totals of this table differ from the figures mentioned previously, namely 618 for the treated group and 1,761 for the control group.

choice of considering internships as unemployment is therefore justified by the fact that, especially in Sardinia, internships are likely to hide unemployment, since people unable to find work often end up doing internships in order to avoid complete inactivity while they keep searching for a job. Therefore, discarding internships from the analysis or considering them as employment would increase potential bias even further than considering them as unemployment. In any case, the choice should not significantly affect the final estimates since only 3% of the survey respondents were doing internships.

The distribution of the variable "Employment status" by treatment status, calculated as explained earlier, is displayed in the Table 2.7.

Table 2.7 – Employment status by treatment status (Dummy)

Employment status	Untreated		Treated		Total	
	N°	%	N°	%	N°	%
Unemployed	273	18	130	24	403	20
Employed	1,222	82	419	76	1,641	80
Total	1,495	100	549	100	2,044	100

Source: Author's data.

The data shows that the treated are 6% less likely to find an employment than the untreated, suggesting that – without controlling for programme selectivity – the scheme has reduced the chances of the recipients to find an employment. Moreover, the Table 2.8, which groups the observations by call, shows that the odds of employment vary significantly between calls. Indeed, the difference between the call with the lowest unemployment rate (2006) and the highest (2009) is 11% (19% vs. 30%). In other words, the longer the time elapsed after the participation in the scheme the better the odds of employment of the recipients, suggesting that reaping the private returns to education can take time.

Table 2.8 – Employment status by call

Call	Unemployed		Employed		Total	
	N°	%	N°	%	N°	%
2006	40	19	171	81	211	100
2007&2008	42	24	137	77	179	100
2009	48	30	111	70	159	100
Total	130	24	419	76	549	100

Source: Author's data.

2.4.3.2 Net monthly income

The variable "net monthly income" is based on the current net monthly income in euros as reported in the survey by the interviewees. Subsequently, these self-reported values have been adjusted at Purchasing Power Parity (PPP) to compensate for differences in the costs of living at their various locations. Initially, this was done by using conversion factors at the national level for those located outside Italy and at regional level for those located in Italy. However, this strategy proved to be inappropriate as we realised that most of the interviewees had located in major urban centres where the costs of living were much higher than the regional or national averages. Therefore, to achieve more accurate estimates we adjusted for costs of living at the levels of capital cities for individuals located abroad and of regional capital cities for individuals located in other Italian regions. This conversion was done using the coefficients provided respectively by EUROSTAT (EC, 2011a, EUROSTAT, 2009b) and by the ISTAT et al. (2009)[12].

Table 2.9 – Net monthly income in euros at PPP by treatment status

Treatment status	mean	sd	min	Max	N
Untreated	1,422	697	116	6,760	1,022[13]
Treated	1,618	980	125	7.503	396[14]
Total	1,477	791	116	7,503	1,418

Source: Author's data.

The Table 2.9 compares the treated and untreated (or control) group by average net monthly income at PPP and shows that the mean net monthly income at PPP of the treated is 196 euros higher than that of the untreated.

Table 2.10 – Net monthly income in euros at PPP by call

Call	mean	sd	min	Max	N
2006	1,779	982	339	6,779	161
2007&2008	1.769	1,076	154	7,903	128
2009	1,319	929	154	7,423	107
Total	1,651	1,017	154	7,903	396

Source: Author's data.

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[12] Since the only conversion factors at regional capital level for Italy referred to 2009, all conversion factors have been used referring to this year.
[13] There are 216 missing values.
[14] There are 23 missing values.

The Table 2.10 shows the mean net monthly income at PPP of the recipients by call year.

As can be seen, the net monthly income at PPP varies significantly from call to call: from the highest value (2006) to the lowest (2009) there is a difference of 460 euros. This might suggest either that participants of earlier calls have had more time to accumulate experience (and normally income goes up with experience) or that the scheme might have different levels of effectiveness for different calls.

2.5 Empirical application

With the methodological framework having been laid out In Section 2.4, this section discusses the steps taken to implement it. Specifically, we begin with the estimation of the PS and then continue by outlining how the units in the treated group have been matched to their respective most similar unit in the control group.

2.5.1 Estimation of the propensity score

The first step of the empirical analysis conducted for this study consists in calculating the PS. To do this, the variables representing the pre-treatment characteristics of both treated and control groups, which are expected to affect both outcomes and selection into the treatment, are regressed on the "treatment" variable – i.e., a dummy accounting for whether each unit belongs to the treated or control group. The propensity score is calculated separately for each call in order to avoid potential post-treatment bias (see Appendix 2.3 for the results), since different calls were released in different times and therefore have different pre-treatment characteristics.

In order to comply with the common support condition, after the calculation of the PS, the units outside the support area are discarded. According to the literature this can be done in two ways: by "minima and maxima comparison" or by "trimming" (Caliendo and Kopeinig, 2008). The former strategy consists of discarding all the observations that are outside the range of PS for which there are observations in both treated and control groups. On the other hand, the latter strategy consists in discarding a given percentage of treated units at which the PS density of the control observations is the lowest.

In this study, the common support condition has been imposed by trimming 10% of the treated units. This choice is justified by the fact that the right hand sides of the PS density distributions were characterised by particularly low densities. Therefore,

trimming is expected to reduce the number of matches in these areas by increasing the precision of the matching, though at the risk of increased bias (for a graphical representation of the common support condition see Appendix 2.4).

2.5.2 Matching

For the successful execution of this analysis, it was necessary to match each unit in the treated group to the most compatible – by PS – one or more units from the control group. Out of the various possible matching strategies, the following two have been selected for this study: nearest neighbour matching with n=1 (consisting of pairing each treated unit to the control unit with the closest PS value) and nearest neighbours matching with n=3 (consisting of pairing each treated unit to the 3 control units with the closest PS values). The use of multiple algorithms for the matching is expected to enhance the robustness of the estimates, since if different algorithms lead to similar results we can more confidently conclude that model dependence is unlikely.

In addition to PS-based matching, exact matching based on either the covariate gender or the covariate level of education was done, due to the key importance of these covariates in determining labour market outcomes. Thus, each unit of the treated group has been matched, based on PS, with one in the subset of the control group with exactly the same value for either one or the other of these two covariates. For instance, considering exact matching on gender, a female in the treated group is matched to the female in the control group that has the closest PS.

Matching can be done with or without replacement, meaning that each unit of the control group can be matched with a treated unit either any number of times or no more than once, respectively. In this study matching was done with replacement, a choice which is expected to increase variance and reduce bias.

The CIA can be satisfied only if the control and treated groups are well balanced, such that the means of the covariates used to calculate the PS are not significantly different (in a statistical sense) between groups. This situation is the same we would expect in case of random assignment to groups. To achieve a suitable balance, various

specifications of logit models were tried until a good balance of the covariates was achieved[15]. The results of the balancing tests can be found in Appendix 2.4.

The next step consisted in estimating the effects of the programme, which can be done in various ways. The simplest one is to calculate the difference in means between the outcomes of each unit in the treated group and its matched unit in the control group; in the case of multiple matched units we would compare to their average outcome. However, according to Abadie and Imbens (2002) a simple matching estimator is biased in finite samples when the matching is not exact. For this reason, among the various methods of adjustment suggested by the literature (Rubin, 1973b; Carpenter, 1977; Rubin, 1979; Robins and Rotnitzky, 1995; Heckman et al., 1997; Rubin and Thomas, 2000; Glazerman et al., 2003; Abadie and Imbens, 2006 in Stuart, 2010), this research has applied the post-matching bias adjustment method based on OLS regression recommended by Abadie and Imbens (2011).

Concerning the calculation of the standard errors, studies relying on the PSM often calculate them by bootstrapping. However, there is academic debate on the validity of this method (Abadie and Imbens, 2006). Therefore, for this study a different strategy has been selected – one suggested by Abadie and Imbens (2002). This alternative method, which allows for heteroskedasticity, consists of a procedure that matches treated units to treated units and control units to control units.

2.6 Results

This section reports and discusses the final results of this chapter. Each of the following sub-sections concerns one of the outcomes studied: odds of employment, the first one, and net monthly income at PPP, the second one. As outlined earlier, the estimates were calculated separately for each call, since they presented slightly different both selection rules and eligibility criteria[16], thus reducing pre-treatment

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[15] The balance diagnostics was checked through "standardized difference in means", a balance diagnostics test relying on the difference in means of each covariate between treated and control group, divided by the standard deviation in the full treated group: $\frac{X_t - X_c}{\sigma_t}$. This measure is compared before and after matching in order to see to what extend the so-called "standardised bias" has been reduced by the matching (Rosenbaum and Rubin, 1985).

[16] E.g. an individual who in 2008 was 35 and therefore was eligible for the call 2008, in 2009 was 36 and therefore was not eligible for the call 2009.

differences with the treated groups. This procedure explains why the size of the control group decreases for more recent calls.

For each outcome, the results are summarised in a table which, for every call, reports the estimates calculated through different algorithms. More precisely, for every call, the first row reports the so-called naïf effect, which is a simple t-test on the difference in means between treated and control groups, without controlling for selectivity. The second row shows the result with Nearest Neighbour Matching (NNM) with single matching (n=1), the third row with NNM with multiple matching (n=3), the fourth row with NNM with single matching (n=1) and exact matching on gender, the fifth row with NNM with single matching (n=1) and exact matching on level of education (the options being undergraduate degree, Master's and Ph.D.).

It is worth emphasizing that the last two rows provide additional information not present in the previous ones. In short, they tell us how the programme would have fared had gender and levels of education, respectively, remained constant. However, we acknowledge that the variables accounting for the current level of education of the interviewees are post-treatment and therefore might be endogenous.

Moreover, for further robustness, an additional check has also been done for every outcome, by calculating a logit model for the odds of employment outcome, and an OLS regression model for the net monthly income at PPP outcome. In other words, by using the same specification as the one used to calculate the PS, the impact of the treatment has been re-estimated for each call. Naturally, the consistency of these estimates with those provided by the PSM further increases the reliability of the results.

2.6.1 Odds of employment

By studying the first outcome of interest, odds of employment, the analysis reported in Table 1.1 shows that in general the treatment has no statistically significant effect on the recipients, for every call and for every matching algorithm. In other words, it has been unable to enhance their chances of finding an employment.

Taking a closer look at the individual calls, the results for the call in 2006 show that the programme has no effect. Moreover, it is interesting to note that there is little evidence of sample selectivity, since the naïf effect does not vary considerably when selection bias is controlled for through the PSM. The only exception emerges when performing

exact matching on sex: in that case a negative effect of 7.5%, statistically significant at 10%, can be observed.

Table 2.11 – PSM estimates of odds of employment

Algorithm	Effect	Standard error	Treat on support.	Treat off support (trimmed)	Control
			Call 2006		
Naïf effect[1]	-.021	.045	190	21	1260
Nnm(m1)[2]	-.020	.042	190	21	1260
Nnm(m3)[3]	-.038	.036	190	21	1260
Nnm(m1) sex[4]	-.075*	.042	190	21	1260
Nnm(m1) edu.[5]	-.024	.040	190	21	1260
			Calls 2007 and 2008		
Naïf effect[1]	.012	.051	162	17	1211
Nnm(m1)[2]	.015	.048	162	17	1211
Nnm(m3)[3]	-.017	.040	162	17	1211
Nnm(m1) sex[4]	.011	.045	162	17	1211
Nnm(m1) edu.[5]	-.025	.044	162	17	1211
			Call 2009		
Naïf effect[1]	.014	.060	144	15	1030
Nnm(m1)[2]	.017	.060	144	15	1030
Nnm(m3)[3]	-.019	.050	144	15	1030
Nnm(m1) sex[4]	-.010	.060	144	15	1030
Nnm(m1) edu.[5]	.031	.058	144	15	1030

Stars indicate significance: *** 1%-level, ** 5%-level, * 10%-level.
The estimates have been calculated with the Stata module NNMATCH (Abadie et al., 2004). They are based on Nearest Neighbour Matching algorithms (NNM), repetitions are allowed and standard errors are calculated allowing for heteroskedasticity (robust=3).
1 Effect without matching: simple difference in means.
2 NNM is implemented with single matching (n=1).
3 NNM is implemented with multiple matching (n=3).
4 NNM is implemented with single matching (n=1) and exact matching is carried out on the covariate sex.
5 NNM is implemented with single matching (n=1) and exact matching is carried out on the covariate education level which can take the only the values either Ph.D. or Master's (i.e. lower levels of education have not been considered)

Similarly, the call 2007&2008 is also characterised by the absence of statistically significant effects. In addition, as in the previous case the naïf effect does not differ significantly from the PSM estimates. Therefore, selectivity does not seem an issue for this call either. Also exact matching on gender and education level does not change significantly the results, suggesting that the observed impact of the programme is not significantly influenced by gender or by level of education.

Likewise, for call 2009 we observe results that are very similar to the previous call: no statistically significant results and no difference between naïf estimate and PSM estimates. Moreover, the results do not change even when exact matching on gender and level of education is performed.

Our estimates can be considered statistically robust since very similar results are obtained by using different matching algorithms. Nevertheless, to further minimize potential bias, another additional robustness check was performed, consisting of a logit regression model. The results, shown in Appendix 2.5, Table A-2.16, confirm that the treatment has no effect on the odds of employment of the recipients for every call.

2.6.2 Net monthly income

The second outcome of interest to assess the effectiveness of the M&B programme is net monthly income at PPP. In this regard, as reported in the Table 2.12, the results show the absence of any effect for the calls 2006 and 2009, but a statistically significant positive effect for the call 2007&2008.

Table 2.12 – PSM estimates for net monthly income at PPP (in euros)

Algorithm	Effect	Standard error	Treat on support.	Treat off support (trimmed)	Control
Call 2006					
Naïf effect[1]	161	95	145	16	832
Nnm(m1)[2]	165	108	145	16	832
Nnm(m3)[3]	119	93	145	16	832
Nnm(m1) sex[4]	-29	118	145	16	832
Nnm(m1) edu.[5]	109	102	145	16	832
Calls 2007 and 2008					
Naïf effect[1]	237	138	116	12	794
Nnm(m1)[2]	237*	121	116	12	794
Nnm(m3)[3]	239**	103	116	12	794
Nnm(m1) sex[4]	180*	104	116	12	794
Nnm(m1) edu.[5]	258**	117	116	12	794
Call 2009					
Naïf effect[1]	-133	124	97	10	674
Nnm(m1)[2]	-142	92	97	10	674
Nnm(m3)[3]	-63	73	97	10	674
Nnm(m1) sex[4]	-148	93	97	10	674
Nnm(m1) edu.[5]	-124	89	97	10	674

Stars indicate significance: *** 1%-level, ** 5%-level, * 10%-level.

The estimates were calculated with the Stata module NNMATCH (Abadie et al., 2004). They are based on Nearest Neighbour Matching algorithms (NNM), repetitions are allowed and standard errors are calculated allowing for heteroskedasticity (robust=3).
1 Effect without matching: simple difference in means.
2 NNM is implemented with single matching (n=1).
3 NNM is implemented with multiple matching (n=3).
4 NNM is implemented with single matching (n=1) and exact matching is carried out on the covariate sex.
5 NNM is implemented with single matching (n=1) and exact matching is carried out on the covariate education level which can take the only the values either Ph.D. or Master's (i.e. lower levels of education have not been considered)

In the results shown in Table 2.12 there is no evidence that the first call (2006) of the programme had an impact on the income of the recipients, since all of the estimates are statistically non-significant. In addition, there is no evidence of self-selection, since the naïf effect is not significantly different from the PSM estimates. Further, the estimates based on exact matching on gender and level of education do not provide statistically different results either, suggesting that the ineffectiveness of the programme does not hinge on either of these two variables. Exactly the same conclusions can be drawn with respect to the call 2009, which shows no significant effects irrespective of the matching algorithm.

As mentioned previously, the call 2007&2008 distinguishes itself since it provides evidence of positive effects of the programme on the net monthly income of the recipients, ranging from 180 to 258 euros per month. In this case, the results are statistically significant at 5-10%. The naïf effect displays very similar results to the PSM estimates, suggesting that (self-)selection is not an issue. Moreover, the algorithm performing exact matching on gender produces a smaller coefficient than the others, which might indicate that the programme impacts differently on men and women.

One might wonder why only the call 2007&2008 achieved the expected result of enhancing the income of the recipients. In this regard, there is no simple and clear answer, especially since the PSM does not provide much information on the mechanisms underlying the effect of the programme. However, in our opinion, the most likely explanation lies in the selection of the recipients. In fact, recall from Table 2.1 that in 2008 a higher number of applications than in the other calls had been rejected: 27% as compared to an average of 17%. This higher selectivity of the call 2008 might have increased both the quality of the degrees and of the applicants, resulting in better net monthly incomes. The issue of the scheme's selectivity and how this can impact on the outcomes of interest is further discussed in the next section.

In addition to the application of multiple matching algorithms, a further robustness check relying on OLS regression was performed in order to improve the reliability of our findings. As can be seen in Appendix 2.5, Table A-2.17, this check confirms that the call 2007&2008 has a statistically significant positive effect on the net monthly income of the recipients, corresponding to 265 euros per month. Moreover, it also provides evidence of a positive and statistically significant effect concerning the call 2006, corresponding roughly to 200 euros per month. However, this result should be taken with great caution, since it is in contradiction with the PSM estimates.

2.7 Discussion and conclusion

Based on our results, there not seem to be any evidence that the Master and Back programme enhanced the labour market outcomes of its recipients – as measured by their odds of employment and their net monthly income at PPP. In fact, only the recipients of the call 2007&2008 have an average net monthly income significantly higher than that of the control group, probably due to the higher selectivity of that call compared to the others.

The analysis also shows that, generally, (self-)selection is not a major issue for estimating the impact of the programme, since the naïf effects are very similar to the estimates calculated through the PSM. Finally, the results indicate that the estimates do not depend on gender nor on education differentials between treated and control group – two particularly important factors to assess labour market outcomes. In fact, the algorithms performing exact matching on these two variables do not yield significantly different results from those obtained through other matching algorithms.

Previous empirical studies focusing on the impact of SM programmes on individual labour market outcomes vary significantly in a number of ways. Specifically, they rely on different research methods and focus on mobility programmes with different characteristics and geographical scope. Therefore, not surprisingly, they lead to results spanning the entire range of possible conclusions. Some of them find that SM has no effect on the labour market outcomes of the recipients (Messer and Wolter, 2007), others achieve mixed results (Bracht et al., 2006, Rodrigues, 2013), and yet others find evidence of a positive impact (Maiworm et al., 1991, Maiworm and Teichler, 1996, Teichler, 1994).

With respect to the methodology, consider that, except Messer and Wolter (2007) and Rodrigues (2013), all of the previous studies ignore that the sample of who migrates might be (self-)selected, which suggests those studies might be affected by a non-trivial bias.

The degree of variation regarding the programmes that have been studied is also very strong, particularly in their intensity and level of financing. Regarding the intensity of the programmes, the average Master and Back participation lasts more than one year and leads to the completion of a degree programme (either a Master's or a Ph.D.). On the contrary, most of previous studies focus on the ERASMUS programme[17], which on average lasts for 6 months and does not lead to any qualification[18].

The difference between these programmes is just as evident with regard to their level of financing. The ERASMUS programme grants scholarships covering somewhat less than 20% of the expenses incurred during the exchange study period (Messer and Wolter, 2007), while the Master and Back scholarships cover 100% of the expenses incurred. The greater magnitude of both these factors should, if anything, result in a greater likelihood of observing some effect by the M&B as compared to the ERASMUS programme. Furthermore, the more generous scholarships should reduce positive self-selection into SM, as individuals coming from more disadvantaged social backgrounds should also be able to afford a study experience outside Sardinia.

Among the empirical works focusing on the microeconomic impact of SM, Messer and Wolter (2007) and Rodrigues (2013) are particularly interesting since they control for (self-)selection, unlike other works. It is therefore worthwhile to compare their focus, methodology and findings to this study.

Messer and Wolter (2007) investigated the impact of participating in the ERASMUS programme by using a sample of Swiss students and, methodologically, rely on an Instrumental Variable approach. They found that the ERASMUS significantly improves the earnings of its recipients. Yet, when they instrument their regression through the variable "mother's level of education" the supposed effect disappears, indicating that the observed positive effect was not causal but depended on individual ability, as

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[17] The only exception is the work by Rodrigues, which focuses on experiences abroad in general and is modulated according to the duration of such experiences.
[18] In fact, it is carried out in the framework of a degree in the home country

proxied by mother's education. Their findings are consistent with ours in discovering no effect of SM. However, there is also an important difference between our studies: they found strong evidence of self-selection while we did not. In our opinion, this difference could be explained by the different intensities of the scholarships granted by the ERASMUS and Master and Back programmes since, while the former covers roughly 20% of the costs of mobility, the latter covers the full 100%. As a result, the ERASMUS programme can be accessed only by students whose families can afford to pay the remaining 80% of the costs, while Master and Back should be accessible for everyone, irrespective of their social background.

Furthermore, the data used by Messer and Wolter (2007) are poorer than the ones used in this study. For this reason, the validity of our estimates can rely on many observables, while the validity of their analysis, beyond a few controls, almost uniquely relies on the underlying assumption of the Instrumental Variable approach.

Another work on SM with a comparable methodology is the paper by Rodrigues (2013). To the best of our knowledge, it is the only study on this topic that also applies the PSM, like this study. In it, the author relies on survey data and arrives at conclusions that are different from ours: she finds that SM has a negative impact on odds of employment but a positive impact on earnings, while we find that it has no effect on both. These differences might be due to number of reasons. For one, her study defines the treatment as having spent a period of time of variable length in another country for study reasons – i.e., her sample of mobile students is comprised of both ERASMUS students and other students who spent a period abroad for various reasons: language courses, summer schools and so on. Another major difference between our studies is that she focuses on 16 different European countries. This extensiveness is certainly valuable, since it provides a broader scope for generalising the results. On the other hand, it introduces a potential problem as makes the sample very heterogeneous (different languages, cultures, and so on). Moreover, the study by Rodrigues has an important weakness in that no data on the objective selection criteria of the scheme were available. Therefore, the risk of model misspecification is higher than in our case.

If we interpret the results of this study in light of the theoretical literature on the microeconomic impact of migration, we find that they are unexpected in two ways. First, due to their higher levels of human capital and of spatial flexibility, individuals who have been mobile (as students) should be more likely to find an employment and to

earn more, which does not agree with our observations. Second, the literature suggests that the average student who undertakes mobility tends to be more skilled and able than the average. Moreover, the selection rules of the programme, explicitly meant to pick the best and the brightest, suggest that we should find evidence of positive (self-)selection into the programme. Surprisingly, we found none. There are many potential reasons for the discrepancies between the expected theoretical outcomes and our empirical observations.

Regarding the first issue, we expect FMS to obtain higher labour market outcomes than non-mobile individuals, since they should possess a particular type of human capital know as *mobility capital* which is expected to be particularly appreciated by the labour markets, but also since they are likely to be more spatially flexible in their job search and should have more and better information on multiple labour markets – particularly concerning the locations in which they have studied. Nevertheless, the empirical evidence gathered by this chapter does not confirm this expectation and begs for an explanation why the programme did not have the desired effect.

A first possible explanation is that the scheme might have been unable to enhance the human capital of the recipients which, according to Human Capital Theory, is a necessary pre-condition to increase individual labour market outcomes. The recipients were provided with the opportunity to attend top-ranking universities all over the world in the belief that the increase of their human capital would be proportional to the quality of their education (Hussain et al., 2009).

However, despite the fact that the scheme aimed to choose the best degree programmes, the implemented selection procedure proved to be relatively lax. In fact most calls, though initially endowed with limited resources covering only part of the applications, subsequently were hugely increased and thus financed almost all the applications, regardless of their quality. This decision, which reduced the average quality of the degrees, was in turn determined by various factors that deserve attention.

For one, the European rules certainly played a central role in the decision to increase funding. In particular, according to the N+2 rule EU funds must be spent by the end of the second year from when they are allocated. This rule favours fast spending (rather than effective spending) and penalises regions with low administrative capacity, which are constantly late in spending EU funds. As a result, the regions that are most in need of EU resources might be the least able to spend them effectively.

The over-budgeting of the calls is also likely to be related to electoral bargaining by regional politicians with would-be recipients of the scheme[19]. In fact, politicians have supported various claims and protests by would-be recipients to obtain an increase of the programme's budget. However, the increase in allocated resources was not accompanied by new and more ambitious objectives for the programme. In other words, local politicians supported the claims of the would-be M&B recipients just to obtain visibility and electoral consensus rather that to improve the programme itself.

Also the timing of the calls is likely to have reduced the impact of the programme. In this regard, recall from Chapter 1 (Table 1.2) that, except for call 2006, the time windows for the submissions of applications were particularly short and did not coincide with the recruitment sessions of most world universities. As a result, the recipients wishing to apply to these universities were either forced to abandon the programme or opt for other (and perhaps less prestigious) universities. This issue might have reduced the effectiveness of the programme in convoying the recipients towards top-ranking universities and, as a consequence, in enhancing their levels of human capital.

An additional reason for the disappointing results might be that, since the programme is still recent, the recipients have not yet had sufficient time to adjust to the labour market as, according to Human Capital Theory, this could take time. However, this hypothesis is not supported by the observations since, if the problem was the elapsed time, we would expect the labour market outcomes of the recipients under the effect of the older calls to be better than those under the effect of the more recent calls; this pattern is not present in the data.

Perhaps, something prevented the recipients from adjusting to the labour market and, we claim, this could have been the economic crisis. In fact, by 2006 – i.e., before the beginning of the crisis – 64% of recipients and 61% of non-recipients had already graduated. However, while most of the latter started immediately seeking for an employment, the former postponed their entrance to the labour market in order to participate in the M&B scheme[20]. As a result, when they started looking for work the

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[19] Evidence of this bargaining can be found in the unofficial Facebook group of the programme: https://www.facebook.com/groups/8729424091/.
[20] They started looking for a job at least one year later than the non-recipients, corresponding to the average length of the scheme (this period was at least three years for Ph. D. students).

economic crisis had reached significant proportions and made finding employment extremely hard.

In addition, the location choice of the recipients might have influenced their labour market performance. In fact, depending on their location choice career opportunities might have been very different. According to Human Capital Theory the highly skilled make their location decisions depending on where they expect to achieve higher returns from their human capital. As such, we expected the recipients of the programme to locate in large urban agglomerations, where innovative firms and employers tend to concentrate.

However, the recipients may also have been driven by alternate factors that were not necessarily aligned with their career progress and, therefore, could partially explain the disappointing results of this chapter. For instance, participants may have returned to Sardinia to take advantage of the so called "Back part of the programme". Recall that even though we excluded from our analysis the recipients that were in the midst of the "Back", we kept those which had already concluded it. In this regard, we know that the average income of the latter is much lower than that of the non-recipients of the "Back" – on average 412 euros per month lower. Therefore, we can infer that the presence of the "Backs" might have reduced the average income of the recipients[21].

Another reason that might have driven the recipients not to locate in economically buoyant areas is the wish to be close to family, friends and so on. Also these non-economic considerations could have contributed to reduce the economic effectiveness of the programme. This is a very important issue that is carefully analysed and discussed in Chapter 4.

Moreover, human capital is place-specific and thus is difficult to transfer between locations (for instance, see Wiers-Jenssen and Try, 2005). Consequently, recipients of the programme might have been unable to transfer their human capital acquired in Sardinia to their new study location, or they might have failed to transfer the newly acquired human capital back to the sending region. In both instances, the recipients might have struggled to benefit from their human capital.

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[21] Earlier we underlined that due to lack of data we were unable to assess the Back part of the programme. However, in order to test this hypothesis suggesting a potential ineffectiveness of the Back further research scrutiny would be required.

Furthermore, social and institutional barriers in the labour markets might have prevented the recipients from achieving the expected labour market outcomes. This possibility is predicted by Dual Labour Market Theory. Unlike Human Capital Theory, which tends to focus on labour supply and assumes the existence of a single global labour market, the Dual Labour Market Theory tends to concentrate on labour demand and postulates the existence of segmented labour markets. As a result, individuals endowed with the same levels of human capital could achieve very heterogeneous outcomes due to strong entry barriers and discrimination preventing mobility between different segments. As such, the efforts of the scheme to increase the employability of the recipients would be destined to be ineffective, since they do not address the real cause of the problem – i.e., the segmentation of the labour market.

As we pointed out in the beginning of this section, the second surprising finding presented in this chapter is the lack of (self-)selection. Recognizing that (self-)selection is one of the main challenges affecting programme evaluation, an important concern of this study's methodological approach is to detect whether (self-)selection was an issue in practice and, if so, its extent and direction. This detection was implemented by comparing, for every call, the naïf effect (i.e., the estimate without taking (self-)selection into account) to the PSM estimates (i.e., the estimates controlling for (self-)selection). The results show that (self-)selection was not a major issue.

This outcome is not what we expected, for various reasons. First, we expected to see effects of (self-)selection since we know that individuals coming from higher social backgrounds and endowed with better skills, ability and human capital are more likely to be mobile as students. Second, and most importantly, selecting the best and the brightest was an explicit objective of the M&B programme. Therefore, the lack of positive self-selection suggests that the scheme was unable to achieve this objective. This conclusion is also confirmed by the logit model estimating the propensity score, where all the covariates accounting for ability are statistically non-significant.

If the programme was unable to select candidates appropriately, the reason may lie in the selection criteria of the various calls, which were unfit to choose the best and the brightest. In addition, and perhaps more importantly, due to the excessive increase of the resources devoted to the programme, the number of recipients was increased almost beyond demand, resulting in almost all applicants being accepted – and therefore, no selection. In fact, as previously mentioned, the amount of resources

devoted to the programme was boosted significantly for the desire to spend the allotted European resources before their expiration and for political consensus. The final outcome is a reduction of the average quality of the applicants and of the education programmes financed. However, as discussed earlier, while the decrease of the quality of the educational programmes most likely resulted in lower individual levels of human capital, the decrease of the quality of the recipients reduced positive selection into the programme.

In conclusion, this chapter investigated the ability of SM schemes to enhance the labour market outcomes of the recipients, as proxied by the variables odds of employment and net monthly income. We improved the existing literature since previous studies did not use any control group nor relied on any appropriate statistical techniques for impact evaluation. Therefore, our findings can be considered more accurate than most previous studies.

Our findings do not provide evidence that the labour market outcomes of the recipients are significantly higher than those of the control group. This might depend on a substantial inability of the programme to select the best degree programmes and the brightest students, probably because of the shortcomings in the programme implementation which were discussed earlier: over-budgeting, N+2 rule, lack of administrative capacity, undue political interferences in the management of the programme, timing of the calls and so on.

Also, the location behaviour of the recipients may have played an important role. In fact, while labour market outcomes are maximised by individuals locating in large labour markets where skills are more valued, the recipients may have been driven by different priorities in their location choice. For instance, they might have been lured back to Sardinia by the economic incentives provided by the Back part of the programme, by the wish to be close to family and friends, or perhaps other factors. This decision may have determined a sub-optimal allocation of their human capital which in turn may have resulted in lower labour market outcomes.

Finally, possessing high levels of human capital might be an insufficient condition to achieve high labour market outcomes, since social and institutional barriers might be at play hindering the highly skilled from reaping the economic returns to their investment in education.

Appendix 2.1   Survey questionnaire

The questionnaire used for the web survey is presented below. Questions were skipped if for the specific interviewee the relevant information was already available through the administrative data sets.

Original questionnaire in Italian

1 INFORMAZIONI ANAGRAFICHE

1.1 Dove abitavi prima di cominciare gli studi universitari?

○ Sardegna (specifica il paese/città) (1) _____

○ Altra regione Italiana (specifica quale) (2) _____

○ Altra nazione (specifica quale) (3) _____

1.2 Dove abiti attualmente?

○ Sardegna (specifica il paese/città) (1) _____

○ Altra regione Italiana (specifica quale) (2) _____

○ Altra nazione (specifica quale) (3) _____

1.3 Qual è attualmente il tuo stato civile?

○ Single (1)

○ Fidanzato/a (2)

○ Convivente (3)

○ Coniugato/a (4)

○ Separato/a Divorziato/a (5)

1.4 Hai figli?

○ No (1)

○ Sì (specificare quanti) (2) _____

1.5 LAUREA

1.5.1 Potresti compilare i campi sottostanti relativi al tuo titolo di laurea?

Votazione finale (1)

Numero di anni fuori corso (2)

Nome università (3)

Città (4)

1.5.2 Potresti indicare l'area disciplinare della tua laurea? (in caso di più lauree indicare quella che si ritiene maggiormente significativa ai fini degli sbocchi occupazionali)

○ Scientifica (1)

○ Chimica - farmaceutica (2)

○ Geo-biologica (3)

○ Medica (4)

○ Ingegneria (5)

○ Architettura (6)

○ Agraria (7)

○ Economico-statistica (8)

○ Politico-sociale (9)

○ Giuridica (10)

○ Letteraria (11)

○ Linguistica (12)

○ Insegnamento (13)

○ Psicologica (14)

1.5.3. Potresti indicare il mese d'iscrizione per il conseguimento di tale laurea?(selezionare prima l'anno, poi il mese)

1.5.4. Potresti indicare la data in cui è stato conseguito il titolo finale? (selezionare prima l'anno, poi il mese)

1.6.0 MASTER AND BACK (M&B)

1.6 Conosci il programma Master and Back della Regione Sardegna?

❍ Sì (1)

❍ No (2)

Answer If Conosci il programma Master and Back della Regione Sardegna? Sì Is Selected

1.7 Potresti specificare se ti è stato concesso qualcuno dei finanziamenti previsti nell'ambito del programma Master and Back (alta formazione, tirocini in uscita, percorsi di rientro)?   (selezionare sino a 2 opzioni appropriate)

❑ No, non mi è stato concesso alcun finanziamento (1)

❑ Sì, mi è stato finanziato un "percorso di alta formazione" (2)

❑ Sì, mi è stato finanziato un "tirocinio in uscita" (3)

❑ Sì, mi è stato finanziato un "percorso di rientro (Back)" (4)

2 TITOLI DI STUDIO POST-LAUREAM DI DURATA SUPERIORE AI 6 MESI

2.2 Hai conseguito qualche titolo di studio post-lauream di durata superiore ai sei mesi? (N.B. Se ne hai conseguiti più d'uno, nelle domande che seguono, partire da quello che ha richiesto il maggior numero di ore per completarlo)

❍ Sì (1)

❍ No (2)

If No Is Selected, Then Skip To End of Block

2.3 Potresti indicare di che titolo si tratta?

❍ Master di I livello erogato da un'università italiana (1)

❍ Master di II livello erogato da un'università italiana (2)

❍ Master erogato da un'università estera (3)

○ Master di alta professionalizzazione erogato da un istituto/organismo di formazione non universitario italiano o estero (4)

○ Dottorato/Ph.D. di ricerca presso un'università italiana o estera (5)

○ Corso di specializzazione presso una scuola universitaria di specializzazione in Italia (6)

○ Altro (specificare) (99) _____

2.4 Potresti specificare la sede dell'università/organismo presso cui hai conseguito il titolo?

○ In Sardegna (specifica il paese/città) (1) _____

○ In un'altra regione Italiana (specifica quale) (2) _____

○ In un'altra nazione (specifica quale) (3) _____

2.5 Potresti indicarmi l'area disciplinare?

○ Scientifica (1)

○ Chimica - farmaceutica (2)

○ Geo-biologica (3)

○ Medica (4)

○ Ingegneria (5)

○ Architettura (6)

○ Agraria (7)

○ Economico-statistica (8)

○ Politico-sociale (9)

○ Giuridica (10)

○ Letteraria (11)

○ Linguistica (12)

○ Insegnamento (13)

○ Psicologica (14)

2.6.1 Potresti indicare la data d'inizio di questo percorso di studio post-lauream? (selezionare prima l'anno, poi il mese)

2.6.2 Potresti indicare la data di conclusione questo percorso di studio post-lauream? (selezionare prima l'anno, poi il mese)

2.7 Ti sei dedicato al conseguimento del titolo full-time o part-time?

❍ Full-time (1)

❍ Part-Time (2)

2.8 Per conseguire questo titolo hai ricevuto contributi a fondo perduto pubblici e/o privati?

❍ No, non ho ricevuto alcun contributo (1)

❍ Sì, ho ricevuto un contributo che copriva meno del 50% delle spese complessivamente sostenute (specificare il nome del contributo) (2) _____

❍ Sì, ho ricevuto un contributo che copriva più del 50% delle spese complessivamente sostenute (specificare il nome del contributo) (3) _____

❍ Altro (specificare) (4) _____

2.10.1 Oltre a quello riportato sopra, hai conseguito anche ulteriori titoli di studio post-lauream di durata superiore ai sei mesi? (N.B. Se ne hai conseguiti più d'uno, nelle domande che seguono, indicare quello che ha richiesto il maggior numero di ore per completarlo)

❍ Sì (1)

❍ No (2)

2.a ALTA FORMAZIONE: MASTER AND BACK ED ALTRI EVENTUALI TITOLI POST-LAUREAM

2.a.1 Potresti indicare qual era il tuo stato civile quando hai fatto domanda per la borsa di studio alta formazione Master and Back?

❍ Single (1)

❍ Fidanzato/a (2)

❍ Convivente (3)

❍ Coniugato/a (4)

❍ Separato/a Divorziato/a (5)

Answer If Hai figli? Sì (specificare quanti) Is Selected

2.a.2 All'epoca avevi figli?

❍ No (1)

❍ Sì (specificare quanti) (2) _____

2.a.3 Potresti indicare che titolo hai conseguito grazie al contributo Master and Back?

❍ Master di I livello erogato da un'università italiana (1)

❍ Master di II livello erogato da un'università italiana (2)

❍ Master erogato da un'università estera (3)

❍ Master di alta professionalizzazione erogato da un istituto/organismo di formazione non universitario italiano o estero (4)

❍ Dottorato/Ph.D. di ricerca presso un'università italiana o estera (5)

❍ Corso di specializzazione presso una scuola universitaria di specializzazione in Italia (6)

❍ Altro (specificare) (99) _____

2.a.4 Potresti specificare la sede dell'università/organismo presso cui hai conseguito il titolo?

❍ In un'altra regione Italiana (specifica quale) (2) _____

❍ In un'altra nazione (specifica quale) (3) _____

2.a.5 Potresti specificare la città?

2.a.6 Potresti indicare il nome dell'università/ente?

2.a.7 Potresti indicare l'area disciplinare?

○ Scientifica (1)

○ Chimica - farmaceutica (2)

○ Geo-biologica (3)

○ Medica (4)

○ Ingegneria (5)

○ Architettura (6)

○ Agraria (7)

○ Economico-statistica (8)

○ Politico-sociale (9)

○ Giuridica (10)

○ Letteraria (11)

○ Linguistica (12)

○ Insegnamento (13)

○ Psicologica (14)

2.a.8 Potresti indicare la data d'inizio di questo percorso di studio post-lauream?(selezionare prima l'anno, poi il mese)

2.a.9 Il tuo percorso di alta formazione è ancora in corso?

○ Sì (1)

○ No (2)

Answer If Il tuo percorso di alta formazione è ancora in corso? Sì Is Not Selected

2.a.10 Potresti indicare la data di conclusione di questo percorso di studio post-lauream? (selezionare prima l'anno, poi il mese)

2.a.11 Ti sei dedicato al conseguimento del titolo full-time o part-time?

❍ Full-time (1)

❍ Part-Time (2)

2.a12 Oltre a quello riportato sopra, supportato dal programma Master and Back, hai conseguito anche ulteriori titoli di studio post-lauream? (N.B. Se ne hai conseguiti più d'uno, nelle domande che seguono, indicare quello che ha richiesto il maggior numero di ore per completarlo)

❍ Sì (1)

❍ No (2)

2.11 Potresti indicare di che titolo si tratta?

❍ Master di I livello erogato da un'università italiana (1)

❍ Master di II livello erogato da un'università italiana (2)

❍ Master erogato da un'università estera (3)

❍ Master di alta professionalizzazione erogato da un istituto/organismo di formazione non universitario italiano o estero (4)

❍ Dottorato/Ph.D. di ricerca presso un'università italiana o estera (5)

❍ Corso di specializzazione presso una scuola universitaria di specializzazione in Italia (6)

❍ Altro (specificare) (7) _____

2.12 Potresti specificare la sede dell'università/organismo presso cui hai conseguito il titolo?

❍ Sardegna (specifica il paese/città) (1) _____

❍ Altra regione Italiana (specifica quale) (2) _____

❍ Altra nazione (specifica quale) (3) _____

2.13 Potresti indicarmi l'area disciplinare?

❍ Scientifica (1)

❍ Chimica - farmaceutica (2)

❍ Geo-biologica (3)

❍ Medica (4)

❍ Ingegneria (5)

❍ Architettura (6)

❍ Agraria (7)

❍ Economico-statistica (8)

❍ Politico-sociale (9)

❍ Giuridica (10)

❍ Letteraria (11)

❍ Linguistica (12)

❍ Insegnamento (13)

❍ Psicologica (14)

2.14.1 Potresti indicare la data d'inizio di questo percorso di studio post-lauream? (selezionare prima l'anno, poi il mese)

2.14.2 Potresti indicare la data di conclusione di questo percorso di studio post-lauream? (selezionare prima l'anno, poi il mese)

2.15 Ti sei dedicato al conseguimento del titolo full-time o part-time?

❍ Full-time (1)

❍ Part-Time (2)

2.16 Per conseguire questo titolo hai ricevuto contributi a fondo perduto pubblici e/o privati?

❍ No, non ho ricevuto alcun contributo (1)

❍ Sì, ho ricevuto un contributo che copriva meno del 50% delle spese complessivamente sostenute (specificare il nome del contributo) (2)
_____

❍ Sì, ho ricevuto un contributo che copriva più del 50% delle spese complessivamente sostenute (specificare il nome del contributo) (3)
_____

❍ Altro (specificare) (4) _____

2.16.1 Oltre ai due riportati sopra, hai conseguito anche ulteriori titoli di studio post-lauream di durata superiore ai sei mesi?(N.B. Se ne hai conseguiti più d'uno, nelle domande che seguono, indicare quello che ha richiesto il maggior numero di ore per completarlo)

❍ Sì (1)

❍ No (2)

2.19 Potresti indicare di che titolo si tratta?

❍ Master di I livello erogato da un'università italiana (1)

❍ Master di II livello erogato da un'università italiana (2)

❍ Master erogato da un'università estera (3)

❍ Master di alta professionalizzazione erogato da un istituto/organismo di formazione non universitario italiano o estero (4)

❍ Dottorato/Ph.D. di ricerca presso un'università italiana o estera (5)

❍ Corso di specializzazione presso una scuola universitaria di specializzazione in Italia (6)

❍ Altro (specificare) (7) _____

2.20 Potresti specificare la sede dell'università/organismo presso cui hai conseguito il titolo?

❍ Sardegna (specifica il paese/città) (1) _____

○ Altra regione Italiana (specifica quale) (2) _____

○ Altra nazione (specifica quale) (3) _____

2.21 Potresti indicarmi l'area disciplinare?

○ Scientifica (1)

○ Chimica - farmaceutica (2)

○ Geo-biologica (3)

○ Medica (4)

○ Ingegneria (5)

○ Architettura (6)

○ Agraria (7)

○ Economico-statistica (8)

○ Politico-sociale (9)

○ Giuridica (10)

○ Letteraria (11)

○ Linguistica (12)

○ Insegnamento (13)

○ Psicologica (14)

2.22.1 Potresti indicare la data d'inizio di questo percorso di studio post-lauream? (selezionare prima l'anno, poi il mese)

2.22.2 Potresti indicare la data di conclusione di questo percorso di studio post-lauream?   (selezionare prima l'anno, poi il mese)

2.23 Ti sei dedicato al conseguimento del titolo full-time o part-time?

○ Full-time (1)

○ Part-Time (2)

2.24 Per conseguire questo titolo hai ricevuto contributi a fondo perduto pubblici e/o privati?

❍ No, non ho ricevuto alcun contributo (1)

❍ Sì, ho ricevuto un contributo che copriva meno del 50% delle spese complessivamente sostenute (specificare il nome del contributo) (2)

_____

❍ Sì, ho ricevuto un contributo che copriva più del 50% delle spese complessivamente sostenute (specificare il nome del contributo) (3)

_____

❍ Altro (specificare) (4) _____

3 STAGES, TIROCINI E PRATICANTATO

3.1 Nella tua vita hai fatto stage, tirocini e/o praticantato?

❍ Sì (1)

❍ No (2)

If No Is Selected, Then Skip To Se durante il tuo corso di laurea hai...

3.2 Potresti indicare quanti stage, tirocini e/o praticantato hai fatto complessivamente nella tua vita? (inserire valore numerico, ad esempio 2)

3.3 Potresti indicare quanti mesi hai dedicato complessivamente a stage, tirocini e/o praticantato nella tua vita? (inserire valore numerico, ad esempio 12)

3.4 Durante il tuo corso di laurea hai partecipato, andando all'estero, a programmi tipo ERASMUS o simili?(in caso negativo saltare questa domanda, in caso affermativo riportare sino ad un massimo di tre esperienze di studio all'estero, compilando le caselle di testo necessarie)

	Esperienza n°1 (1)	Esperienza n°2 (2)	Esperienza n°3 (3)

In quale nazione (1)			
Per quanti mesi (2)			

4 PERCORSO DI RIENTRO MASTER AND BACK

4.4 Potresti indicare in quale paese/città della Sardegna hai fatto il tuo percorso di rientro (Back)?

4.5 Potresti indicare quando hai cominciato il tuo percorso di rientro (back)? (selezionare prima l'anno, poi il mese)

4.6 Potresti indicare quanti mesi sei rimasto disoccupato prima di incominciare il Back?

❍ Meno di 3 mesi (1)

❍ Da 3 a 6 mesi (2)

❍ Da 7 a 12 mesi (3)

❍ Da 13 a 18 mesi (4)

❍ Da 19 a 24 mesi (5)

❍ Oltre 24 mesi   (6)

4.7 Mediamente quante ore lavori/avi alla settimana? (inserire un valore numerico, ad esempio 40)

4.8 In quale settore operi/avi?

❍ Agricoltura, caccia e pesca (1)

❍ Industria (2)

❍ Servizi (3)

Answer If In quale settore operi/avi? Servizi Is Selected

4.9 E più in particolare:

- ○ Commercio, alberghi e pubblici esercizi (1)

- ○ Trasporti, viaggi, poste e telecomunicazioni (2)

- ○ Credito e assicurazioni (inclusa intermediazione finanziaria) (3)

- ○ Attività professionali e di consulenza (studi legali, di progettazione, attività immobiliari e di noleggio, sondaggi e analisi di mercato, ricerca e pubblicità, ecc.) (4)

- ○ Informatica e attività connesse (sviluppo di software, elaborazione di dati, manutenzione e riparazione di elaboratori elettronici) (5)

- ○ Istruzione e formazione (ad eccezione degli istruttori delle attività sportive) (6)

- ○ Sanità e assistenza sociale (ospedali, studi medici, ecc.) (7)

- ○ P.A. e difesa (ministeri, regioni, enti locali, organi costituzionali, ecc.) (8)

- ○ Altri servizi pubblici, sociali e alle persone (cinema, tv, palestre, musei, attività presso le famiglie, ecc..) (9)

Answer If In quale settore operi/avi? Industria Is Selected

4.10 E più in particolare:

- ○ Industria che estrae minerali (1)

- ○ Produzione e distribuzione di energia elettrica, acqua e gas (2)

- ○ Costruzioni (3)

- ○ Settore chimico petrolchimico e farmaceutico (4)

- ○ Industria meccanica e dei mezzi di trasporto (5)

- ○ Industria manifatturiera (6)

4.11 Potresti indicare che tipo di contratto ti è stato fatto per il tuo percorso di rientro (back)?

- ○ Contratto a progetto o Co.Co.Co. (5)

○ Altro tipo di contratto a tempo determinato (7)

○ Altro (specificare) (99) _____

4.12 Potresti indicare più o meno a quanto corrisponde/va il tuo guadagno mensile netto, comprensivo del contributo regionale per il back (in euro)?

○ fino a 250 (1)

○ da più di 250 a 500 (2)

○ da più di 500 a 750 (3)

○ da più di 750 a 1.000 (4)

○ da più di 1.000 a 1.250 (5)

○ da più di 1.250 a 1.500 (6)

○ da più di 1.500 a 2.000 (7)

○ da più di 2.000 a 2.500 (8)

○ da più di 2.500 a 3.000 (9)

○ da più di 3.000 a 3.500 (10)

○ da più di 3.500 a 4.000 (11)

○ oltre 4.000 (12)

4.13 In quale ambito territoriale opera/ava l'azienda/ente presso cui lavori/avi? (barrare tutte le caselle necessarie)

❑ Locale (1)

❑ Regionale (2)

❑ Nazionale (3)

❑ Europeo (4)

❑ Extra-europeo (5)

4.14 Quante persone, oltre te, lavorano/avano abitualmente nell'impresa, ente o studio nel quale svolgi/evi la tua attività?

- Nessuna (1)

- da 1 a 9 (2)

- da 10 a 49 (3)

- da 50 a 99 (4)

- da 100 a 249 (5)

- 250 e oltre (6)

4.15   Che titolo di studio é/era richiesto per questo lavoro?

- Nessun titolo in particolare (1)

- Diploma (2)

- Laurea (3)

- Master (4)

- Dottorato (5)

- Altro (specificare) (6) _____

4.16 Quanto sei/eri soddisfatto, in una scala da 1 a 7, rispetto ai seguenti aspetti del tuo lavoro? (1=molto insoddisfatto; 7=molto soddisfatto)

Coerenza con le tue qualifiche (1)

Stabilità e sicurezza del posto di lavoro (2)

Grado di autonomia sul lavoro (3)

Guadagni (4)

Possibilità di carriera (5)

4.17   Quanto sei/eri soddisfatto complessivamente del tuo lavoro?

- Molto insoddisfatto (1)

- Insoddisfatto (2)

- Abbastanza insoddisfatto (3)

- Indifferente (4)

○ Abbastanza soddisfatto (5)

○ Soddisfatto (6)

○ Molto soddisfatto (7)

4.18 Seleziona una delle seguenti opzioni, relative allo stato attuale del tuo "percorso di rientro" M&B:

○ Il percorso di rientro è ancora in corso (1)

○ Il percorso di rientro si è concluso e il contratto mi è stato rinnovato (2)

○ Il percorso di rientro si è concluso e il contratto non mi è stato rinnovato (3)

○ Altro (specificare) (4) _____

Answer If Seleziona una delle seguenti opzioni, relative allo stato... Il percorso di rientro si è concluso e il contratto mi è stato rinnovato Is Selected

4.19 Lavori ancora dove hai fatto il percorso di rientro?

○ Sì (1)

○ No (2)

Answer If Seleziona una delle seguenti opzioni, relative allo stato... Il percorso di rientro si è concluso e il contratto mi è stato rinnovato Is Selected

Visto che al termine del tuo percorso di rientro il contratto ti è stato rinnovato, parliamo delle condizioni lavorative dopo il rinnovo del contratto. L'obiettivo è capire se, dopo il rinnovo, la tua condizione lavorativa è migliorata, peggiorata o rimasta invariata.

Answer If Seleziona una delle seguenti opzioni, relative allo stato... Il percorso di rientro si è concluso e il contratto mi è stato rinnovato Is Selected

4.20 Potresti specificare che tipo di contratto ti è stato fatto dopo il rinnovo?

○ Contratto a tempo indeterminato (1)

○ Contratto di formazione lavoro (2)

○ Contratto di apprendistato o di inserimento (3)

○ Contratto di somministrazione di lavoro (ex lavoro interinale) (4)

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❍ Contratto a progetto o Co.Co.Co. (5)

❍ Contratto di prestazione d'opera occasionale (6)

❍ Altro tipo di contratto a tempo determinato (7)

❍ Lavoro senza contratto (8)

❍ Altro (specificare) (9) _____

Answer If Seleziona una delle seguenti opzioni, relative allo stato... Il percorso di rientro si è concluso e il contratto mi è stato rinnovato Is Selected

4.21   Potresti specificare se, dopo il rinnovo, i seguenti fattori del tuo lavoro sono migliorati, rimasti invariati o peggiorati?

	Migliorato (1)	Rimasto invariato (2)	Peggiorato (3)
Numero medio di ore settimanali lavorate (1)	❍	❍	❍
Trattamento economico (2)	❍	❍	❍
Livello di soddisfazione rispetto alla coerenza tra il tuo lavoro e le tue qualifiche (3)	❍	❍	❍
Livello di soddisfazione complessiva rispetto al tuo lavoro (4)	❍	❍	❍

Answer If Seleziona una delle seguenti opzioni, relative allo stato... Il percorso di rientro è ancora in corso Is Selected

4.22 Pensi che alla scadenza del tuo "percorso di rientro" M&B il contratto ti verrà rinnovato?

❍ Sì, sono fiducioso che mi venga rinnovato (1)

❍ Non so (2)

❍ No, non sono fiducioso che mi venga rinnovato (3)

5 SITUAZIONE OCCUPAZIONALE

5.1 Quali caratteristiche dovrebbe avere il tuo lavoro ideale? (selezionare sino a 3 caratteristiche)

❑ Alta retribuzione (1)

❑ Consentirmi di fare carriera (2)

❑ Consentirmi di acquisire nuove competenze e mettere a frutto quelle possedute (3)

❑ Offrirmi un contratto a tempo indeterminato (lavoro fisso) (4)

❑ Lasciarmi molta autonomia (5)

❑ Lasciarmi molto tempo libero (6)

❑ Avere una locazione geografica che mi consenta di stare vicino alla mia famiglia (7)

❑ Altro (specificare) (8) _____

5.2   qual è la tua attuale situazione occupazionale?

○ Studente/in formazione (1)

○ Disoccupato/a (2)

○ Stagista/tirocinante/praticante (3)

○ Occupato/a (4)

○ Casalinga (5)

If Occupato/a Is Not Selected, Then Skip To Potresti indicare quanti mesi se...

5.3 Potresti indicare dov'è localizzato questo lavoro?

○ Sardegna (specifica il paese/città) (1) _____

○ Altra regione Italiana (specifica quale) (2) _____

○ Altra nazione (specifica quale) (3) _____

5.4 Potresti indicare quando hai cominciato questo lavoro?   (selezionare prima l'anno, poi il mese)

5.5 Potresti indicare quanti mesi sei rimasto disoccupato prima di incominciare questo lavoro?

○ Meno di 3 mesi (1)

○ Da 3 a 6 mesi (2)

○ Da 7 a 12 mesi (3)

○ Da 13 a 18 mesi (4)

○ Da 19 a 24 mesi (5)

○ Oltre 24 mesi   (6)

5.6 Mediamente quante ore lavori alla settimana?   (inserire un valore numerico, ad esempio 40)

5.7 Puoi indicarmi più o meno a quanto corrisponde il tuo guadagno mensile netto (in euro)?

○ fino a 250 (1)

○ da più di 250 a 500 (2)

○ da più di 500 a 750 (3)

○ da più di 750 a 1.000 (4)

○ da più di 1.000 a 1.250 (5)

○ da più di 1.250 a 1.500 (6)

○ da più di 1.500 a 2.000 (7)

○ da più di 2.000 a 2.500 (8)

○ da più di 2.500 a 3.000 (9)

○ da più di 3.000 a 3.500 (10)

○ da più di 3.500 a 4.000 (11)

○ oltre 4.000 (12)

5.8 Potresti specificare la tipologia di lavoro?

❍ Lavoro autonomo (1)

❍ Lavoro dipendente (2)

❍ Lavoro parasubordinato (3)

❍ Altro (specificare) (4) _____

5.9 Tra le seguenti voci quale descrive meglio la tua posizione?

If Potresti specificare la tipologia di lavoro? Lavoro autonomo Is Selected

❍ Imprenditore (1)

If Potresti specificare la tipologia di lavoro? Lavoro autonomo Is Selected

❍ Libero professionista (2)

If Potresti specificare la tipologia di lavoro? Lavoro autonomo Is Selected

❍ Lavoratore in proprio (commerciante, artigiano, coltivatore diretto, ecc) (3)

❍ Coadiuvante nell'azienda di un familiare (4)

❍ Socio di una cooperativa (5)

If Potresti specificare la tipologia di lavoro? Lavoro autonomo Is Selected And Potresti specificare la tipologia di lavoro? Lavoro parasubordinato Is Selected

❍ Lavoratore autonomo senza specifica qualificazione (collaboratore familiare, trasportatore, conducente, commerciante ambulante) (6)

❍ Dirigente (7)

If Potresti specificare la tipologia di lavoro? Lavoro dipendente Is Selected Or Potresti specificare la tipologia di lavoro? Lavoro parasubordinato Is Selected

❍ Quadro, funzionario (inclusi i direttivi, ricercatori, insegnanti di scuola media inferiore, superiore, elementare o materna, ufficiali delle forze armate) (8)

If Potresti specificare la tipologia di lavoro? Lavoro dipendente Is Selected Or Potresti specificare la tipologia di lavoro? Lavoro parasubordinato Is Selected

❍ Un impiegato ad alta/media qualificazione (analisti di dati, geometri e periti tecnici, capi segreteria, infermieri professionali, contabili, archivisti, sotto-ufficiali delle forze armate, ecc.) (9)

If Potresti specificare la tipologia di lavoro? Lavoro dipendente Is Selected Or Potresti specificare la tipologia di lavoro? Lavoro parasubordinato Is Selected

○ Impiegato esecutivo (addetti agli sportelli, telefonisti, segretari, commessi di negozio, militari di carriera, polizia e/o assimilati di grado inferiore a sotto-ufficiali, ecc.) (10)

If Potresti specificare la tipologia di lavoro? Lavoro dipendente Is Selected Or Potresti specificare la tipologia di lavoro? Lavoro parasubordinato Is Selected

○ Operaio o capo-operaio (11)

If Potresti specificare la tipologia di lavoro? Lavoro dipendente Is Selected Or Potresti specificare la tipologia di lavoro? Lavoro parasubordinato Is Selected

○ Lavoratore non qualificato (uscieri, bidelli, portieri) (12)

○ Altro (specificare) (13) _____

5.10 In quale settore operi?

○ Agricoltura, caccia e pesca (1)

○ Industria (2)

○ Servizi (3)

Answer If In quale settore operi? Servizi Is Selected

5.11 E più in particolare:

○ Commercio, alberghi e pubblici esercizi (1)

○ Trasporti, viaggi, poste e telecomunicazioni (2)

○ Credito e assicurazioni (inclusa intermediazione finanziaria) (3)

○ Attività professionali e di consulenza (studi legali, di progettazione, attività immobiliari e di noleggio, sondaggi e analisi di mercato, ricerca e pubblicità, ecc.) (4)

○ Informatica e attività connesse (sviluppo di software, elaborazione di dati, manutenzione e riparazione di elaboratori elettronici) (5)

○ Istruzione e formazione (ad eccezione degli istruttori delle attività sportive) (6)

○ Sanità e assistenza sociale (ospedali, studi medici, ecc.) (7)

If Potresti specificare la tipologia di lavoro? Lavoro dipendente Is Selected Or Potresti specificare la tipologia di lavoro? Lavoro parasubordinato Is Selected

○ P.A. e difesa (ministeri, regioni, enti locali, organi costituzionali, ecc.) (8)

○ Altri servizi pubblici, sociali e alle persone (cinema, tv, palestre, musei, attività presso le famiglie, ecc..) (9)

Answer If In quale settore operi? Industria Is Selected

5.12 E più in particolare:

○ Industria che estrae minerali (1)

○ Produzione e distribuzione di energia elettrica, acqua e gas (2)

○ Costruzioni (3)

○ Settore chimico petrolchimico e farmaceutico (4)

○ Industria meccanica e dei mezzi di trasporto (5)

○ Industria manifatturiera (6)

Answer If Potresti specificare la tipologia di lavoro? Lavoro autonomo Is Not Selected

5.13 Il tuo lavoro è occasionale, stagionale o continuativo?

○ Occasionale (1)

○ Stagionale (2)

○ Continuativo (3)

Answer If Potresti specificare la tipologia di lavoro? Lavoro dipendente Is Selected Or Potresti specificare la tipologia di lavoro? Lavoro parasubordinato Is Selected

5.14 Con quale tipo di contratto lavori?

○ Con un contratto a tempo indeterminato (1)

○ Con un contratto di formazione lavoro (2)

○ Con un contratto di apprendistato o di inserimento (3)

○ Contratto di somministrazione di lavoro (ex lavoro interinale) (4)

○ Con un contratto a progetto o Co.Co.Co. (5)

○ Con un contratto di prestazione d'opera occasionale (6)

○ Con un altro tipo di contratto a tempo determinato (7)

○ Lavoro senza contratto (8)

○ Altro (specificare) (9) _____

5.15 In quale ambito territoriale opera l'azienda/ente presso cui lavori?   (barrare tutte le caselle necessarie)

❑ Locale (1)

❑ Regionale (2)

❑ Nazionale (3)

❑ Europeo (4)

❑ Extra-europeo (5)

5.16 Quante persone, oltre te, lavorano abitualmente nell'impresa, ente o studio nel quale svolgi la tua attività?

○ Nessuna (1)

○ da 1 a 9 (2)

○ da 10 a 49 (3)

○ da 50 a 99 (4)

○ da 100 a 249 (5)

○ 250 e oltre (6)

5.17 Che titolo di studio è richiesto per il tuo attuale lavoro?

○ Nessun titolo in particolare (1)

○ Diploma (2)

○ Laurea (3)

○ Master (4)

○ Dottorato (5)

○ Altro (specificare) (6) _____

5.18 Quanto sei soddisfatto, in una scala da 1 a 7, rispetto ai seguenti aspetti del tuo lavoro? (1=molto insoddisfatto; 7=molto soddisfatto)

Coerenza con le tue qualifiche (1)

Stabilità e sicurezza del posto di lavoro (2)

Grado di autonomia sul lavoro (3)

Guadagni (4)

Possibilità di carriera (5)

5.19   Quanto sei soddisfatto complessivamente del tuo lavoro?

○ Molto insoddisfatto (1)

○ Insoddisfatto (2)

○ Abbastanza insoddisfatto (3)

○ Indifferente (4)

○ Abbastanza soddisfatto (5)

○ Soddisfatto (6)

○ Molto soddisfatto (7)

Answer If Qual'é la tua attuale situazione occupazionale? Disoccupato/a Is Selected

5.20 Potresti indicare da quanti mesi sei disoccupato?

○ Meno di 3 mesi (1)

○ Da 3 a 6 mesi (2)

○ Da 7 a 12 mesi (3)

○ Da 13 a 18 mesi (4)

○ Da 19 a 24 mesi (5)

○ Oltre 24 mesi   (6)

Answer If Seleziona una delle seguenti opzioni, relative allo stato... Il percorso di rientro è ancora in corso Is Selected

5.21 Il lavoro attuale, svolto con il contributo del M&B, è il tuo primo lavoro post-lauream di durata superiore a sei mesi?

❍ Sì (1)

❍ No (2)

If Sì Is Selected, Then Skip To End of Block

Answer If Seleziona una delle seguenti opzioni, relative allo stato... Il percorso di rientro si è concluso e il contratto <u>non</u> mi è stato rinnovato Is Selected Or Seleziona una delle seguenti opzioni, relative allo stato... Il percorso di rientro si è concluso e il contratto mi è stato rinnovato Is Selected

5.22 Il percorso di rientro M&B è stato il tuo primo lavoro post-lauream di durata superiore ai sei mesi?

❍ Sì (1)

❍ No (2)

If Sì Is Selected, Then Skip To End of Block

Answer If Potresti specificare se ti è stato concesso q... Sì, mi è stato finanziato un "percorso di rientro (Back)" Is Not Selected And Qual'é la tua attuale situazione occupazionale? Occupato/a Is Selected

5.23 Il tuo impiego attuale rappresenta la prima esperienza lavorativa post-lauream di durata superiore ai 6 mesi?

❍ Sì (1)

❍ No (2)

If Sì Is Selected, Then Skip To End of Block

Answer If Qual'é la tua attuale situazione occupazionale? Occupato/a Is Not Selected And Potresti specificare se ti è stato concesso q... Sì, mi è stato finanziato un "percorso di rientro (Back)" Is Not Selected Or Il tuo percorso di alta formazione è ancora in corso? Sì Is Selected

5.24 Dopo la laurea hai avuto delle esperienze lavorative di durata superiore ai 6 mesi?

❍ Sì (1)

❍ No (2)

If No Is Selected, Then Skip To End of Block

5.25 Potresti indicare dov'era localizzato il tuo primo lavoro post-lauream di durata superiore ai sei mesi?

❍ Sardegna (specifica il paese/città) (1) _____

❍ Altra regione Italiana (specifica quale) (2) _____

❍ Altra nazione (specifica quale) (3) _____

5.26 Potresti indicare quando hai trovato il tuo primo lavoro post-lauream di durata superiore ai 6 mesi? (selezionare prima l'anno, poi il mese)

5.27 Potresti indicare la data di conclusione di questa esperienza lavorativa? (selezionare prima l'anno, poi il mese)

5.28 Con quale tipo di contratto lavoravi?

❍ Si trattava di un lavoro autonomo, pertanto non avevo alcun contratto (10)

❍ Con un contratto a tempo indeterminato (1)

❍ Con un contratto di formazione lavoro (2)

❍ Con un contratto di apprendistato o di inserimento (3)

❍ Contratto di somministrazione di lavoro (ex lavoro interinale) (4)

❍ Con un contratto a progetto o Co.Co.Co. (5)

❍ Con un contratto di prestazione d'opera occasionale (6)

❍ Con un altro tipo di contratto a tempo determinato (7)

❍ Lavoro senza contratto (8)

❍ Altro (specificare) (9) _____

5.29 Potresti indicare quanti mesi sei rimasto disoccupato prima di incominciare questo lavoro?

❍ Meno di 3 mesi (1)

❍ Da 3 a 6 mesi (2)

❍ Da 7 a 12 mesi (3)

❍ Da 13 a 18 mesi (4)

❍ Da 19 a 24 mesi (5)

❍ Oltre 24 mesi   (6)

5.30 Mediamente quante ore lavoravi alla settimana? (inserire un valore numerico, ad esempio 40)

5.31 Puoi indicarmi più o meno a quanto corrispondeva il tuo guadagno mensile netto (in euro)?

❍ fino a 250 (1)

❍ da più di 250 a 500 (2)

❍ da più di 500 a 750 (3)

❍ da più di 750 a 1.000 (4)

❍ da più di 1.000 a 1.250 (5)

❍ da più di 1.250 a 1.500 (6)

❍ da più di 1.500 a 2.000 (7)

❍ da più di 2.000 a 2.500 (8)

❍ da più di 2.500 a 3.000 (9)

❍ da più di 3.000 a 3.500 (10)

❍ da più di 3.500 a 4.000 (11)

❍ oltre 4.000 (12)

5.32 In quale ambito territoriale operava l'azienda/ente presso cui lavoravi?   (barrare tutte le caselle necessarie)

❑ Locale (1)

❑ Regionale (2)

❑ Nazionale (3)

❑ Europeo (4)

❑ Extra-europeo (5)

5.33 Quante persone, oltre te, lavoravano abitualmente nell'impresa, ente o studio nel quale svolgevi la tua attività?

○ Nessuna (1)

○ da 1 a 9 (2)

○ da 10 a 49 (3)

○ da 50 a 99 (4)

○ da 100 a 249 (5)

○ 250 e oltre (6)

5.34   Che titolo di studio era richiesto per questo lavoro?

○ Nessun titolo in particolare (1)

○ Diploma (2)

○ Laurea (3)

○ Master (4)

○ Dottorato (5)

○ Altro (specificare) (6) _____

5.35   Quanto eri soddisfatto del tuo lavoro rispetto alla coerenza con le tue qualifiche?

○ Molto insoddisfatto (1)

○ Insoddisfatto (2)

❍ Abbastanza insoddisfatto (3)

❍ Indifferente (4)

❍ Abbastanza soddisfatto (5)

❍ Soddisfatto (6)

❍ Molto soddisfatto (7)

5.36   Quanto eri soddisfatto complessivamente del tuo lavoro?

❍ Molto insoddisfatto (1)

❍ Insoddisfatto (2)

❍ Abbastanza insoddisfatto (3)

❍ Indifferente (4)

❍ Abbastanza soddisfatto (5)

❍ Soddisfatto (6)

❍ Molto soddisfatto (7)

Answer If Il lavoro attuale, svolto con il contributo del M&B, ... No Is Selected Or Il percorso di rientro M&B è stato il tuo primo lavor... No Is Selected Or Il tuo impiego attuale rappresenta la prima esperienza la... No Is Selected Or Dopo la laurea hai avuto delle esperienze lavorative di d... Sì Is Selected

5.37 Hai avuto altre esperienze lavorative post-lauream, di durata superiore ai sei mesi, che non hai citato in precedenza?

❍ Sì (1)

❍ No (2)

5.38 Potresti indicare dov'era localizzato questo lavoro?(qualora le esperienze lavorative post-lauream di durata superiore ai sei mesi non citate in precedenza fossero state più d'una, fare riferimento alla più significativa in termini di ore complessive lavorate)

❍ In Sardegna (specifica il paese/città) (1) _____

❍ In un'altra regione Italiana (specifica quale) (2) _____

❍ In un'altra nazione (specifica quale) (3) _____

5.39 Potresti indicare la data d'inizio di questa esperienza lavorativa? (selezionare prima l'anno, poi il mese)

5.40 Potresti indicare la data di conclusione di questa esperienza lavorativa? (selezionare prima l'anno, poi il mese)

5.41 Potresti indicare quanti mesi sei rimasto disoccupato prima di trovare questo lavoro?

❍ Meno di 3 mesi (1)

❍ Da 3 a 6 mesi (2)

❍ Da 7 a 12 mesi (3)

❍ Da 13 a 18 mesi (4)

❍ Da 19 a 24 mesi (5)

❍ Oltre 24 mesi   (6)

5.42 Con quale tipo di contratto lavoravi?

❍ Si trattava di un lavoro autonomo, pertanto non avevo alcun contratto (10)

❍ Con un contratto a tempo indeterminato (1)

❍ Con un contratto di formazione lavoro (2)

❍ Con un contratto di apprendistato o di inserimento (3)

❍ Contratto di somministrazione di lavoro (ex lavoro interinale) (4)

❍ Con un contratto a progetto o Co.Co.Co. (5)

❍ Con un contratto di prestazione d'opera occasionale (6)

❍ Con un altro tipo di contratto a tempo determinato (7)

❍ Lavoro senza contratto (8)

❍ Altro (specificare) (9) _____

5.43 Mediamente quante ore lavoravi alla settimana? (inserire un valore numerico, ad esempio 40)

5.44 Puoi indicarmi più o meno a quanto corrispondeva il tuo guadagno mensile netto (in euro)?

❍ fino a 250 (1)

❍ da più di 250 a 500 (2)

❍ da più di 500 a 750 (3)

❍ da più di 750 a 1.000 (4)

❍ da più di 1.000 a 1.250 (5)

❍ da più di 1.250 a 1.500 (6)

❍ da più di 1.500 a 2.000 (7)

❍ da più di 2.000 a 2.500 (8)

❍ da più di 2.500 a 3.000 (9)

❍ da più di 3.000 a 3.500 (10)

❍ da più di 3.500 a 4.000 (11)

❍ oltre 4.000 (12)

5.45 In quale ambito territoriale operava l'azienda/ente presso cui lavoravi?   (barrare tutte le caselle necessarie)

❑ Locale (1)

❑ Regionale (2)

❑ Nazionale (3)

❑ Europeo (4)

❑ Extra-europeo (5)

5.46 Quante persone, oltre te, lavoravano abitualmente nell'impresa, ente o studio nel quale svolgevi la tua attività?

○ Nessuna (1)

○ da 1 a 9 (2)

○ da 10 a 49 (3)

○ da 50 a 99 (4)

○ da 100 a 249 (5)

○ 250 e oltre (6)

5.47   Che titolo di studio era richiesto per questo lavoro?

○ Nessun titolo in particolare (1)

○ Diploma (2)

○ Laurea (3)

○ Master (4)

○ Dottorato (5)

○ Altro (specificare) (6) _____

5.48   Quanto eri soddisfatto del tuo lavoro rispetto alla coerenza con le tue qualifiche?

○ Molto insoddisfatto (1)

○ Insoddisfatto (2)

○ Abbastanza insoddisfatto (3)

○ Indifferente (4)

○ Abbastanza soddisfatto (5)

○ Soddisfatto (6)

○ Molto soddisfatto (7)

5.49   Quanto eri soddisfatto complessivamente del tuo lavoro?

○ Molto insoddisfatto (1)

○ Insoddisfatto (2)

○ Abbastanza insoddisfatto (3)

○ Indifferente (4)

○ Abbastanza soddisfatto (5)

○ Soddisfatto (6)

○ Molto soddisfatto (7)

6 BACKGROUND FAMILIARE

6.1 Puoi indicarmi il titolo di studio di tua madre?

○ Elementare (1)

○ Media inferiore (2)

○ Media superiore (3)

○ Laurea (4)

○ Altro (specificare) (5) _____

6.2 Puoi indicarmi il titolo di studio di tuo padre?

○ Elementare (1)

○ Media inferiore (2)

○ Media superiore (3)

○ Laurea (4)

○ Altro (specificare) (5) _____

6.3 Potresti indicare qual è l'attuale situazione occupazionale di tua madre?

○ Occupata (1)

○ Pensionata (specificare da quanti anni) (2) _____

○ Disoccupata (specificare da quanti anni) (4) _____

○ Cassintegrata (specificare da quanti anni) (6) _____

❍ Casalinga (8)

❍ Altro (specificare) (9) _____

6.4 Potresti indicare qual è l'attuale situazione occupazionale di tuo padre?

❍ Occupato (1)

❍ Pensionato (specificare da quanti anni) (2) _____

❍ Disoccupato (specificare da quanti anni) (4) _____

❍ Cassintegrato (specificare da quanti anni) (6) _____

❍ Casalingo (8)

❍ Altro (specificare) (9) _____

Answer If Potresti indicare qual è la situazione occupazionale di t... Occupata Is Selected Or Potresti indicare qual è la situazione occupazionale di t... Pensionata da meno di 5 anni Is Selected Or Potresti indicare qual è la situazione occupazionale di t... Disoccupata da meno di 5 anni Is Selected Or Potresti indicare qual è la situazione occupazionale di t... Cassintegrata da meno di 5 anni Is Selected

6.5 Puoi indicarmi più o meno a quanto corrisponde il guadagno mensile netto di tua madre (in euro)?(Nel caso di genitore pensionato, disoccupato o cassintegrato, indicare l'ultimo guadagno prima della pensione/disoccupazione/cassintegrazione)

❍ fino a 500 (1)

❍ da 500 a 1.000 (2)

❍ da 1.000 a1.500 (3)

❍ da 1.500 a 2.000 (4)

❍ da 2.000 a 2.500 (5)

❍ da 2.500 a 3.000 (6)

❍ da 3.000 a 3.500 (7)

❍ da 3.500 a 4.000 (8)

❍ oltre 4.000 (9)

❍ Altro (specificare) (10) _____

Answer If Potresti indicare qual è la situazione occupazionale di t... Occupato Is Selected Or Potresti indicare qual è la situazione occupazionale di t... Pensionato da meno di 5 anni Is Selected Or Potresti indicare qual è la situazione occupazionale di t... Disoccupato da meno di 5 anni Is Selected Or Potresti indicare qual è la situazione occupazionale di t... Cassintegrato da meno di 5 anni Is Selected

6.6 Puoi indicarmi più o meno a quanto corrisponde il guadagno mensile netto di tuo padre (in euro)?(Nel caso di genitore pensionato, disoccupato o cassintegrato, indicare l'ultimo guadagno prima della pensione/disoccupazione/cassintegrazione)

❍ fino a 500 (1)

❍ da 500 a 1.000 (2)

❍ da 1.000 a1.500 (3)

❍ da 1.500 a 2.000 (4)

❍ da 2.000 a 2.500 (5)

❍ da 2.500 a 3.000 (6)

❍ da 3.000 a 3.500 (7)

❍ da 3.500 a 4.000 (8)

❍ oltre 4.000 (9)

❍ Altro (specificare) (10) _____

Answer If Dove abiti attualmente? Sardegna (specifica il paese/città) Is Selected

7 SOCIAL NETWORKS (I)

Answer If Dove abiti attualmente? Sardegna (specifica il paese/città) Is Selected

7.1 Negli ultimi sei mesi, quante volte ti sei recato al di fuori della Sardegna per motivi di lavoro?   (inserire valore numerico, ad esempio 8)

Answer If Dove abiti attualmente? Sardegna (specifica il paese/città) Is Selected

7.2 Hai delle collaborazioni formali o informali con imprese/enti al di fuori della Sardegna?

❍ Sì (1)

❍ No (2)

If No Is Selected, Then Skip To End of Block

Answer If Hai delle collaborazioni formali o informali con imprese/... Sì Is Selected

7.3 Dove in particolare?

❑ In un'altra regione Italiana (specificare quale) (1) _____

❑ In un'altra nazione (specificare quale) (2) _____

Answer If Dove abiti attualmente? Sardegna (specifica il paese/città) Is Not Selected

7 SOCIAL NETWORKS (I)

Answer If Dove abiti attualmente? Sardegna (specifica il paese/città) Is Not Selected

7.4 Negli ultimi sei mesi, quante volte ti sei recato in Sardegna per motivi di lavoro? (inserire valore numerico, ad esempio 8)

Answer If Dove abiti attualmente? Sardegna (specifica il paese/città) Is Not Selected

7.5 Hai delle collaborazioni formali e/o informali con imprese/enti sardi?

❍ Sì (1)

❍ No (2)

If No Is Selected, Then Skip To End of Block

7.6 Di che tipo di collaborazione/i si tratta principalmente?

❍ Formale/i (hai un contratto) (1)

❍ Informale/i (non hai nessun contratto) (2)

❍ Sia formale/i che informale/i (3)

7.7 Mediamente, quante ore al mese dedichi a questa/e collaborazione/i?   (inserire valore numerico, ad esempio 30)

7.8 La comunicazione relativa alla tua collaborazione avviene tramite: (selezionare tutte le risposte necessarie)

❑ E-mail (1)

❑ Telefono (2)

❑ Social networks (Skype, facebook, ecc) (3)

❑ Faccia a faccia (4)

7.9 Quanto è frequente questa comunicazione?

◯ Quasi tutti i giorni (1)

◯ Quasi tutte le settimane (2)

◯ Quasi tutti i mesi (3)

◯ Poche volte all'anno (4)

◯ Mai (5)

7.10 Di che imprese/enti si tratta principalmente: (selezionare sino a tre risposte)

❑ Imprese private (1)

❑ Organizzazioni non-profit (2)

❑ Università (3)

❑ Centri di ricerca privati (4)

❑ Centri di ricerca pubblici (5)

❑ Enti pubblici (6)

❑ Altro (specificare) (7) _____

7 SOCIAL NETWORKS (II)

Siamo davvero alla conclusione del questionario, le ultime domande riguardano la tua esperienza di lavoro e/o studio fuori dalla Sardegna.

7.11 Durante le tue esperienze di permanenza al di fuori dalla Sardegna ti sei iscritto a: (barrare tutte le caselle necessarie):

❑ Partiti politici   (1)

❑ Organizzazioni sindacali (2)

❑ Associazioni o gruppi di volontariato (3)

❑ Associazioni ecologiche, per i diritti civili e per la pace (4)

❑ Associazioni culturali, ricreative o di altro tipo (5)

❑ Associazioni sportive (6)

❑ Associazioni professionali o di categoria (7)

❑ Nessuno di questi (8)

7.12   Durante la tua permanenza fuori dalla Sardegna, con chi trascorri/evi prevalentemente il tuo tempo libero (ad esempio: con chi ti incontri/avi per andare al cinema, ristorante, pub, ecc...)? (barrare tutte le caselle necessarie)

❑ Amici sardi (1)

❑ Amici non sardi (2)

❑ Colleghi (3)

❑ Parenti (4)

❑ Compagno/a (5)

❑ Solo/a (6)

Answer If Dove abiti attualmente? Sardegna (specifica il paese/città) Is Selected

7.13 Seleziona sino a tre fattori che sono stati particolarmente determinanti nella tua scelta di tornare in Sardegna: (barrare sino a tre caselle)

❑ Trovare un buon lavoro (1)

❑ Potermi mettere in proprio (2)

❑ Essere in prossimità di imprese innovative e/o centri di ricerca d'eccellenza (3)

❑ La voglia di tornare dalla mia famiglia (4)

❑ La buona apertura mentale e tolleranza (5)

❑ La diversità etnica e culturale (6)

❑ La presenza di una buona scelta di attività per il tempo libero (teatro, cinema, locali notturni, ecc.) (7)

❑ La presenza di buone università (8)

Answer If Dove abiti attualmente? Sardegna (specifica il paese/città) Is Not Selected

7.14 In futuro pensi di tornare a vivere in Sardegna?

○ Si, a breve (1)

○ Si, ma non a breve (2)

○ No (3)

○ Non so (4)

Answer If In futuro pensi di tornare a vivere in Sardegna? Si, a breve Is Selected Or In futuro pensi di tornare a vivere in Sardegna? Si, ma non a breve Is Selected

7.15 Seleziona sino a tre fattori che ritieni particolarmente determinanti nella tua scelta di tornare in Sardegna?

❑ Trovare un buon lavoro (1)

❑ Potermi mettere in proprio (2)

❑ Essere in prossimità di imprese innovative e/o centri di ricerca d'eccellenza (3)

❑ La voglia di tornare dalla mia famiglia (4)

❑ La buona apertura mentale e tolleranza (5)

❑ La diversità etnica e culturale (6)

❑ La presenza di una buona scelta di attività per il tempo libero (teatro, cinema, locali notturni, ecc.) (7)

❑ La presenza di buone università (8)

Answer If In futuro pensi di tornare a vivere in Sardegna? No Is Selected Or In futuro pensi di tornare a vivere in Sardegna? Non so Is Selected

7.16 Seleziona sino a tre fattori che ritieni determinanti nella tua scelta di non tornare in Sardegna?

❑ Non troverei un buon lavoro (1)

❑ Non potrei mettermi in proprio (2)

❑ Non ci sono imprese innovative e/o centri di ricerca d'eccellenza (3)

❑ Qui ho la mia famiglia, i miei affetti (4)

❑ Non c'è sufficiente apertura mentale e tolleranza (5)

❑ Non c'è sufficiente diversità etnica e culturale (6)

❑ Non c'è sufficiente scelta di attività per il tempo libero (teatro, cinema, locali notturni, ecc.) (7)

❑ Non ci sono buone università (8)

Questa è l'ultima schermata del questionario. Se ci sono aspetti della tua esperienza di studio e/o lavorativa che non sono state colte dalle domande precedenti, ma che ritieni importante segnalare, per favore usa la casella di testo sottostante.

Se lo desideri, quando saranno disponibili, potrai ricevere i risultati della ricerca allo stesso indirizzo e-mail attraverso cui hai ricevuto l'invito per quest'indagine. Ti basterà rispondere affermativamente alla domanda seguente.Desideri ricevere informazioni sui risultati della ricerca?

○ Sì (1)

○ No (2)

Translation of part of the questionnaire in English

Below, the most relevant questions of the web survey, from which the variables used throughout the thesis have been drawn, have been translated in English.

1.2 Where do you currently live?

○   Sardinia (specify village/city) (1) _____

○   Other Italian region (specify which one) (2) _____

○   Other country (specify which one) (3) _____

1.3 What is your current marital status?

○   Single (1)

○   In a relationship (2)

○   Unmarried partner (3)

○   Married (4)

○   Divorced (5)

1.5.1 Please complete the following information regarding your degree.

Final mark _____(1)

Number of extra years required to complete _____(2)

Name of University_____(3)

City _____(4)

1.5.2 Please indicate your area of study (In case of multiple degrees, in the following questions please consider the one you expect will bring more employment opportunities).

○ Scientific (1)

○ Chemistry - Pharmaceutical (2)

○ Geo-biological (3)

○ Medical (4)

○ Engineering (5)

○ Architecture (6)

○ Agriculture (7)

○ Economics-statistics (8)

○ Political-social (9)

○ Law (10)

○ Literature (11)

○ Linguistics (12)

○ Teaching (13)

○ Psychology (14)

1.5.4 Could you specify when you obtained your degree? (first select the year, then the month)

2.a.1 What was your marital status when you applied for the scholarship M&B Higher Education?

○ Single (1)

○ In a relationship (2)

○ Unmarried partner (3)

○ Married (4)

○ Divorced (5)

2.2 Have you been granted a postgraduate degree through a programme that lasted more than six months? (p.s. In case of multiple degrees with these characteristics, in the following questions please consider the one that required more hours to complete)

○ Yes (1)

○ No (2)

2.a.3 Could you specify what kind of degree you obtained through the support of the Master and Back programme?

○ First level Italian Master's (1)

○ Second level Italian Master's (2)

○ Master's degree from foreign University (3)

○ Professional diploma a non-academic institutes/organization (Italian or foreign) (4)

○ Italian or foreign Doctorate/Ph.D. (5)

○ Specialisation courses at an Italian university (6)

○ Other (specify) (99) _____

2.a.6 Please specify the name of the university/institution from where you graduated.

2.4 Where is it located?

○ In Sardinia (specify village/city) (1) _____

○ In another Italian region (specify which one) (2) _____

○ In another country (specify which one) (3) _____

2.a.4 Please specify the location of the university/institution form where you graduated.

○ In another Italian region (specify which one) (2) _____

○ In another country (specify which one) (3) _____

2.11 Could you specify what kind of degree you obtained?

○ First level Italian Master's (1)

○ Second level Italian Master's (2)

○ Master's degree from foreign University (3)

○ Professional diploma a non-academic institutes/organization (Italian or foreign) (4)

○ Italian or foreign Doctorate/Ph.D. (5)

○ Specialisation courses at an Italian university (6)

○ Other (specify) (99) _____

2.12 Please specify the location of the university/institution form where you graduated.

○ In Sardinia (specify village/city) (1) _____

○ In another Italian region (specify which one) (2) _____

○ In another country (specify which one) (3) _____

2.13 Please indicate your area of study (In case of multiple degrees with these characteristics, in the following questions please consider the one you expect will bring more employment opportunities).

○ Scientific (1)

○ Chemistry Pharmaceutical (2)

○ Geo-biological (3)

○ Medical (4)

○ Engineering (5)

○ Architecture (6)

○ Agriculture (7)

○ Economics-statistics (8)

○ Political-social (9)

○ Law (10)

○ Literature (11)

○ Linguistics (12)

○ Teaching (13)

○ Psychology (14)

2.19 Could you specify what kind of degree you obtained?

○ First level Italian Master's (1)

○ Second level Italian Master's (2)

○ Master's degree from foreign University (3)

○ Professional diploma a non-academic institutes/organization (Italian or foreign) (4)

○ Italian or foreign Doctorate/Ph.D. (5)

○ Specialisation courses at an Italian university (6)

○ Other (specify) (99) _____

2.20 Please specify the location of the university/institution form where you graduated.
○ In Sardinia (specify village/city) (1) _____

○ In another Italian region (specify which one) (2) _____

○ In another country (specify which one) (3) _____

2.21 Please indicate your area of study.

○ Scientific (1)

○ Chemistry Pharmaceutical (2)

○ Geo-biological (3)

○ Medical (4)

○ Engineering (5)

○ Architecture (6)

○ Agriculture (7)

○ Economics-statistics (8)

○ Political-social (9)

○ Law (10)

○ Literature (11)

○ Linguistics (12)

○ Teaching (13)

○ Psychology (14)

2.3 Could you specify what kind of degree you obtained?

○ First level Italian Master's (1)

○ Second level Italian Master's (2)

○ Master's degree from foreign University (3)

○ Professional diploma a non-academic institutes/organization (Italian or foreign) (4)

○ Italian or foreign Doctorate/Ph.D. (5)

○ Specialisation courses at an Italian university (6)

○ Other (specify) (99) _____

3.4 Over the course of your degree studies did you participate, by going abroad, to programmes like the ERASMUS or similar? (if not, skip this question; if yes, report up to three study experiences abroad by filling out the boxes below).

Experience 1

In which country? _____

Duration (months)? _____

Experience 2

In which country? _____

Duration (months)? _____

Experience 3

In which country? _____

Duration (months)? _____

4.8 In which sector do you work?

○ Agriculture, hunting and fishing (1)

○ Industry (2)

○ Services (3)

5.1 What characteristics should your ideal job have? (select up to 3 characteristics)

❑ High-earning (1)

❑ Yield good career opportunities (2)

❑ Give me the possibility of acquiring new skills and applying the ones I have(3)

❑ Be a permanent position(4)

❑ Allow me to work independently (5)

❑ Leave me lots of free time (6)

❑ Located close to family (7)

❑ Other (specify) (8) _____

5.2 What is your current employment situation?

○ Student (1)

○ Unemployed(2)

○ Intern / Trainee / Apprentice (3)

○ Employed (4)

○ Homemaker (5)

5.7 Please indicate in which range your net monthly income is (in euros)?

○ up to 250 (1)

○ from 251 to 500 (2)

○ from 501 to 750 (3)

○ from 751 to 1,000 (4)

○ from 1,001 to 1,250 (5)

○ from 1,251 to 1.500 (6)

○ from 1,501 to 2,000 (7)

○ from 2,001 to 2,500 (8)

○ from 2,501 to 3,000 (9)

○ from 3,001 to 3,500 (10)

○ from 3,501 to 4,000 (11)

○ more than 4,000 (12)

5.8 Could you specify what type of job do you have?

○ Self-employed (1)

○ Temporary or permanent employee (2)

○ Temporary contract work (3)

○ Other (specify) (4) _____

5.11 More specifically:

○ Commerce, hospitality and shops (1)

○ Transport, travel, postal service (2)

○ Credit and insurance (including financial services) (3)

○ Professional activities and consulting (legal, design, real estate, rental, surveys and market analysis, research and advertising, etc.).(4)

○ Computing-related activities (software development, data processing, maintenance and repair of computers) (5)

○ Education and training (except coaching sports) (6)

○ Healthcare and welfare work(hospitals, doctors, etc.) (7)

○ Government and defence (ministries, regions, local authorities, constitutional bodies, etc.). (8)

○ Other community and personal services (cinema, TV, gyms, museums, activities with families, etc. ..) (9)

5.16 How many other people, besides you, normally work in your workplace?

○ No one (1)

○ from 1 to 9 (2)

○ from 10 to 49 (3)

○ from 50 to 99 (4)

○ from 100 to 249 (5)

○ 250 or more (6)

5.17 What level of education is required for your current employment?

○ None in particular (1)

○ Secondary school (2)

○ undergraduate degree (3)

○ Master's (4)

○ Ph.D. (5)

○ Other (specify) (6) _____

5.18 How satisfied are you, on a scale from 1 to 7, with the following aspects of your employment?

Matches your skills (1)

Stability and safety (2)

Independence (3)

Income (4)

Career opportunities (5)

5.24 Did you, after graduating, have any job that lasted longer than 6 months?

❍ Yes (1)

❍ No (2)

5.25 Where was your first job after graduation which lasted at least six months?

❍ In Sardinia (specify village/city) (1) _____

❍ In another Italian region (specify which one) (2) _____

❍ In another country (specify which one) (3) _____

5.37 Did you, after graduating, have any job that lasted longer than 6 months and did not mention earlier?

❍ Yes (1)

❍ No (2)

5.38 Where was this employment located? (In case of multiple job experiences with these characteristics, in the following questions please consider the longest in hours worked)

❍ In Sardinia (specify village/city) (1) _____

❍ In another Italian region (specify which one) (2) _____

❍ In another country (specify which one) (3) _____

6.1 What level of education did your mother achieve?

❍ Elementary school (1)

❍ Primary school (2)

❍ Secondary school (3)

❍ University (4)

❍ Other (specify) (5) _____

6.2 What level of education did your father achieve?

❍ Elementary school (1)

❍ Primary school (2)

❍ Secondary school (3)

❍ University (4)

❍ Other (specify) (5) _____

7.11 During your geographical mobility experiences did you join any(tick as many boxes as you need):

❑ Political parties (1)

❑ Trade unions (2)

❑ Volunteer groups (3)

- ❑ Associations promoting the environment, civil rights or peace (4)
- ❑ Cultural, recreational or other associations (5)
- ❑ Sporting associations (6)
- ❑ Professional associations (7)
- ❑ None of these (8)

7.13 Select up to three determinant factors for your decision to return to Sardinia:

- ❑ Found a satisfactory employment (1)
- ❑ Ability to start my own business (2)
- ❑ Be near innovative firms and/or research centres of excellence (3)
- ❑ The desire to return to my family (4)
- ❑ The openness and tolerance of the community (5)
- ❑ Cultural and ethnic diversity (6)
- ❑ The presence of a good choice of leisure activities (theatre, cinema, nightclubs, etc.) (7)
- ❑ The presence of good universities (8)

7.15 Select up to three determinant factors for your decision to return to Sardinia:

- ❑ Found a satisfactory employment (1)
- ❑ Ability to start my own business (2)
- ❑ Be near innovative firms and/or research centres of excellence (3)
- ❑ The desire to return to my family (4)
- ❑ The openness and tolerance of the community (5)
- ❑ Cultural and ethnic diversity (6)
- ❑ The presence of a good choice of leisure activities (theatre, cinema, nightclubs, etc.) (7)
- ❑ The presence of good universities (8)

7.16 Select up to three determinant factors for your decision to not return to Sardinia

- ❑ I would not find a satisfactory employment (1)

- ❑ I would not be able to start my own business (2)

- ❑ I would not be near innovative firms and/or research centres of excellence(3)

- ❑ My family and my affections are here(4)

- ❑ There is not sufficient openness and tolerance of the community(5)

- ❑ There is not sufficient cultural and ethnic diversity (6)

- ❑ There is a lack of leisure activities (theatre, cinema, nightclubs, etc.) (7)

- ❑ There are no good universities (8)

Appendix 2.2   Description of the variables

The table below provides a description of the variables that are used in this chapter, their sources and, if relevant, the web survey question from which they have been drawn. For some variables the column Source reports multiple sources. This indicates that the variable was created by integrating the content of different sources. This has been done for two reasons:

- Some records from the Regional Employment Agency were incomplete;
- Some information contained in the dataset of the Regional Employment Agency was not provided in the dataset of the University of Cagliari.

In both instances the missing information was collected through the web survey system, which included or skipped questions depending on the completeness of the interviewee's record.

A further remark concerns the column Q. which, when relevant, reports the question/s of the web survey from which the variables were drawn. For some variables there are multiple questions since, due to the structure of the web questionnaire, they might have been built by integrating information from different questions.

Table A-2.1 – Description and source of the dependent variables

Dependent Variables	Description	Source	Q.*
Employment status	A dummy which takes the value 1 if the interviewee was employed when the interview was conducted and 0 otherwise	Web survey	5.2
Net monthly income at PPP	The net monthly income of the interviewee when the survey was conducted, in euros, adjusted at Purchasing Power Parity (PPP)	Web survey + ISTAT + EUROSTAT	5.7

Table A-2.2 – Description and source of the dependent independent variables

Independent Variables	Description	Source	Q.*
Deg. topic arts and human.**	A dummy identifying individuals who had an undergraduate degree in Arts and Humanities	University of Cagliari + Regional Employment Agency + Web survey	1.5.2
Deg. topic econ. and stats	A dummy identifying individuals who had an undergraduate degree in Economics and Statistics	University of Cagliari + Regional Employment Agency + Web survey	1.5.2
Deg. topic Science and Techn.***	A dummy identifying individuals who had an undergraduate degree in Science and Technology	University of Cagliari + Regional Employment Agency + Web survey	1.5.2
Deg. topic Soc. Sciences****	A dummy identifying individuals who had an undergraduate degree in other Social Sciences (i.e., other than Economics and Statistics)	University of Cagliari + Regional Employment Agency + Web survey	1.5.2
ERASMUS	A dummy identifying the interviewees that had participated in the ERASMUS or other similar programmes	Web survey	3.4
Father university	A dummy identifying the interviewees whose father had a university degree	Web survey	6.2
Final mark: 110/110 or higher	A dummy identifying the interviewees with a final graduation mark of 110/110 or 110/110 cum laude	Web survey + University of Cagliari + Regional Employment Agency	1.5.1
Graduation more than one year late	A dummy identifying the interviewees who have graduated later than one year beyond normal completion time	Web survey + University of Cagliari + Regional Employment Agency	1.5.1
Higher= Undergrad. Degree	A dummy identifying the interviewees whose highest level of education is an undergraduate degree	Web survey + University of Cagliari + Regional Employment Agency	1.5.1
Higher= Master's	A dummy identifying the interviewees whose highest level of education is a Master's degree	Web survey + Regional Employment Agency	2.3, 2.a.3, 2.11, 2.19

Independent Variables	Description	Source	Q.*
Higher= Ph.D.	A dummy identifying the interviewees whose highest level of education is Ph.D.	Web survey + Regional Employment Agency	2.3, 2.a.3, 2.11, 2.19
Ideal job – High earnings	A dummy identifying the interviewees who declared that their ideal job should have high earnings	Web survey	5.1
Male	A dummy identifying males	Regional Employment Agency + University of Cagliari	
Married or unmarried partner	A dummy identifying married or unmarried partners	Web survey	1.3
No job experience	A dummy identifying interviewees without any job experience	Web survey	5.24, 5.37
Treatment	A dummy identifying the recipients of the M&B Higher Education programme	Regional Employment Agency	
Years since graduation	Number of years since the first degree	Web survey + University of Cagliari + Regional Employment Agency	1.5.4

*Question from the Web survey (if relevant).
** This dummy has been created by aggregating the following topics drawn from the relevant questions in the web questionnaire: Literature, Linguistics, Teaching, Psychology.
*** This dummy has been created by aggregating the following topics drawn from the relevant questions in the web questionnaire: Scientific, Chemistry Pharmaceutical, Geo-biological, Engineering, Architecture, Agriculture.
**** This dummy has been created by aggregating the following topics drawn from the relevant questions in the web questionnaire: Political-social, Law.

Appendix 2.3   PS estimation

The table below reports the results of the logit models that have been estimated to calculate the propensity scores for the various calls of M&B.

Table A-2.3 – Logit model to calculate the propensity score by call

Dep. Var.: Treatment	2006	2007&2008	2009
Male	0.205	0.158	0.291
	(0.167)	(0.161)	(0.191)
Married or unmarried partner	-1.059***	-0.846***	-0.758**
	(0.253)	(0.272)	(0.353)
ERASMUS	0.986***	0.913***	0.417**
	(0.166)	(0.160)	(0.201)
Years since graduation	0.327***	0.0492	-0.294***
	(0.0359)	(0.0378)	(0.0530)
Final mark: 110/110 or higher	0.312*	0.275*	0.227
	(0.164)	(0.162)	(0.190)
Graduation more than one year late	-0.327*	-0.0136	0.312*
	(0.168)	(0.164)	(0.188)
Higher= Ph.D.	-0.986*	-2.023*	-2.020**
	(0.559)	(1.039)	(1.030)
Higher= Master's	-0.771***	-1.060***	-1.194***
	(0.288)	(0.352)	(0.391)
Deg. topic Science and Techn.	-0.340	-0.0980	-0.396
	(0.280)	(0.259)	(0.296)
Deg. topic Soc. Sciences	0.540*	0.475*	0.520
	(0.301)	(0.283)	(0.321)
Deg. topic arts and human.	0.0923	0.0320	0.0233
	(0.279)	(0.268)	(0.310)
Mother university	0.259	0.178	0.246
	(0.193)	(0.190)	(0.235)
No job experience	-0.404*	-0.171	0.493**
	(0.231)	(0.235)	(0.218)
Ideal job – High earnings	-1.152***	-0.352*	-2.498***
	(0.245)	(0.187)	(0.466)
Constant	-4.194***	-2.437***	-0.523
	(0.385)	(0.352)	(0.384)
Pseudo R2	0.152	0.064	0.172
Observations	1,715	1,652	1,402

Source: Author's data.
Standard errors in parentheses
* significant at 10%; ** significant at 5%, *** significant at 1%

Appendix 2.4   Common support graphs and balancing tests

Odds of employment

Figure A- 2.4.1 – Common support graphs for odds of employment
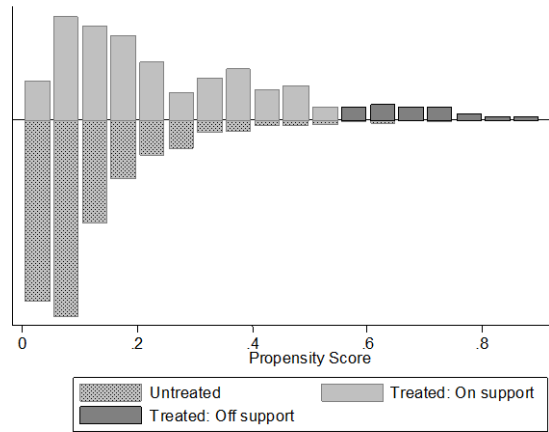
Call 2006

Call 2007&2008
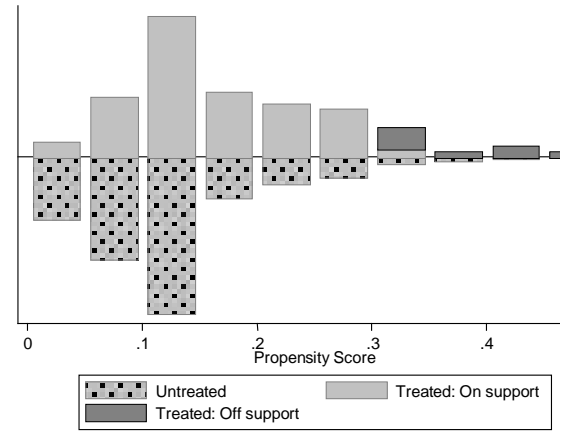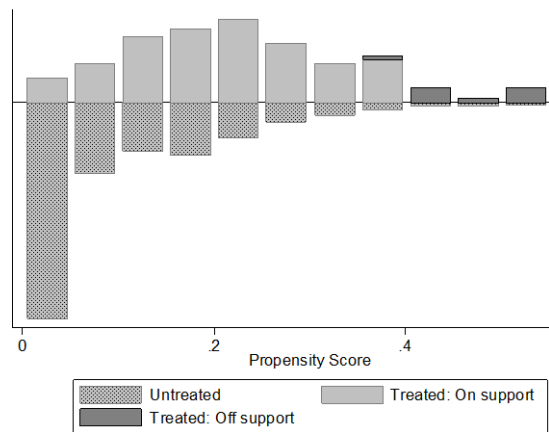
Call 2009

Table A-2.4 – Summary of balancing test, odds of employment, Call 2006

Sample	Pseudo R2	LR chi2	p > chi2
Unmatched	0.146	176.85	0
Matched	0.01	5.5	0.978

Table A-2.5 – Balancing test, odds of employment, Call 2006

Variable	Sample	Mean Treat	Control	%bias	%reduct |bias|	T-test t	p>|t|
Male	Unmatched	0.38	0.36	5.5		0.75	0.45
	Matched	0.38	0.39	-1.1	80.3	-0.11	0.92
Married or unmarried partner	Unmatched	0.10	0.18	-23.2		-2.88	0.00
	Matched	0.11	0.09	3.1	86.8	0.34	0.73
ERASMUS	Unmatched	0.39	0.19	44.9		6.55	0.00
	Matched	0.36	0.37	-1.2	97.4	-0.11	0.92
Years since graduation	Unmatched	8.15	6.64	57.5		8.14	0.00
	Matched	7.65	7.82	-6.8	88.2	-0.74	0.46
Final mark: 110/110 or higher	Unmatched	0.63	0.55	15.4		2.05	0.04
	Matched	0.60	0.59	1.1	93	0.1	0.92
Graduation more than one year late	Unmatched	0.39	0.48	-19		-2.53	0.01
	Matched	0.42	0.42	0	100	0	1.00
Higher= Ph.D.	Unmatched	0.02	0.02	2.6		0.37	0.71
	Matched	0.02	0.01	7.2	-173	1	0.32
Higher= Master's	Unmatched	0.09	0.10	-6.4		-0.83	0.41
	Matched	0.09	0.12	-7.2	-12.8	-0.67	0.51
Deg. topic Science and Techn.	Unmatched	0.34	0.41	-14.4		-1.92	0.06

| Variable | Sample | Mean | | %bias | %reduct \|bias\| | T-test | |
		Treat	Control			t	p>|t|
	Matched	0.35	0.42	-13.1	9.6	-1.26	0.21
Deg. topic Soc. Sciences	Unmatched	0.21	0.13	20		2.88	0.00
	Matched	0.18	0.16	5.6	72	0.54	0.59
Deg. topic arts and human.	Unmatched	0.35	0.34	1.7		0.22	0.82
	Matched	0.36	0.33	5.5	-234.1	0.54	0.59
Father university	Unmatched	0.21	0.15	15.3		2.16	0.03
	Matched	0.18	0.22	-9.5	37.9	-0.89	0.37
No job experience	Unmatched	0.19	0.14	13.7		1.93	0.05
	Matched	0.16	0.19	-8.5	37.7	-0.8	0.42
Ideal job – High earnings	Unmatched	0.10	0.25	-38.1		-4.61	0.00
	Matched	0.11	0.13	-7	81.5	-0.79	0.43

Source: Author's data.

Table A-2.6 – Summary of balancing test, odds of employment, Call 2007&2008

Sample	Pseudo R2	LR chi2	p>chi2
Unmatched	0.067	70.64	0
Matched	0.023	10.45	0.657

Table A-2.7 – Balancing test, odds of employment, Call 2007&2008

		Mean				T-test	
Variable	Sample	Treat	Control	%bias	%reduct |bias|	t	p>|t|
Male	Unmatched	0.40	0.36	8.5		1.07	0.28
	Matched	0.38	0.47	-17.8	-108.9	-1.57	0.12
Married or unmarried partner	Unmatched	0.07	0.19	-36.3		-3.96	0.00
	Matched	0.07	0.07	1.9	94.8	0.22	0.83
ERASMUS	Unmatched	0.39	0.20	43.2		5.85	0.00
	Matched	0.33	0.34	-2.8	93.6	-0.23	0.81
Years since graduation	Unmatched	6.38	6.61	-10.2		-1.22	0.22
	Matched	6.40	6.09	13.4	-31.7	1.23	0.22
Final mark: 110/110 or higher	Unmatched	0.59	0.55	7.9		0.98	0.33
	Matched	0.56	0.59	-6.2	20.7	-0.56	0.58
Graduation more than one year late	Unmatched	0.44	0.48	-7.7		-0.96	0.34
	Matched	0.45	0.49	-8.7	-12.4	-0.78	0.44
Higher= Ph.D.	Unmatched	0.00	0.03	-24.7		-2.34	0.02
	Matched	0.00	0.01	-5.1	79.2	-1	0.32
Higher= Master's	Unmatched	0.06	0.13	-25.6		-2.84	0.01
	Matched	0.06	0.06	2.1	91.6	0.24	0.81
Deg. topic Science and Techn.	Unmatched	0.39	0.41	-3.3		-0.41	0.68

Variable	Sample	Mean		%bias	%reduct |bias|	T-test	
		Treat	Control			t	p>|t|
	Matched	0.42	0.46	-7.6	-130.9	-0.67	0.50
Deg. topic Soc. Sciences	Unmatched	0.23	0.13	26		3.54	0.00
	Matched	0.19	0.12	16	38.3	1.54	0.13
Deg. topic arts and human.	Unmatched	0.27	0.34	-15.7		-1.91	0.06
	Matched	0.28	0.30	-4	74.3	-0.37	0.72
Father university	Unmatched	0.21	0.16	12.5		1.62	0.11
	Matched	0.18	0.23	-12.8	-2.5	-1.1	0.27
No job experience	Unmatched	0.16	0.19	-7.3		-0.89	0.37
	Matched	0.17	0.15	3.2	55.8	0.3	0.76
Ideal job – High earnings	Unmatched	0.22	0.26	-9.1		-1.12	0.26
	Matched	0.23	0.22	2.9	68.3	0.27	0.79

Source: Author's data.

Table A-2.8 – Summary of balancing test, odds of employment, Call 2009

Sample	Pseudo R2	LR chi2	p>chi2
Unmatched	0.195	182.31	0
Matched	0.009	3.58	0.995

Table A-2.9 – Balancing test, odds of employment, Call 2009

		Mean				T-test	
Variable	Sample	Treat	Control	%bias	%reduct |bias|	t	p>|t|
Male	Unmatched	0.38	0.36	5.9		0.69	0.489
	Matched	0.38	0.41	-5.7	1.9	-0.48	0.631
Married or unmarried partner	Unmatched	0.06	0.18	-36.5		-3.74	0
	Matched	0.07	0.08	-4.3	88.2	-0.44	0.659
ERASMUS	Unmatched	0.29	0.21	18		2.2	0.028
	Matched	0.24	0.20	8	55.3	0.71	0.478
Years since graduation	Unmatched	4.59	6.33	-78.3		-9.05	0
	Matched	4.73	4.80	-3.2	95.9	-0.3	0.766
Final mark: 110/110 or higher	Unmatched	0.60	0.57	7.3		0.85	0.396
	Matched	0.59	0.58	1.4	80.6	0.12	0.905
Graduation more than one year late	Unmatched	0.52	0.44	15.5		1.82	0.068
	Matched	0.49	0.44	9.7	37.2	0.82	0.41
Higher= Ph.D.	Unmatched	0.01	0.08	-37		-3.42	0.001
	Matched	0.01	0.00	3.5	90.7	1	0.318
Higher= Master's	Unmatched	0.05	0.19	-44.5		-4.43	0
	Matched	0.06	0.03	6.5	85.3	0.85	0.396
Deg. topic Science and Techn.	Unmatched	0.35	0.41	-11.1		-1.29	0.199

Variable	Sample	Mean Treat	Mean Control	%bias	%reduct |bias|	T-test t	p>|t|
	Matched	0.39	0.37	4.3	61.1	0.36	0.717
Deg. topic Soc. Sciences	Unmatched	0.25	0.13	30.1		3.89	0
	Matched	0.19	0.19	0	100	0	1
Deg. topic arts and human.	Unmatched	0.29	0.35	-12.7		-1.47	0.143
	Matched	0.30	0.30	0	100	0	1
Father university	Unmatched	0.19	0.16	6.4		0.77	0.44
	Matched	0.17	0.17	0	100	0	1
No job experience	Unmatched	0.26	0.35	-17.9		-2.05	0.04
	Matched	0.28	0.26	4.5	74.7	0.4	0.691
Ideal job – High earnings	Unmatched	0.03	0.27	-70		-6.63	0
	Matched	0.03	0.03	2.1	97.1	0.34	0.736

Source: Author's data.

Monthly earnings

Figure A- 2.4.2 – Common support graphs for net monthly income at PPP

Call 2006

Call 2007&2008
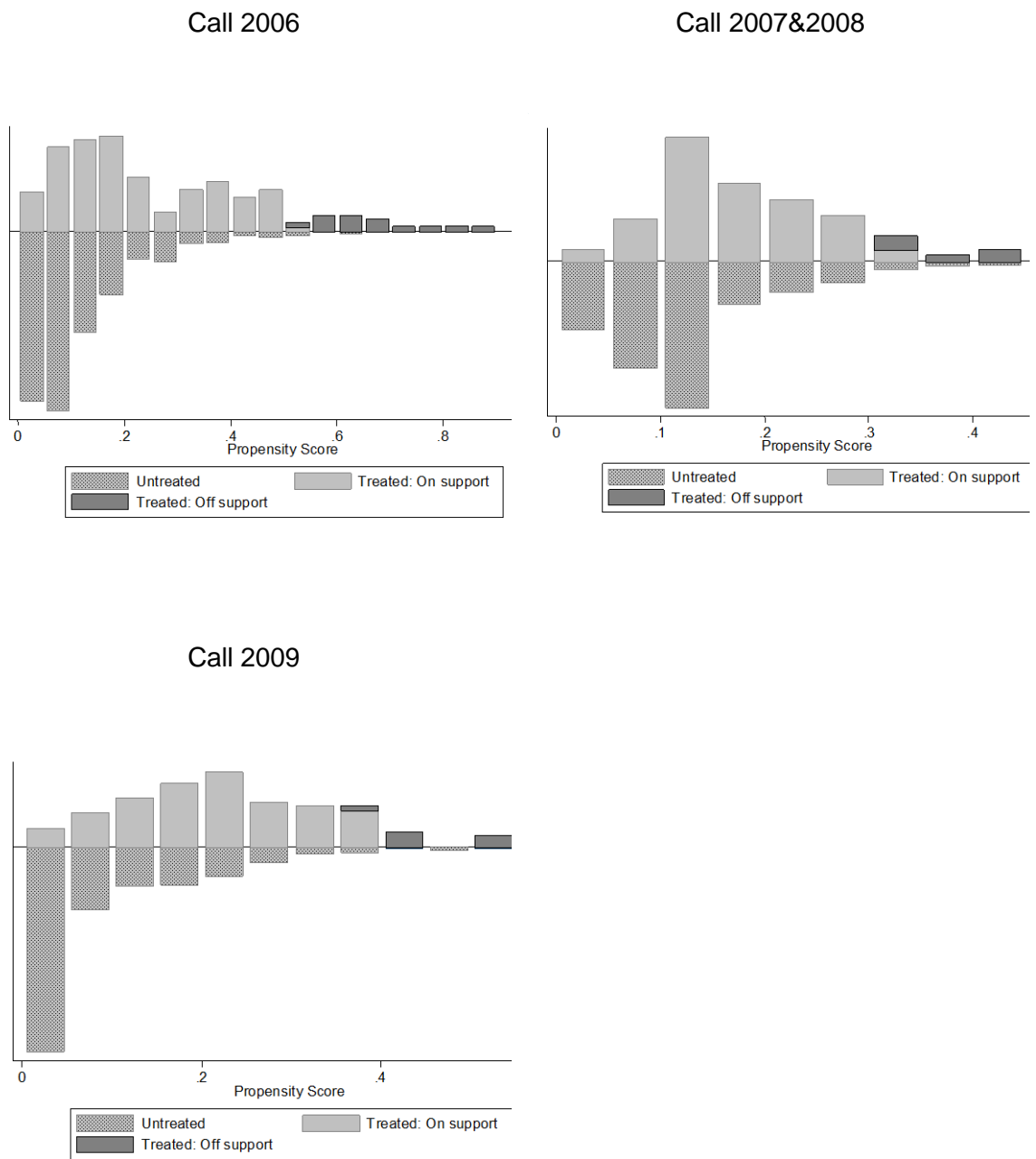
Call 2009

Table A-2.10 – Summary of balancing test, net monthly income at PPP, Call 2006

Sample	Pseudo R2	LR chi2	p>chi2
Unmatched	0.146	128.93	0
Matched	0.018	7.14	0.929

Table A-2.11 – Balancing test, net monthly income at PPP, Call 2006

		Mean			T-test		
Variable	Sample	Treat	Control	%bias	%reduct |bias|	t	p>|t|
Male	Unmatched	0.39	0.39	-0.4		-0.05	0.963
	Matched	0.38	0.34	7.1	-1690.3	0.61	0.543
Married or unmarried partner	Unmatched	0.10	0.19	-26.2		-2.8	0.005
	Matched	0.10	0.09	3.9	85	0.4	0.692
ERASMUS	Unmatched	0.41	0.20	46.2		5.78	0
	Matched	0.37	0.39	-4.6	90.1	-0.36	0.718
Years since graduation	Unmatched	8.22	6.85	50.8		6.24	0
	Matched	7.77	7.88	-4.2	91.7	-0.41	0.679
Final mark: 110/110 or higher	Unmatched	0.63	0.56	14.5		1.67	0.095
	Matched	0.61	0.62	-2.8	80.6	-0.24	0.81
Graduation more than one year late	Unmatched	0.39	0.47	-15.7		-1.81	0.071
	Matched	0.43	0.37	11.2	28.8	0.96	0.339
Higher= Ph.D.	Unmatched	0.02	0.02	0.5		0.06	0.951
	Matched	0.01	0.01	0	100	0	1
Higher= Master's	Unmatched	0.10	0.13	-8.1		-0.91	0.362
	Matched	0.11	0.11	0	100	0	1
Deg. topic Science and Techn.	Unmatched	0.34	0.40	-13		-1.49	0.137
	Matched	0.35	0.39	-7.2	44.8	-0.61	0.544
Deg. topic Soc. Sciences	Unmatched	0.21	0.13	22.1		2.76	0.006
	Matched	0.19	0.21	-5.5	74.9	-0.44	0.659
Deg. topic arts and human.	Unmatched	0.32	0.35	-6.4		-0.74	0.459

Variable	Sample	Mean Treat	Control	%bias	T-test %reduct |bias|	t	p>|t|
	Matched	0.33	0.32	2.9	54.6	0.25	0.803
Father university	Unmatched	0.22	0.15	18.2		2.23	0.026
	Matched	0.21	0.19	3.5	80.6	0.29	0.77
No job experience	Unmatched	0.22	0.15	18.7		2.3	0.022
	Matched	0.19	0.22	-7.2	61.7	-0.58	0.564
Ideal job – High earnings	Unmatched	0.11	0.27	-40.6		-4.27	0
	Matched	0.11	0.17	-16.1	60.3	-1.52	0.13

Source: Author's data.

Table A-2.12 – Summary of balancing test, net monthly income at PPP, Call 2007&2008

Sample	Pseudo R2	LR chi2	p>chi2
Unmatched	0.096	70.26	0
Matched	0.038	12.06	0.523

Table A-2.13 – Balancing test, net monthly income at PPP, Call 2007&2008

Variable	Sample	Mean Treat	Control	%bias	%reduct |bias|	T-test t	p>|t|
Male	Unmatched	0.41	0.39	4.3		0.45	0.651
	Matched	0.40	0.52	-24.5	-471.6	-1.85	0.065
Married or unmarried partner	Unmatched	0.08	0.20	-35.5		-3.3	0.001
	Matched	0.09	0.07	5.1	85.7	0.49	0.625
ERASMUS	Unmatched	0.42	0.21	47.2		5.36	0
	Matched	0.36	0.36	0	100	0	1
Years since graduation	Unmatched	6.52	6.83	-13.7		-1.39	0.165
	Matched	6.57	6.15	18.2	-33.5	1.47	0.142
Final mark: 110/110 or higher	Unmatched	0.62	0.56	10.8		1.12	0.262
	Matched	0.59	0.64	-8.8	18.6	-0.67	0.502
Graduation more than one year late	Unmatched	0.43	0.47	-7.5		-0.79	0.429
	Matched	0.44	0.43	1.7	77.1	0.13	0.895
Higher= Ph.D.	Unmatched	0.00	0.03	-26.5		-2.12	0.034
	Matched	0.00	0.00	0	100	.	.
Higher= Master's	Unmatched	0.05	0.16	-37.1		-3.34	0.001
	Matched	0.05	0.06	-2.9	92.2	-0.28	0.776
Deg. topic Science and Techn.	Unmatched	0.34	0.39	-10.2		-1.06	0.289
	Matched	0.38	0.46	-16.1	-57.7	-1.2	0.233
Deg. topic Soc. Sciences	Unmatched	0.28	0.13	38.4		4.54	0
	Matched	0.22	0.16	15.2	60.5	1.18	0.239
Deg. topic arts and human.	Unmatched	0.25	0.36	-23.3		-2.36	0.018

Variable	Sample	Mean Treat	Control	%bias	%reduct |bias|	T-test t	p>|t|
	Matched	0.28	0.28	-1.9	91.9	-0.15	0.884
Father university	Unmatched	0.20	0.16	11.5		1.26	0.209
	Matched	0.17	0.20	-6.7	41.8	-0.5	0.614
No job experience	Unmatched	0.16	0.20	-11.2		-1.14	0.256
	Matched	0.16	0.15	4.5	59.7	0.36	0.718
Ideal job – High earnings	Unmatched	0.23	0.28	-12.5		-1.28	0.201
	Matched	0.23	0.20	7.9	36.5	0.64	0.525

Source: Author's data.

Table A-2.14 – Summary of balancing test, net monthly income at PPP, Call 2009

Sample	Pseudo R2	LR chi2	p>chi2
Unmatched	0.25	156	0
Matched	0.049	13.14	0.437

Table A-2.15 – Balancing test, net monthly income at PPP, Call 2009

Variable	Sample	Mean Treat	Control	%bias	%reduct |bias|	T-test t	p>|t|
Male	Unmatched	0.38	0.39	-0.8		-0.08	0.936
	Matched	0.37	0.40	-6.3	-661.2	-0.44	0.66
Married or unmarried partner	Unmatched	0.07	0.20	-37		-3.13	0.002
	Matched	0.08	0.08	0	100	0	1
ERASMUS	Unmatched	0.29	0.22	15.7		1.57	0.118
	Matched	0.24	0.23	2.4	85	0.17	0.866
Years since graduation	Unmatched	4.58	6.57	-89.5		-8.4	0
	Matched	4.70	4.81	-5.1	94.3	-0.39	0.697
Final mark: 110/110 or higher	Unmatched	0.66	0.58	17.2		1.63	0.103
	Matched	0.65	0.51	29.8	-73	2.05	0.042
Graduation more than one year late	Unmatched	0.49	0.43	10.3		0.99	0.322
	Matched	0.47	0.58	-20.7	-101.1	-1.44	0.152
Higher= Ph.D.	Unmatched	0.01	0.08	-35.2		-2.7	0.007
	Matched	0.01	0.00	5	85.7	1	0.319
Higher= Master's	Unmatched	0.05	0.22	-52.2		-4.2	0
	Matched	0.05	0.03	6.3	88	0.72	0.473
Deg. topic Science and Techn.	Unmatched	0.36	0.40	-8.5		-0.81	0.42
	Matched	0.39	0.31	17	-101.1	1.2	0.231
Deg. topic Soc. Sciences	Unmatched	0.25	0.12	33.4		3.59	0
	Matched	0.20	0.21	-2.7	92	-0.18	0.859
Deg. topic arts and human.	Unmatched	0.30	0.36	-14		-1.32	0.186

Variable	Sample	Mean Treat	Control	%bias	%reduct |bias|	T-test t	p>|t|
	Matched	0.32	0.33	-2.2	84.4	-0.15	0.879
Father university	Unmatched	0.21	0.16	14.4		1.45	0.147
	Matched	0.21	0.12	21.2	-46.8	1.55	0.123
No job experience	Unmatched	0.30	0.37	-14.3		-1.35	0.177
	Matched	0.31	0.24	15.3	-7.1	1.13	0.262
Ideal job – High earnings	Unmatched	0.04	0.29	-73.1		-5.71	0
	Matched	0.04	0.04	0	100	0	1

Source: Author's data.

Appendix 2.5 Robustness checks: odds of employment and net monthly income

Table A-2.16 – Logistic regression odds of employment

Dep. Var.: Employment status	2006	2007&2008	2009
Treatment	**-0.240**	**-0.324**	**-0.261**
	(0.207)	**(0.202)**	**(0.210)**
Male	0.474***	0.575***	0.411**
	(0.159)	(0.163)	(0.174)
Married or unmarried partner	0.379*	0.397*	0.591**
	(0.216)	(0.222)	(0.262)
ERASMUS	0.296	0.235	0.0194
	(0.181)	(0.180)	(0.185)
Years since graduation	0.115***	0.161***	0.180***
	(0.0342)	(0.0379)	(0.0437)
Final mark: 110/110 or higher	0.235	0.309**	0.360**
	(0.144)	(0.149)	(0.162)
Graduation more than one year late	-0.186	-0.266*	-0.192
	(0.148)	(0.152)	(0.163)
Higher= Ph.D.	0.606	-0.0110	-0.502
	(0.756)	(0.563)	(0.348)
Higher= Master's	0.558*	0.466*	0.234
	(0.305)	(0.283)	(0.238)
Deg. topic Science and Techn.	-0.179	-0.270	0.0947
	(0.240)	(0.242)	(0.258)
Deg. topic Soc. Sciences	-0.341	-0.219	-0.292
	(0.268)	(0.275)	(0.284)
Deg. topic arts and human.	-0.116	-0.125	-0.0631
	(0.240)	(0.247)	(0.264)
Father university	0.601***	0.388*	0.472**
	(0.223)	(0.212)	(0.232)
No job experience	0.0587	-0.327	0.113
	(0.236)	(0.210)	(0.183)
Ideal job – High earnings	0.412**	0.415**	0.393*
	(0.183)	(0.177)	(0.201)
Constant	0.395	0.192	-0.0544
	(0.317)	(0.329)	(0.341)
Observations	1,471	1,390	1,189
Pseudo R2	0.052	0.056	0.069

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
The regression was calculated with a specification identical to the one used to estimate the propensity score.

Table A-2.17 – OLS regression net monthly income at PPP (in euros)

Dep. Var.: Net monthly income at PPP	2006	2007&2008	2009
Treatment	**200.6*****	**265.4*****	**18.48**
	(63.94)	**(70.18)**	**(78.58)**
Male	205.7***	319.4***	284.7***
	(48.59)	(51.22)	(55.40)
Married or unmarried partner	123.7**	118.2*	121.4*
	(60.28)	(63.36)	(67.86)
ERASMUS	151.3***	174.2***	190.2***
	(53.64)	(56.27)	(59.80)
Years since graduation	42.49***	36.50***	38.26***
	(10.36)	(11.74)	(12.86)
Final mark: 110/110 or higher	25.98	1.725	22.64
	(45.82)	(49.11)	(52.77)
Graduation more than one year late	-178.3***	-172.9***	-134.6**
	(46.79)	(50.19)	(53.42)
Higher= Ph.D.	-126.8	206.4	65.60
	(150.7)	(146.6)	(106.4)
Higher= Master's	-53.32	-2.552	108.6
	(71.82)	(71.94)	(67.21)
Deg. topic Science and Techn.	-96.30	53.65	111.6
	(73.86)	(78.19)	(85.46)
Deg. topic Soc. Sciences	-254.3***	-171.1*	17.49
	(86.25)	(90.54)	(100.6)
Deg. topic arts and human.	-512.4***	-363.6***	-285.0***
	(74.74)	(80.07)	(88.91)
Father university	215.0***	138.6**	144.8**
	(60.56)	(64.28)	(69.04)
No job experience	26.89	-30.50	-18.05
	(65.75)	(64.40)	(55.69)
Ideal job – High earnings	55.39	56.04	100.7*
	(52.60)	(52.83)	(58.83)
Constant	1,272***	1,160***	1,027***
	(100.4)	(107.8)	(112.8)
Observations	993	922	781
R2	0.204	0.209	0.185

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
The regression was calculated with a specification identical to the one used to estimate the propensity score.

Chapter 3.   Do student mobility grants lead to job (mis)matching?

3.1 Introduction

Since the launch of the Lisbon strategy in the year 2000, the European Union (EU) has placed a significant policy emphasis on knowledge and innovation as key sources of economic competitiveness. The implementation of the Lisbon Strategy and its translation into practical policy targets has resulted in a strong focus on Research and Development (R&D) at the EU, national and regional level. Howerver, soon after the policies were implemented it became apparent that sub-optimal investments in R&D were able to account for only a relatively small part of the overall EU innovation deficit. In particular, the lack of appropriate human capital – in both quantitative and qualitative terms – to complement R&D investments was and remains a relevant bottleneck in the EU innovation system: the fraction of the active population (25-64 years) that has completed higher education in Europe is 21%, as compared to 38% in the US and 36% in Japan (Ploeg and Veugelers, 2008). In more qualitative terms, the matching between supply and demand of skills is far from perfect in Europe. According to the EU Labour Force Survey "nearly 15% of European employees are over-qualified, on average, while 21% are under-qualified, implying a total incidence of vertical mismatch in the EU of about 36%" (EC, 2013, p. 17), with significant variations across countries and regions. Further economic integration (in particular in the New Member States), the economic crisis and the 'skill-biased' process of technological change are likely to reinforce this fundamental imbalance resulting in further polarisation driven by a reduction in the demand for medium-level skills (CEDEFOP, 2011).

The EU has responded to these challenges with policy aimed at addressing both quantitative and qualitative skill imbalances. On the one hand, the Europe 2020 strategy – the key EU strategic document on long-term growth and employment – has endorsed an EU-wide "effort to increase the share of 30-34 year olds with tertiary educational attainment to at least 40% by 2020" (EC, 2012a). On the other hand, the EU has identified a number of labour demand and supply factors leading to the observed mismatch: from the provision of education and training curricula better tailored to firms' needs, to reforms in labour market institutions and regulations (EC, 2013). In this context, labour mobility – both geographical and occupational – and the removal of all barriers to its full realisation are presented as key tools to tackle skills mismatches.

The importance of skilled labour mobility in order to minimize geographical and sectoral skills mismatches has been fully acknowledged by the EC with its *Action Plan for Skills and Mobility*: "Fostering growth in the European economy calls for better matching

between the skills demanded in growth sectors and regions and those available in the workforce. A fundamental aim of the European Union is indeed to create the opportunities which allow the individuals to take free and responsible decisions for their own life, including to move in another Member State. This may contribute to reducing sectorial and geographical imbalances and hence creates the conditions for a better use of the resources available" (EC, 2002, p. 6). Further, the "lack of geographical and occupational mobility" is again featured among the key determinants of skills mismatch in the EU labour market by the more recent EC (2013) *Staff Working Document Employment and Social Developments in Europe*.

While mobility has been consistently presented by the EU as a key factor to address skills mismatch, the practical policy tools for its active support have remained relatively limited. In this context, Learning Mobility (LM) programmes are regarded as ideal simultaneous responses to both quantitative and qualitative skill imbalances. For this reason they have attracted special and increasing attention. In fact, they can simultaneously increase the level of human capital of their recipients (learning) and reduce their probability of skills mismatch by broadening the geographical scope of their future job search process.

Based on this rationale the EU has invested in a number of LM schemes. The most popular examples are the ERASMUS programme for undergraduate students, the Marie Curie Action for pre- and post-doctoral researchers, and the Leonardo Programme, which provides staff, students, job-seekers and apprentices with targeted support to enhance their skills on a work placement in another European country (for a comprehensive review of EU LM programmes see Chapter 1).

More recently, EU-wide LM programmes have been complemented by regional-level schemes of a similar nature, usually financed by the European Social Fund (ESF). Individual EU regions – often economically disadvantaged areas – have promoted LM schemes for their residents, providing them with financial support to study in other countries or regions in order to improve their access to high-quality education and training while, at the same time, maximising their future employability.

Given the increasing popularity of these LM programmes at all levels, the objective of this work is to assess their ability to improve the job matching of their beneficiaries. In particular, we examine a programme called "Master and Back", which targets students. As such, our focus is on a particular type of LM, usually referred to as Student Mobility (SM). The programme is designed and implemented by the Sardinian Regional

Government (Italy) in order to fund studies at the post-graduate level by local residents in other regions or countries. The empirical analysis, based on a unique and original database combining administrative and individual-level data on beneficiaries and non-beneficiaries of the programme over several years, aims to isolate the impact of the programme on the quality of both vertical and horizontal matching – also referred to as overeducation and overskilling, respectively.

This study is highly innovative with respect to the existing empirical literature. Notwithstanding the emphasis placed by the literature on overeducation, overskilling and their determinants, limited attention has generally been devoted to the impact evaluation of policy programmes aimed at their reduction. This work shows that LM programmes might produce some individual-level benefits, working as people-based policies. However, the regions funding LM programmes might be unable to "incorporate" their benefits into their local labour markets, suggesting that these tools are not appropriate as place-based policies. In addition, we pay special attention to the problem of (self-)selection of individuals into the programme, shedding new light on the importance in this type of programmes of the procedures for the identification and selection of the beneficiaries. In fact, once the (self-)selection of the most talented and motivated individuals into the M&B programme is fully accounted for, its positive impact seems to disappear.

The remainder of this chapter is organised as follows: Section 3.2 presents the economic rationale for LM grants as tools to tackle job mismatching in the labour market, while Section 3.3 recalls the basic characteristics of M&B programme (already discussed more extensively in Chapter 1) and describes the unique datasets collected for its analysis. Then, Section 3.4 discusses the methodology, the empirical results and a number of robustness checks. Finally, Section 3.5 concludes with some policy implications.

3.2 Job matching and the rationale for learning mobility grants

The matching between educational achievements and skills (formally and practically) required on-the-job has been extensively analysed in the economic literature. The progressive expansion of the supply of skilled workers experienced by almost all developed countries has been only partially matched by new job opportunities, forcing workers to accept jobs with formal qualification requirements below their actual education level (Freeman, 1976, Hartog, 2000).

According to McGuinness (2006), 'overeducation' identifies the extent to which workers possess a level of education in excess of that formally required for their job. In addition to overeducation, the skills mismatch in the labour market can take other forms. For instance, though an individual may be well matched with regards to the formal levels of education required for their current employment, he might still be mismatched concerning the actual use of his skills in his current employment. This type of mismatching is known in the literature as overskilling (CEDEFOP, 2010).

In the standard neo-classical analysis of the labour market, overeducation is conceptualised as a temporary form of disequilibrium (Tsang and Levin, 1985). An increase in the supply of graduates would lead to a decrease in their wages. Firms would adjust their production process in order to take advantage of cheap skills available on the market, while fewer individuals would enter higher education due to its decreasing returns. As a result, after a transition period with overeducation, market-equilibrium would be achieved again and full utilization of available skills would be re-established (Alpin et al., 1998).

However, not only the underlying assumptions of this framework remain highly unrealistic, but also labour-demand side factors are in fact highly relevant to explain overeducation (Green and Zhu, 2010). A number of institutional factors might prevent firms from adjusting their production processes in response to the increase in skilled labour supply: national pay agreements, labour regulations, trade unions etc. In a Job Competition framework, market rigidities generate a persistent disequilibrium in the labour market where individual returns to education depend on job characteristics (Thurow, 1975). The labour market is not fuelled by the exchange of a given set of skills but by their generation through on-the-job training. Jobs are ordered according to their skill requirement and, symmetrically, job-seekers are put in a queue where their position depends on their level of education (a proxy for their on the job 'trainability'): the higher the education level, the higher the rank in the queue and the probability of being assigned a top-ranked job. Employment provides individuals with further training which, in its turn, further improves workers' position in the queue. In this 'job competition' framework any increase in skills' supply leads to more competition between workers to keep their relative position in the queue for a job, boosting further investments in education. As a consequence of this cumulative mechanism, overeducation is bound to increase in response to the generalised increase in skill supply and the combination of bumping-down and crowding out effects at the bottom of the workers' queue (Alpin et al., 1998, McGuinness, 2006).

Finally, the process of assignment of workers to their jobs might not follow an ordered process driven solely by job characteristics, but it might reflect the interaction between personal characteristics and income-maximisation: workers with specific characteristics will be attracted to particular jobs and sectors. In this context, imperfections in the matching mechanisms might lead to persistent overeducation (Assignment Models).

The empirical analysis of the determinants of skills mismatch has attracted an increasing emphasis in the economic literature in the US (Duncan and Hoffman, 1982, Sicherman, 1991), in Europe (Hartog and Oosterbeek, 1988, Sloane et al., 1999) and in the UK (Alpin et al., 1998, Barone and Ortiz, 2011, Battu et al., 1999, Chevalier, 2000, Dolton and Vignoles, 2000, Green and McIntosh, 2007, Kler, 2006, McGuinness, 2002, McGuinness, 2003, McGuinness and Bennett, 2007, McGuinness and Sloane, 2011). All these studies have, in different ways, compared assumptions and predictions of the various approaches for the analysis of overeducation. A number of empirical studies have challenged the assumptions of the neo-classical approach, suggesting that – contrary to human capital theory - not only overeducated workers tend to earn significantly less than non-overeducated workers but also that this is true independently of their skill level (as proxied by their university grades) and of their sector of activity (public or private) (Dolton and Vignoles, 2000). However, the type of skills possessed by the workers has a strong impact on their probability of experiencing overeducation: those who are specialised in fields – such as math, science and engineering – more valued by their potential employers are less likely to be overeducated (Green and McIntosh, 2007).

Geographical mobility is also highly correlated to overeducation. The job search process is driven by the simultaneous objectives of wage maximisation and optimal job matching (minimisation of overeducation). However, for married individuals the search radius is spatially constrained by the choices of other family members in order to maximise total family welfare (Frank, 1978). In response to these constraints, higher-income (usually male) family-members tend to be privileged, forcing their (usually female) partners to restrict their job-search process and accept both sub-optimal job matching (overeducation) and lower wages (Frank, 1978). McGoldrick and Robst (1996) – who extended Frank's approach to cover both male and female workers – find a significant negative correlation between overeducation and the size of the labour market in the US, confirming the link between geographical mobility (or the lack thereof) and overeducation.

The evidence on Europe echoes what is observed in the US. Büchel and Battu (2003) explicitly account for commuting distance between various labour markets in Germany and suggest that both married men and women in rural areas are more likely to be overeducated, suggesting that it is geographical accessibility that determines the quantity and quality of employment opportunities leading to a sub-optimal job matching in peripheral and rural areas. The density of the local labour marker (a proxy for the variety of opportunities available at the local level) is a key driver for job matching: individuals located in large labour markets are less likely to be overeducated, even if larger shares of highly skilled individuals are also concentrated in denser markets – Jauhiainen (2011) for the case of Finland; Tselios (2013) for the EU regions. Geographical mobility is a fundamental mechanism to overcome local labour markets constraints. Individuals search for jobs in close proximity to their place of residence while trying to make the best possible use of their skill set (Simpson, 1992). When they are unable to find a suitable job within their 'home' regional labour market, they have three alternative options: unemployment, overeducation or spatial flexibility (either by commuting or migration). Büchel and van Ham (2003) focus their empirical analysis on the third mechanism in order to assess the relative importance of meso-level opportunities (regional market characteristics) vs. micro-level individual mobility constraints (commuting and migration tolerance) as drivers for overeducation in Germany. Their results suggest that spatial flexibility reduces the likelihood of overeducation while regional unemployment rates do not directly affect it. Similar mechanisms influence the probability of overeducation of recent graduates in the Netherlands: education-job mismatches are reduced when graduates are geographically mobile (Hensen et al., 2009).

Accessibility to more diversified sets of employment opportunities, either in the form of denser local labour markets or – especially in peripheral areas – by means of geographical mobility, is a key factor to prevent overeducation. Even if the existing literature seems to converge on the key drivers of overeducation, the consensus on the role of public policy in influencing them (and possibly mitigating their adverse impacts) is less forthcoming.

In his seminal work on the analysis of the policy tools to trigger overeducation, McGuinness (2002) assesses the impact on overeducation of a programme designed to provide a pool of selected graduates in Northern Ireland with the opportunity of benefitting from postgraduate education in business and management followed by job placement assistance. The results suggest that while the training section of the

programme produced an adverse impact on overeducation, the job placement part contributed to its reduction. Overall, the possibility of reducing overeducation in the labour market crucially depends on an accurate identification of the areas and fields of skill shortage (that failed in Northern Ireland case with its a priori focus on managerial skills) and on active tools to minimise the mismatch between supply and demand of skills. Imprecise (or often arbitrary) categorisations of graduate jobs further aggravate mismatches, reducing the correlation between skills and earnings (McGuinness, 2003)

Notwithstanding the emphasis placed on geographical mobility in both the conceptual and empirical literature, the analysis of the impact on overeducation of active mobility policies remains very limited. Some existing contributions have been focused on the ERASMUS programme, suggesting that learning mobility increases the likelihood of labour mobility later in life, possibly mitigating the risk of overeducation by expanding the job search radius of its beneficiaries (Guellec and Cervantes, 2002, King and Ruiz-Gelices, 2003, Parey and Waldinger, 2011). Similar results have been produced with reference to the Marie Curie Programme (van de Sande et al., 2005).

3.3 Data collection and description

In order to assess the impact of SM grants on the job (mis)matching of the beneficiaries in the labour market, this chapter looks at the Master and Back (M&B) Higher Education which, as discussed in detail in Chapter 1, is a programme co-financed by on European Social Fund (ESF) and has been launched in 2005 by the Italian region Sardinia. The M&B programme provides its beneficiaries (eligible residents of the region) with a scholarship, covering both enrolment fees and a monthly stipend, to attend either a Master's or a Ph.D. programme at a university outside the boundaries of Sardinia, whether in Italy or abroad. In this regard, it can be considered a typical example of SM programme co-financed by the EU.

To analyse the impact of SM supported by the M&B programme on the job matching of its beneficiaries, two different datasets were collected. The first dataset, made available by the Regional Employment Agency[1] of the Sardinia Region, includes detailed information on all M&B applicants[2] in the calls 2006-2009[3]. The second dataset was instead provided by the University of Cagliari and includes detailed administrative and

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[1] Agenzia Regionale per il Lavoro.
[2] The dataset includes personal and contact details, previous education history, university of graduation, total funding for the M&B scholarship, etc.
[3] The impact of more recent M&B calls cannot be assessed yet given that many beneficiaries might not yet have completed the educational programme funded by the scheme, making it impossible to assess their labour market performance.

personal data (including contact details) of all university graduates over the period 2000-2010 (43,913 records in total). The control group for the study was necessarily selected from the individuals included in this second dataset, given that the number of rejected M&B applicants is too small to form a suitable control group[4]. The information included in both datasets has been complemented by a purpose-designed web survey targeting all M&B beneficiaries and a selected sample of non-applicants (but potentially eligible) graduates from the University of Cagliari. The survey generated an average response rate of 44% over the treated groups from the various calls[5] and 21% for the (much larger) control group[6].

Among the M&B recipients, only those who completed their Master's/Ph.D. were included in the final sample. Moreover, since the control group is based on a sample of graduates from the University of Cagliari, all the recipients who graduated from other universities were dropped in order to maximise comparability between treatment and control group. As a result, 383 observations, out of 878 were discarded. In addition, the M&B beneficiaries receiving funding not only from the 'Higher Education' section of the scheme but also from the 'Back' section (providing them with additional incentives to return to work in Sardinia, possibly biasing their location choices and the resulting quality of their job matching in the labour market) have also been discarded[7] (a total of 197 observations were dropped).

Based on the features of the treated group, the control group was also constructed from the University of Cagliari dataset. In order to identify a suitable control group, all graduates that received a M&B higher education scholarships (or 'Back' funding) were dropped, along with all graduates potentially ineligible for M&B funding[8] because their final graduation grade was too low (i.e., below 100/110) or because of their type of

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[4] As discussed in Chapter 2, almost all M&B applicants received the scholarship. Only 17% of the applicants (i.e., 414 applicants out of 2,440) failed to obtain the funding, mainly for bureaucratic/administrative reasons.

[5] The response rate to the web survey is close to 40% in 2006 and 2007 and higher than 50% in 2008 and 2009.

[6] This response rate is significantly higher than in similar papers and, in any case, the respondents do not need to form a representative sample of the entire population of the graduates of the University of Cagliari but they only need to provide a suitable control group for the M&B beneficiaries among whom response rate is significantly higher.

[7] The individuals benefitting from the 'Back' section of the programme as well may represent a biased subsample for which the assessment of the effect of the programme on job matching is likely to be problematic since they entered employment based on the availability of specific financial incentives, and they restricted their job search area to the Sardinian regional labour market as consequence of these monetary compensations. This latter issue is particularly relevant due to the fact that the level and quality of job matching is likely to be substantially affected by the size of the relevant labour market of reference (Buchel and van Ham, 2003).

[8] See Chapter 1 for a description of the eligibility criteria of the programme.

degree ("Specialist degree" or "*laurea vecchio ordinamento*" are necessary requirements for eligibility). In addition, all graduates aged 35 or above were also discarded (as ineligible for M&B funding), together with those who graduated after the application deadline of the last call taken into consideration (2009). Of the remaining individuals all those with a valid e-mail address were targeted by the web survey and the actual respondents form the control group used in the empirical analysis.

Finally, both the treated and control groups were limited to individuals who were employed at the time of the study in order to permit the assessment of the quality of the job matching in the labour market (as customary in the analysis of overeducation and overskilling). The two groups were compared along a number of relevant dimensions that could affect self-selection into treatment, including individual characteristics (such as gender and date of completion of their undergraduate degree), proxies for individual ability (such as duration of undergraduate studies in excess of the normal degree completion time), field of studies (science and technology vs. other fields) and personal preferences with reference to mobility (captured by the importance attributed by the respondents to presence of "cultural industries", ethnic and cultural diversity and presence of innovative firms and centres of excellence in research when making their location choices). As can be seen from Table A-3.3 of the Appendix 3.2, treated and control groups are well balanced as there are no statistically significant differences between them with respect to the variables considered.

3.4 Empirical analysis: outcomes, model of empirical analysis and results

This section focuses on the description of the outcomes that have been used to proxy job matching, of the methodology and empirical model underlying the analysis of the data and, finally, on the results that have been achieved.

3.4.1 Outcomes

The existing literature has measured job matching in various ways and, usually, a distinction is made between objective and subjective measures.

An example of an objective measure is the comparison of the individual level of education that is required by particular types of jobs according to the systematic classifications of jobs by education level: in the US such a classification is provided by the Dictionary of Occupational Titles (see for instance Rumberger, 1987). Another objective measure consists in considering overeducated those who have a level of

education higher than one standard deviation above their occupation's mean education level.

Concerning subjective measures, there are two main options to identify overeducation. The first one consists in asking the interviewees to self-report the level of education required to get their jobs and then of comparing this with the level of education actually possessed (Duncan and Hoffman, 1982, Sicherman, 1991, Sloane et al., 1999). The second one consists in asking the interviewees what kind of education would be needed by a person, in order to perform their respective jobs (for instance, see Alba-Ramirez, 1993).

The debate among the supporters of different measures has usually been only theoretical and each method has been supported by different but equally valid arguments. However, no empirical evidence is usually provided to support the primacy of one method over the others (for a review of this debate seeChevalier, 2000, Hartog, 2000, McGuinness, 2006). An exception to this custom is the work by Groot and Maassen van den Brink (2000), who compared the results obtained through different definitions of overeducation. According to their study, the subjective measure based on the comparison of self-reported level of education required for the job with the actual level achieved seems particularly reliable as compared to the others. For this reason in this study we rely on this measurement option.

Overeducation has been proxied by a variable called "vertical matching" which is constructed as a dummy taking the value 1 when the formal level of education required in the job application is equal to the actual level of education achieved by the individual. More specifically, individuals holding an undergraduate degree or higher levels of education who take positions for which at least an undergraduate degree is required, are considered matched.

Table 3.1 compares the level of vertical matching of untreated (or non-recipients) and treated individuals (or recipients). It shows that while only 14% of treated individuals are mismatched (or overeducated), as many as 24% of untreated individuals are in this condition, indicating that the recipients are 10% less likely to be overeducated than the non-recipients. In other words, this table suggests that taking the programme favours a better job matching. Naturally, this result will be further scrutinised later in this chapter to detect the influence of potential confounding factors.

Table 3.1 – Outcome "Vertical matching" by treatment status.

Treatment status	Mismatched		Matched		Total	
	N°	%	N°	%	N°	%
Untreated	189	24	601	76	790	100
Treated	26	14	155	86	181	100
Total	215	22	756	78	971	100

Source: authors' data.

Further, an additional outcome was also used in this analysis, since the outcome overeducation might be insufficient to account for the multiple dimensions of job matching. In particular, this measurement might hide the individual ability of the interviewees, since individuals endowed with the same level of formal education might have different levels of ability (Chevalier, 2000, Green and Zhu, 2010).

To measure the individual level of ability a new measure of job matching called overskilling (or horizontal matching) was introduced (Green and McIntosh, 2007) Overskilling is defined as a situation in which an individual is not able to fully utilise his/her skills and abilities in the current job irrespective of the level of formal education possessed and required (CEDEFOP, 2010). It has been measured by asking the interviewees either their level of satisfaction with regard to the match between their skills and jobs (Chevalier, 2000) or the extent to which past skills are used in the current job (Green and Zhu, 2010).

For this research we have decided to rely on the former question. Accordingly, the second (alternative) dependent variable is based on a web survey question asking the interviewees to rank their level of job satisfaction with respect to the matching between their skills and those required by their current job. Job matching/satisfaction in the web survey was measured on a scale from 1 to 7 (1 being very unsatisfied and 7 very satisfied). However, for the purposes of this study the results were re-aggregated in a single dummy variable, called "horizontal matching", which takes the value 1 if the individual declared to have a level of job satisfaction higher than 4.

As can be seen in Table 3.2 the rate of overskilling (or horizontal mismatching) is 37% for the untreated group and just 25% for the treated group. This suggests that the recipients are 12% less likely to become overskilled. Of course, as in the previous case, the results need further testing to measure the potential influence of confounding factors.

Table 3.2 – Outcome "Horizontal matching" by treatment status.

Treatment status	Mismatched		Matched		Total	
	N°	%	N°	%	N°	%
Untreated	289	37	501	63	790	100
Treated	46	25	135	75	181	100
Total	335	35	636	66	971	100

Source: authors' data.

Additional insight emerges by comparing the tables displaying vertical and horizontal matching: overskilling seems to affect a much higher number of individuals in our sample than overeducation (35% vs 22%, respectively). This difference suggests that overskilling might represent a very serious problem, possibly even worse than overeducation, though it is often neglected by the literature.

3.4.2 Methodology and model of empirical analysis

The estimation strategy for the effect of the programme on the level of job matching is based on a treatment and control group research design. Despite designing a control group that is likely to be comparable in terms of pre-treatment characteristics[9], a key issue in the estimation of the effect of the treatment on job matching remains the customary selection bias. Moreover the lack of data on the level of skill pre-treatment matching keeps us from being able to estimate the relation of interest in a Difference-in-Difference framework, further constraining in the causal estimation of the effect of the treatment.

Some omitted variables – for example, in terms of unobserved individual ability – might affect the probability of finding a job with better job matching after the M&B programme: M&B beneficiaries might be different from the control group in terms of their unobserved capabilities, which could improve their matching irrespective of the actual benefit from the programme. In addition, given that M&B funds post-graduate studies outside the Regional boundaries, this might lead to further selection bias problems: treatment and control groups may differ not only in terms of unobserved ability but also with respect to the subjects' attitude towards mobility simply due to personal or contextual reasons (e.g., family background or any other peer effect dynamics).

The dependent variable is a proxy for the quality of job matching in the period following the completion of the program. As explained in the previous sub-section, two proxies

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[9] As supported by the descriptive statistics for the two groups reported in Table A-3.3 of the Appendix 3.2.

for job matching are used: vertical and horizontal matching. The former measures the extent to which the recipients of the scheme perform jobs requiring their level of education, while the latter the extent to which they are content with the opportunities of exploiting their skills in their jobs. Moreover, considering overeducation (vertical matching) and overskilling (horizontal matching) at the same time can be of great value, since the interplay between these two concepts can shed further light on the underlying mechanisms through which human capital can be underutilised in the labour market (Green and McIntosh, 2007). For this reason an additional dependent variable was constructed summarising the previous ones. We called it "Total matching" and it is a dummy which is set to 1 if both vertical and horizontal matching are set to 1 (see Table A-3.1 for further information on the dependent variables).

The relation of interest is estimated adopting a linear probability model (LPM) and controlling for the endogeneity of the regressor of interest through an Instrumental Variable approach. The estimation equation of the probability of job matching takes the following form:

Eq. 3.1 $$Job\ matching_{it} = \beta_0 + \beta_1 Treatment_{i,t-1} + \beta X_{it} + \varepsilon_{it}$$

where: $Job\ matching_{it}$ is a dummy variable taking value 1 in the case of positive matching – for vertical, horizontal and total matching – for individual i at time t; $Treatment_{i,t-1}$ is a dummy taking value 1 if the individual received the treatment at time t-1; X_{it} is a vector of the post treatment controls typically used in studies on over-education discussed above (such as gender, age, marital status, field of studies and sector of employment)[10]; ε_{it} is a the error term.

The key challenge in the estimation of *Eq. 3.1* is the selection bias associated to the treatment status. Some omitted variables – for example in terms of unobserved individual ability – might affect the probability to find a better skill matching after the M&B programme: M&B beneficiaries might differ from the control group in terms of their a priori unobserved capabilities, improving their matching irrespective of the actual benefit (or 'value added') from the programme. In addition, given that M&B programme funds post-graduate studies outside Sardinia, this might lead to additional selection bias: treatment and control groups may differ not only in terms of unobserved ability but also with reference to their attitude toward mobility due to personal or contextual

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[10] For further information on the independent variables see Table A-3.2.

characteristics (e.g. family background or any other peer effect dynamics). The instrument needs to be correlated with the unobserved personal and contextual characteristics potentially driving the sorting mechanism into the program, but not correlated with additional omitted variables in the main regression. A first best approach in a policy evaluation framework would have been to use the eligibility status as an instrument for the treatment status. Unfortunately the category of 'eligible not treated' is too small to be a suitable option: as previously discussed a negligible number of individuals eligible for the grant did not benefit from the financial support provided by the Master and Back, implying the need of designing a different identification strategy. Given these constraints, this paper adopts an instrumental variable approach customary in the literature on the return to education: it makes use of the level of education of the mother of each individual – measured by the level of formal qualification held – as an instrument for unobserved individual and contextual characteristics (Ashenfelter and Krueger, 1994, Butcher and Case, 1994, Card, 1995, Card, 1999, Currie and Moretti, 2003).

Table 3.3 shows that, on average, the recipients' mothers have a higher level of education than the non-recipients' ones. For instance, while as many as 24% of the recipients' mothers have achieved tertiary education, just 15% of the non-recipients' mothers have achieved such level of education.

Table 3.3 – Mothers' level of education of the respondents by treatment status.

Treatment status	Primary		Secondary		High school		University		Total	
	N°	%	N°	%	N°	%	N°	%	N°	%
Untreated	174	22	209	26	287	36	120	15	790	100
Treated	26	14	30	17	81	45	44	24	181	100
Total	200	21	239	25	368	38	164	17	971	100

Source: Authors' data.

It must be noted that there is a long tradition of empirical analyses using family background information - such as mother's or father's education - to control for unobserved ability and explain the probability to engage in further education. Ashenfelter and Rouse (1998) show that up to 60% of the cross-sectional variation in schooling outcomes in a large sample of twins is explained by family factors. This claim is reinforced by Card (1999) showing that almost 30% of the observed variation in educational achievements among US adults is explained by parental education. In a similar vein the attitude of individuals towards mobility is positively affected by individualism and both parents' and peers' attitudes (Dette and Dalbert, 2005). Individuals from different social backgrounds - in terms of both familiar and broader

social structures - are subject to different incentives and different typologies of peer effects with reference to both further investments in education and mobility (the two key features of 'learning mobility' programmes). Individuals living in more (less) stimulating social environments might be more (less) likely to apply for a programme that is financing further education outside their 'home' region (Eliasson et al., 2003, Noe and Barber, 1993, Tabuchi and Thisse, 2002). In our paper the choice of 'mother education'[11] as an instrument builds on the idea that parental education is likely to be a good proxy for unobserved abilities as well as differences in those contextual conditions that may affect the decision to simultaneously invest in further education and move outside the boundaries of the region, in order to exploit the opportunities offered by the M&B programme. As with all IV strategies, one may argue that the instrument is unlikely to affect the dependent variable only through the treatment status, violating the exclusion restrictions. Unfortunately no direct test for the validity of the exclusion restrictions is available. However a number of robustness checks provide us with supportive evidence in favour of the reliability of the proposed strategy.

One final consideration should be taken into account when considering our results. The restriction of the analysis to individuals currently in employment is motivated by the focus of the paper on the probability of job matching within the labour market. It should be acknowledged that those in employment may represent by themselves a selected group, since overeducated people may decide to remain unemployed instead of accepting 'less suitable jobs' (Büchel and van Ham, 2003, Devillanova, 2013). From this point of view the selection bias may be exacerbated by the variable of interest – i.e. participation into the M&B programme - given that the main objective of the programme is precisely to increase the higher education achievements of its beneficiaries. However, this is a minor concern in our case. This typology of voluntary unemployment – according to the existing literature – is in fact driven by the size of the labour market (with selective access to employment becoming more problematic in small markets and when the job search area is geographically restricted) (see among others Hassler et al., 2005). As a consequence, this problem is unlikely to be systematically dependent on the treatment status given that M&B aims to promote simultaneously both further education and geographical mobility thus extending the job search area of its beneficiaries. Precisely this simultaneous focus on both higher education and mobility

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[11] Note that father's education was also tested as a possible alternative instrument. However its correlation with our variable of interest, the treatment status, is weak in the first stage and does not satisfy the standard weak instrument tests.

contributes to rule out the risk of potential systematic correlation between the treatment status and the phenomenon of selection into employment.

3.4.3 Main results and robustness checks

In this subsection, the regression model specified in Eq. 3.1 is estimated in order to evaluate the impact of the M&B programme on overeducation (vertical matching) and overskilling (horizontal matching) using the estimation strategy discussed above. Then, to verify the robustness of the technique, the same regressions are re-estimated using a proxy for overall matching (total matching) as a dependent variable. This alternative estimation allows us to check whether the impact of the programme emerges with respect to a more comprehensive (summary) measure of job matching/satisfaction instead of a reference to the individual components.

3.4.3.1 The impact of M&B on overeducation (vertical matching)

The results of the estimation on overeducation are reported in Table 3.4. Column 1 can be interpreted as the baseline model and presents the estimation of the effect of the treatment, while controlling for standard individual characteristics such as gender, marital status and age. The treatment status appears to be positively correlated to job matching and is significant at 5%. The individual controls report the expected signs. The estimation shows that females experience a lower probability of job matching along with older individuals, for whom a significance level of 10% is found. Interestingly marital status is positively correlated to job matching but not significant.

Column 2 controls for individual educational levels (excluding the qualification obtained under the Master and Back funding) through a set of qualification dummies. This control is essential to correctly identify the effect of the treatment, since individuals in the control group might have benefited from additional training after the degree independently from the Master and Back. Additional educational achievements are positively correlated to vertical matching but not statistically significant except for those holding a Master's degree (second level[12]) or a Ph.D. This evidence generally confirms that investing in education reduces the risk of overeducation.

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[12] In the Italian system a distinction is made between First level and Second level Master's degree: the former requires First level undergraduate degree, the latter Specialist (or second level) degree.

Table 3.4 – Treatment status and vertical matching

Dep.Var.: Vertical matching	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) 2SLS
Treatment	0.0752** (0.0307)	0.113*** (0.0314)	0.123*** (0.0316)	0.124*** (0.0319)	0.0907** (0.0370)	-0.190 (0.408)
Female	-0.0294 (0.0265)	-0.0274 (0.0261)	0.00948 (0.0265)	-0.0049 (0.0267)	-0.0037 (0.0266)	-0.0004 (0.0279)
Married	0.0220 (0.0316)	0.0190 (0.0315)	0.0127 (0.0311)	0.0001 (0.0307)	0.00250 (0.0308)	-0.0140 (0.0400)
Age	-0.0086** (0.0042)	-0.0099** (0.0042)	-0.0093** (0.0041)	-0.0103** (0.0041)	-0.0095** (0.0041)	-0.0104** (0.0043)
Master's (first level)		0.0490 (0.0705)	0.0801 (0.0712)	0.0366 (0.0717)	0.0321 (0.0720)	-0.0212 (0.106)
Master's (second level)		0.106*** (0.0312)	0.118*** (0.0310)	0.0856*** (0.0314)	0.0862*** (0.0313)	0.0532 (0.0589)
Ph.D.		0.212*** (0.0316)	0.169*** (0.0321)	0.153*** (0.0329)	0.152*** (0.0330)	0.111 (0.0697)
Economics and Statistics			-0.135*** (0.0411)	-0.0958** (0.0431)	-0.0970** (0.0427)	-0.0835* (0.0475)
Other social sciences			-0.148*** (0.0392)	-0.127*** (0.0397)	-0.126*** (0.0396)	-0.0806 (0.0739)
Humanities			-0.155*** (0.0329)	-0.176*** (0.0321)	-0.176*** (0.0320)	-0.181*** (0.0344)
Public Sector				0.162*** (0.0325)	0.167*** (0.0327)	0.168*** (0.0334)
Manufacturing				0.314** (0.144)	0.293** (0.143)	0.305** (0.145)
Services				0.188 (0.142)	0.183 (0.141)	0.205 (0.145)
Sardinia					-0.0635* (0.0349)	-0.174 (0.163)
Constant	1.077*** (0.140)	1.060*** (0.139)	1.109*** (0.138)	0.880*** (0.195)	0.910*** (0.195)	1.061*** (0.295)
Observations	960	960	960	960	960	960
R-squared	0.012	0.041	0.069	0.102	0.106	0.057

Source: Author's data.
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Column 3 controls for the type of qualification acquired by the individuals. This dimension is particularly interesting because it allows us to account for the heterogeneous effect that different educational backgrounds may have in terms of probability of vertical matching. When the whole set of dummies is included in the regression it becomes clear that only individuals with a background in science (the baseline category) distinguish themselves for achieving better job matching. Interestingly, the effect is significantly negative for all the other types of education.

Once qualification levels and types of educational background are controlled for, the treatment status remains positively associated to vertical matching and statistically significant at the 1% level.

Column 4 controls for the sectoral composition of the labour market and for employment in the public sector. Notably, those working in the public sectors are those showing the best vertical matching. This is probably dependent of the fact that participation in public sector selection procedures tends to be legally constrained by the formal level of qualification achieved by the applicant. After controlling for the sector of employment the M&B variable remains positively and significantly associated to vertical matching.

Columns 5 further controls for the location where the individuals are currently working, distinguishing in particular those working in Sardinia from those currently located outside the region. The control for Sardinia is negatively associated to quality of vertical matching and is significant at 10% level.

This evidence suggests that those that are currently employed in Sardinia tend to experience a worse vertical matching. This feature generally supports the idea that the probability of a better matching is positively associated to the extension of the job search area (Molho, 2001). More interestingly, including the control for the current geographical location of the individuals reduces both magnitude and significance of the treatment status, implying that the benefit of the programme tends to be higher for the beneficiaries that did not come back to Sardinia after their studies. This evidence seems to suggest that LM programmes – such as M&B – tend to be more successful as people-based policies rather than place-based initiatives: LM does improve the quality of the matching on the labour market (improving individual welfare) but this does not necessarily happen within the boundaries of the 'home' region sponsoring the programme, generating limited localised spill-over and benefits to economic development at the local level (contrary to the expectations of the regional government).

The impact of the programme remains statistically significant and positively associated to vertical matching despite the relevant number of 'post-treatment' controls added to the specification. This result suggests a robust correlation independent of individual or contextual characteristics. However, the positive effect of the M&B treatment might still be driven by selection bias: those that were selected for M&B funding may differ from their controls in terms of unobserved characteristics. These omitted variables may refer

to both the (as customary in the literature) unobserved ability that is assumed to bias the return of education and any other contextual characteristic that may affect the selection mechanism for the program. In particular, it is possible that individuals coming from different social backgrounds, in terms of both familiar and broader social structures, are subject to different incentives and different types of peer effects with reference to both further investments in education and mobility (the key features of LM programmes). Individuals living in more (less) stimulating social environments might be more (less) likely to apply for a programme that is financing further education outside their 'home' region.

An extensive literature suggests that individuals have highly heterogeneous attitudes towards geographical mobility and that unobserved ability and peer effects exert a significant influence on educational achievements (Belzil and Hansen, 2002, Card and Krueger, 1992, Willis and Rosen, 1978, Winston and Zimmerman, 2004), casting doubts on the possibility to correctly assess the impact of the programme without properly accounting for all these possible distortive mechanisms.

Consequently, to deal with this possible bias the regression model has been re-estimated adopting an Instrumental Variable approach. Building on the existing literature on the return of education, the parental educational level is adopted as an instrument for the treatment status.

The selected Instrumental Variable – mother's education – is significantly associated to the regressor of interest at 1% level (Table 3.5). Further, the F-statistic for the first stage is close to the customary value of ten (Staiger and Stock, 1997) and is generally above the threshold values identifies by Stock and Yogo (2005). These statistics exclude the risk of IV weakness and, therefore, support the validity of the Instrumental Variable approach. The IV results reported in Column 6 suggest that, after controlling for the selection bias associated with the sorting mechanism into the program, the impact of the programme itself becomes insignificant. In other words, once we account for the mechanisms that might induce certain individuals to apply for the M&B funding, the additional effect of the funds disappears: M&B beneficiaries benefit from a better matching (lower risk of overeducation) because of their a priori initial characteristics and not necessarily because of the scholarship received. This evidence seems to suggest that these individuals would have probably achieved a better vertical matching – lower risk of overeducation – even without the M&B programme.

Table 3.5 – First stage regression

Dep. Var.: Treatment	(1) OLS
Female	0.0170 (0.0241)
Married	-0.0571** (0.0220)
Age	-0.0012 (0.0034)
Master's (first level)	-0.1949*** (0.0422)
Master's (second level)	-0.1258*** (0.0230)
Ph.D.	-0.1539*** (0.0334)
Economics and Statistics	0.0494 (0.0374)
Other social sciences	0.1645*** (0.0355)
Humanities	-0.0137 (0.0271)
Public Sector	0.0076 (0.0254)
Manufacturing	0.0562 (0.0653)
Services	0.0880 (0.0555)
Sardinia	-0.3892*** 0.0317
Mother Education	0.0326*** (0.0114)
Constant	0.3740*** (0.1370)
Observations	960
R-squared	0.329

Source: Author's data.
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Therefore, our study casts some doubts on the economic rationale behind LM programmes given that a relevant share of their effect is highly dependent on the a priori self-selection of the most 'successful' individuals into these programmes. As a consequence, the design of these schemes should carefully consider the identification of appropriate eligibility criteria and selection procedure, complemented by appropriate information campaigns to encourage broaden participation at the application stage.

3.4.3.2 The impact of M&B on overskilling (horizontal matching)

The estimation strategy discussed above has been repeated using the horizontal matching proxy as dependent variable. In contrast to vertical matching, horizontal

matching captures the practical suitability of the workers' skill sets for the tasks they are expected to perform as part of their current job. For the same level of formal educational requirements (vertical matching) the quality of horizontal matching/job satisfaction may vary substantially depending on the possibility of consistently applying the distinctive skills acquired over the entire range of the workers' educational experiences.

Empirical results for horizontal matching are presented in Table 3.6. Like the previous analysis, Column 1 reports the estimate of the effect of the treatment after controlling for individual characteristics. The treatment is significant at the 1% level and positively associated to job matching. The sign for each individual-level control tends to be coherent with previous findings but, in comparison to vertical matching results, the significance levels are substantially higher.

Column 2 includes the whole set of dummies for the level of education, excluding the qualification obtained through M&B. Interestingly, only the Ph.D. dummy maintains its significance level suggesting that only individuals with very high educational achievements and distinctive skills benefit systematically from a better horizontal matching.

The results presented in Column 3 include controls for the type of qualification held. Also, in this case the signs of the coefficients remain unchanged and consistent with previous findings for vertical matching, though the general significance level tends to be lower. Comparing the various educational backgrounds, individuals with a scientific background are those experiencing the best horizontal matching.

Column 4 controls for the sectoral composition of the labour market and for public employment. Analogously to vertical matching, public sector workers tend to experience the better horizontal matching. Despite the relevance of some of the regressors included in the alternative specifications, the M&B treatment positively associated to the dependent variable and statistically significant.

Finally, in Column 5 the controls for geographical location are included by means of a dummy variable identifying individuals currently living and working in Sardinia. In this case, the variable is not statistically significant, suggesting that the quality of horizontal matching is not necessarily affected by the decision to return to Sardinia (contrary to vertical matching). However, as in the previous results, this additional control

substantially affects the significance level of the treatment status which remains positively correlated to horizontal matching but significant only at 10% level.

Table 3.6 – Treatment status and horizontal matching

Dep. Var.: Horizontal matching	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) 2SLS
Treatment	0.0904**	0.111***	0.117***	0.124***	0.0851*	0.232
	(0.0372)	(0.0381)	(0.0393)	(0.0394)	(0.0442)	(0.470)
Female	-0.0767**	-0.0744**	-0.0565*	-0.0704**	-0.0690**	-0.0707**
	(0.0305)	(0.0304)	(0.0317)	(0.0322)	(0.0321)	(0.0324)
Married	0.0684*	0.0654*	0.0625*	0.0580	0.0608*	0.0695
	(0.0350)	(0.0351)	(0.0352)	(0.0353)	(0.0353)	(0.0446)
Age	-0.0148***	-0.0152***	-0.0150***	-0.0160***	-0.0151***	-0.0147***
	(0.00480)	(0.00484)	(0.00490)	(0.00492)	(0.00493)	(0.00514)
Master's (first level)		0.0652	0.0787	0.0482	0.0431	0.0710
		(0.0782)	(0.0778)	(0.0784)	(0.0787)	(0.118)
Master's (second level)		0.0440	0.0506	0.0288	0.0295	0.0468
		(0.0362)	(0.0364)	(0.0372)	(0.0371)	(0.0665)
Ph.D.		0.124***	0.103**	0.0912*	0.0897*	0.111
		(0.0473)	(0.0483)	(0.0489)	(0.0488)	(0.0831)
Economics and Statistics			-0.0584	-0.0348	-0.0361	-0.0432
			(0.0471)	(0.0486)	(0.0483)	(0.0533)
Other social sciences			-0.0810*	-0.0742	-0.0735	-0.0972
			(0.0460)	(0.0466)	(0.0467)	(0.0878)
Humanities			-0.0753*	-0.0949**	-0.0938**	-0.0912**
			(0.0392)	(0.0395)	(0.0394)	(0.0402)
Public Sector				0.105***	0.111***	0.110***
				(0.0364)	(0.0365)	(0.0364)
Manufacturing				0.00999	-0.0144	-0.0208
				(0.133)	(0.132)	(0.134)
Services				-0.00624	-0.0125	-0.0242
				(0.128)	(0.127)	(0.133)
Sardinia					-0.0732*	-0.0152
					(0.0387)	(0.190)
Constant	1.178***	1.159***	1.185***	1.187***	1.222***	1.143***
	(0.164)	(0.165)	(0.167)	(0.203)	(0.203)	(0.322)
Observations	960	960	960	960	960	960
R-squared	0.024	0.031	0.036	0.045	0.049	0.039

Source: Author's data.
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Also concerning horizontal matching, the potential endogeneity of the treatment status needs to be carefully considered. Therefore, to produce unbiased results the regressor of interest (M&B treatment status) is instrumented by the education level of each individual's mother. As before, the instrument is characterized by a strong first stage

that confirms its relevance[13]. Results for the Instrumental Variable estimation are reported in Column 6.

After controlling for the endogeneity due to the selection bias, the treatment status becomes insignificant. This finding confirms previous evidence on vertical matching, suggesting that the treatment effect is strongly dependent on the self-selection into the program. This evidence is highly relevant for policy purposes: LM programmes might in principle affect the job satisfaction and horizontal matching of their recipients. However, once again, the design of appropriate selection procedures is of paramount importance in order to design policies that result in added value for participants that might otherwise be unable to afford high-quality post-graduate education abroad.

3.4.3.3 Robustness checks

The results for both vertical and horizontal matching tend to confirm some concerns regarding the 'selective' mechanisms that might drive the selection of individuals into the programme. The Instrumental Variable approach implemented to correct for these potential problems passed the first stage robustness checks confirming that the selected instrument is strongly correlated with the variable of interest. Notwithstanding these checks and despite the construction of a control sample with precisely the same features of the M&B beneficiaries (in terms of final grade, type of degree, age, etc.) a possible violation of the exclusion restrictions might still bias the results. In fact, the selected instrument may be still correlated with some of the additional controls thus requiring further attention. Unfortunately, no direct test for the validity of the exclusion restrictions is available, but some supportive evidence can still be provided in line with the most advanced literature on causal identification.

Table A-3.4 and Table A-3.5, respectively for vertical and horizontal matching, present the re-estimation of the full regression models reported in Columns 6 of both Table 3.1 and Table 3.3, respectively, progressively eliminating all the controls. These results confirm that the impact of the treatment status after instrumenting through the level of mother's education is not systematically affected by the specification of the model and the inclusion of additional regressors.

There exists a possibility that the impact of the programme becomes apparent only when a more comprehensive dimension of job satisfaction is taken into account, rather

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[13] Note that the first stage regression is equal to that reported in Table 3.5.

than considering its sub-components separately through the vertical and horizontal matching proxies. We exploit this possibility to implement a further robustness check by repeating the entire estimation procedure with 'total matching' as dependent variable[14]. The results reported in Table A-3.6 confirm that the estimation of the treatment status does not change when this new combined dependent variable is taken into account. The sign of the treatment is still positive and significant in the OLS but it becomes insignificant when the potential selection bias is taken into account in the IV estimations. The sign and significance level of the additional controls remain generally consistent with the main results.

Finally, the estimation strategy performed aims to assess the matching probability after controlling for a number of individual characteristics and some basic controls for labour market characteristics, namely sector and location. As acknowledged by the existing literature, such labour market characteristics may play a concurrent and substantial role in determining the level and quality of the job matching. Although our data do not provide the necessary information to fully control for demand-supply conditions in each destination labour market we do have information on the size of the employers in which the recipients of the scheme found employment. We exploit this information to perform a further robustness check. Consider that individuals working for larger companies that provide better opportunities for training and learning might be more satisfied than others individuals. Furthermore, consider that the characteristics of the employers – including their size – are highly correlated to the structure of the local production system in terms of types of economic actors demanding skilled individuals in the local labour market.

To control for this additional dimension, the regression of interest has been replicated to include the size of firm employing the individual as an additional control. As reported in Table A-3.7, despite some weak evidence of a positive correlation between firm size and job matching, the inclusion of these additional controls does not affect the estimation of the M&B treatment status.

Overall, the results presented above are robust to a number of checks, including the specification of the model, alternative definitions of the dependent variable and inclusion of additional controls. The effect of the treatment on job matching is positive

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[14] Recall that the 'Total matching' dummy variable takes the value 1 when an individual achieves both vertical and horizontal matching.

and significant. However, it becomes non-significant when the (self-)selection mechanisms of the recipients into the programme are controlled for.

3.5 Discussion and conclusions

Both vertical and horizontal mismatching in the labour market have received substantial attention in the economic literature, with particular attention being paid to their links to human capital investments and geographical mobility. However, to the best of our knowledge, very few existing contributions have attempted to assess the impact of active labour market policies aiming to reduce job mismatching by means of learning mobility programmes (notwithstanding the increasing popularity of these schemes). This work tries to fill this gap in the literature by implementing a careful causal analysis of the impact of the M&B programme on different forms of job (mis)matching in the labour market, through an innovative dataset combining administrative data with unique, individual-level, information.

The empirical results suggest that LM programmes have a strong potential to improve the quality of both vertical and horizontal matching. However, there are two fundamental caveats that concern this potential and that this study has uncovered: a) the benefits of these programmes are not necessarily reaped by the region funding the scheme, particularly if the region has weak labour market conditions; b) the value added of the programme crucially depends on the procedures implemented for the selection of the beneficiaries since the key risk with these programmes is to fund individuals who would invest in further education and mobility even without public support.

The results produced by this study suggest that the M&B programme works as a people-based policy rather than a place-based policy given that the individuals working in Sardinia tend to benefit less from the programme in terms of both vertical and horizontal matching. This symptom calls for a careful assessment of the underlying causes that might have determined it.

In general, being located in large urban agglomerations is considered crucial for achieving high returns from individual human capital. However, Sardinia is one of the most scarcely populated Italian regions – just 68 inhabitants per square kilometre, as compared to the Italian average of 199. Moreover, it does not have large urban centres – the largest one is Cagliari with just over 150.000 residents (about 450.000 if we also consider the surrounding metropolitan area).

Furthermore, as discussed in Chapter 1, there are various elements suggesting the unattractiveness of the regional labour market for the highly skilled. In particular, the levels of innovation are very low: 0.5% of regional GDP invested in R&D by the public sector (as compared to 0.64% of the EU average), just 0.08 of private invested in R&D (among the lowest in Europe!), 0.9% of R&D members of staff (as compared to 1.5% of the EU average) and 0.4% of researchers (as compared to 0.7% of the EU average). Consider that the lack of innovation is also favoured and aggravated by the small average size of Sardinian firms which, alone, can hardly find resources to invest in R&D.

An additional factor that likely hinders the opportunities of job matching is represented by the lack of job opportunities: traditionally scarce – in 2009 unemployment rate was 9.9%, compared to the Italian average of 6.1% – these have been further reduced by the economic crisis – by 2012 the unemployment rate in Sardinia reached 15%, compared to the national average of 10.7%.

In short, the lack of urban agglomeration, scarce innovation capacity and problems with high unemployment (further worsened by the economic crisis) make Sardinia an environment that does not favour good job matching.

Besides the characteristics of the regional labour market, there are other factors that also undermine the matching between skills and jobs at the regional level. In particular, there is a mismatch between education policies and local skill requirements, and a substantial lack of public support to favour good matching between the skills of recipients wishing to return and the existing job vacancies in the regional labour market.

Concerning the mismatch between education policies and local skill requirements, since the call 2007 the programme identified priority sectors (see Table 1.4 for an overview) in order to concentrate the resources of the programme on specific topics that were expected to fulfil the future job vacancies in the regional labour market, consistently with the strategic plans of the regional government. Unfortunately, the procedure for the selection of these priority sectors was characterised by little transparency and scarce methodological rigour, which cast serious doubts on the ability of the programme management to make strategic decisions that could help the Sardinian economy. Moreover, the huge increase of the calls' budget – discussed in Chapter 2 – resulted in a lack of selection. In other words, all the topics were financed irrespective of their expected usefulness.

On the other hand, concerning the lack of public support to favour good skill matching some effort has been put into ameliorating the situation. In fact various initiatives have been deployed by the managing authority of the M&B scheme to favour the matching between returners and local job vacancies: databases have been created with the CVs of the recipients willing to return and the employers potentially interested in hiring them, workshops have been organised to make returners and employers meet in person, seminars about the Sardinian labour market have been held to provide guidance to the returners, and so on. However, thus far none of these strategies seem to have been particularly effective.

There are various possible explanations for the ineffectiveness of these attempts to favour the matching between returners and regional job vacancies. In particular, employment services should not be limited to specific initiatives (in this case the M&B programme) but should be provided permanently to both job-seekers and potential employers. In fact, they require a high level of specialisation, professionalism and data on the labour market whose collection might require a long time (World Economic Forum, 2014).

In other countries employment services are managed by highly specialised human resources endowed with comprehensive datasets about the job vacancies and their characteristics (World Economic Forum, 2014). Unfortunately Sardinia, though endowed with specific functions in this field[15], so far has been unable to set out an efficient public employment service. The current system is based on two twin networks of offices having roughly the same competences – the CSLs (*Centri dei Servizi per il Lavoro*) and the CESILs (*Centri Servizi per l'Inserimento Lavorativo*). They are almost completely uncoordinated with each other and are not supported by any effective information system (for further information on how employment services are organised in Sardinia see Meloni, 2013). Surely, improving their quality would most likely be very beneficial to residents of Sardinia in general and, more specifically, to the matching of the M&B returners with appropriate job vacancies.

Another issue that emerges clearly from our results is the presence of strong positive self-selection into the programme – i.e., the recipients are comprised of individuals that,

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[15] The Legislative Decree n. 469/1997 for the reorganization of public employment services devolved this function to the regions.

on average, had higher chances of achieving good levels of job matching irrespective of participating to the programme.

The programme aimed to select the most promising students in Sardinia, irrespective of where they were born and of their social origin (individual equity principle). In contrast, our results provide evidence that the selection of the recipients took place based on their social background, proxied by their mothers' levels of education. Of course, this positive self-selection problem provides evidence that the programme was ineffective in pursuing its objectives, since it shows that the public resources have been invested to achieve outcomes that would have been achieved irrespective of the programme (scarce value added).

There are various factors that might have facilitated positive self-selection. The possibly most important one is related to the excessive increase of the calls' resources (over-budgeting) discussed earlier. While the selection criteria of the scheme were meant to select students based on their CV and on their proposed educational programme, the lack of selection favoured individuals coming from higher social backgrounds since, most likely, they were more used to travelling and in their social context student mobility was more valued as compared to individuals with more humble social origins.

In addition, the implementation of the programme may have further favoured candidates from higher social backgrounds through the major delays in the assessment of the applications and in the payment of the scholarships. In some cases several months passed from the submission of the applications to the actual award of the scholarships. Similar delays occurred from when the scholarships were awarded to their actual payment. These delays entailed a burden on many participants to initially cover many expenses, such as tuition fees and moving expenses, with their own financial resources while they waited for their scholarships to be liquidated. While recipients from a high social background may have easily dealt with this issue thanks to the financial support of their families, individuals from lower social backgrounds may have found it more difficult or impossible, potentially leading them to abandon participation altogether.

In order to reduce the potential drawback associated to positive self-selection based on individual social background, information campaigns to promote the scheme and the potential opportunities offered by further education outside the region should be prepared since this would broaden participation, recruiting groups that would otherwise

not be involved. Transparent and fair selection procedures are also important to ensure the openness of the scheme to all applicants, including those outside the local elite. High-quality targeting of the programme is of fundamental importance. The inclusion of family income considerations among the eligibility criteria might be unrealistic in weak institutional contexts: in the case of Italy the officially reported family income and wealth might differ substantially from actual individual socio-economic conditions, due to black markets and tax evasion. However, it might still be possible to earmark funding for specific local groups that might be disproportionally less likely to be involved in high-level educational opportunities outside the region (e.g., women or people living in rural areas).

Appendix 3.1 Description of the variables

The table below provides a description of the variables that are used in this chapter, their sources and, if relevant, the web survey question from which they have been drawn. For some variables the column Source reports multiple sources. This indicates that the variable was created by integrating the content of different sources. This has been done for two reasons:

- Some records from the Regional Employment Agency were incomplete;
- Some information contained in the dataset of the Regional Employment Agency was not provided in the dataset of the University of Cagliari.

In both instances the missing information was collected through the web survey system, which included or skipped questions depending on the completeness of the interviewee's record.

A further remark concerns the column Q. which, when relevant, reports the question/s of the web survey from which the variables were drawn. For some variables there are multiple questions since, due to the structure of the web questionnaire, they might have been built by integrating information from different questions.

Table A-3.1 – Description and source of the dependent variables

Dependent Variables	Description	Source	Q.*
Horizontal matching	A dummy which takes the value 1 if the individual declared to be satisfied by the matching between his/her job and his/her skills. In a scale from 1 to 7, levels of satisfaction higher than 4 have been assigned the value 1; lower levels the value 0.	Web survey	5.18 (1)
Vertical matching	A dummy which takes the value 1 when the formal level of education required in the job application is equal to the actual level of education achieved by the individual	Web survey	5.17, 2.3, 2.a.3, 2.11, 2.19
Total matching	A dummy which takes the value 1 when both horizontal and vertical matching take the value 1	Web survey	5.18, 5.17, 2.3, 2.a.3, 2.11, 2.19

Table A-3.2 – Description and source of the independent variables

Independent Variables	Description	Source	Q.*
Age	Age of the interviewees when the Web survey was conduced	University of Cagliari + Regional Employment Agency	
Cultural industries	A dummy identifying the interviewees who declared that "the presence of a good choice of leisure activities (theatres, cinemas, night life, etc." was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Cultural/ethnic diversity	A dummy identifying the interviewees who declared that the presence of "Ethnic and cultural diversity" was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Current location: Sardinia	A dummy identifying individuals located in Sardinia when the survey was conducted	Web survey	1.2
Date of undergrad title	A number identifying the date in which undergraduate studies were concluded	Regional Employment Agency + University of Cagliari	
Deg. topic Science and Techn.**	A dummy identifying individuals who had an undergraduate degree in Science and Technology	University of Cagliari + Regional Employment Agency + Web survey	1.5.2
Employees 10-49	A dummy identifying individuals employed in firms with 10-49 members of staff	Web survey	5.16
Employees 50-99	A dummy identifying individuals employed in firms with 50-99 members of staff	Web survey	5.16
Employees 100-249	A dummy identifying individuals employed in firms with 100-249 members of staff	Web survey	5.16
Employees 250 & more	A dummy identifying individuals employed in firms with 250&more members of staff	Web survey	5.16
Female	A dummy identifying females	Regional Employment Agency + University of Cagliari	
Graduation more than one year late	A dummy identifying the interviewees who have graduated later than one year beyond normal completion time	Web survey + University of Cagliari + Regional Employment Agency	1.5.1

Independent Variables	Description	Source	Q.*
Higher= Ph.D.	A dummy identifying the interviewees whose highest level of education is Ph.D.	Web survey + Regional Employment Agency	2.3, 2.a.3, 2.11, 2.19
Higher=Master's (first level)	A dummy identifying interviewees whose higher level of education is First level Italian Master's	Regional Employment Agency + Web survey	2.3, 2.a.3, 2.11, 2.19
Higher=Master's (second level)	A dummy identifying the interviewees whose higher level of education is a second level Italian Master's	Regional Employment Agency + Web survey	2.3, 2.a.3, 2.11, 2.19
Innovation and research centres	A dummy identifying interviewees who declared that "being in proximity of innovative firms and/or research centres" was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Manufacturing	A dummy identifying individuals currently employed in the manufacturing sector	Web survey	4.8
Married	A dummy identifying married or unmarried partners	Web survey	1.3
Mother university	A dummy identifying interviewees whose mother holds a university degree	Web survey	6.1
Postgrad topic arts and human.***	A dummy identifying individuals whose higher level of education is in Arts and Humanities	Regional Employment Agency + Web survey	1.5.2, 2.4, 2.a.6, 2.13, 2.21
Postgrad topic sci. and techn.****.	A dummy identifying individuals whose higher level of education is in Science and Technology	Regional Employment Agency + Web survey	1.5.2, 2.4, 2.a.6, 2.13, 2.21
Postgrad topic econ. and stats	A dummy identifying individuals whose higher level of education is in Economics and Statistics	Regional Employment Agency + Web survey	1.5.2, 2.4, 2.a.6, 2.13, 2.21
Postgrad topic Soc. Sciences*****	A dummy identifying individuals whose higher level of education is in other Social Sciences (i.e., other than Economics and Statistics)	Regional Employment Agency + Web survey	1.5.2, 2.4, 2.a.6, 2.13, 2.21
Public sector	A dummy identifying individuals currently employed in the public sector	Web survey	5.8, 5.11
Services	A dummy identifying individuals currently employed in the service sector	Web survey	4.8

Independent Variables	Description	Source	Q.*
Treatment	A dummy identifying the recipients of the M&B Higher Education programme	Regional Employment Agency	

*Question of the Web survey (if relevant).

** This dummy has been created by aggregating the following topics drawn from the relevant questions of the web questionnaire: Scientific, Chemistry, Pharmaceutical, Geo-biological, Engineering, Architecture, Agriculture.

*** This dummy has been created by aggregating the following topics drawn from the relevant questions of the web questionnaire: Literature, Linguistics, Teaching, Psychology.

**** This dummy has been created by aggregating the following topics drawn from the relevant questions of the web questionnaire: Scientific, Chemistry, Pharmaceutical, Geo-biological, Engineering, Architecture, Agriculture.

***** This dummy has been created by aggregating the following topics drawn from the relevant questions of the web questionnaire: Political-social, Law.

Appendix 3.2   Balancing test

Table A-3.3 – Detecting potential selection bias in the treatment

Independent variables	Group	Obs.	Mean	Sd. Err.	s.d.	diff.	Sd. Err.	T-test	P-value
Female	Contr.	790	0.61	0.02	0.49	0.03	0.04	0.71	0.48
	Treat.	181	0.58	0.04	0.49				
Date of undergrad title	Contr.	790	16444	31	877	-116	74	-1.57	0.12
	Treat.	180	16560	72	960				
Graduation more than one year late	Contr.	790	0.95	0.04	1.00	0.08	0.08	0.93	0.35
	Treat.	181	0.87	0.07	0.99				
Deg. topic science and techn.	Contr.	790	0.40	0.02	0.49	-0.04	0.04	-0.90	0.37
	Treat.	181	0.44	0.04	0.50				
Cultural industries	Contr.	255[1]	0.05	0.01	0.22	0.01	0.02	0.33	0.75
	Treat.	181	0.04	0.02	0.21				
Cultural/ethnic diversity	Contr.	255	0.09	0.02	0.29	-0.03	0.03	-0.92	0.36
	Treat.	181	0.12	0.02	0.33				
Innovation and research centres	Contr.	255	0.09	0.02	0.29	0.02	0.03	-0.56	0.57
	Treat.	181	0.11	0.02	0.31				

Source: authors' data.

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[1] In the last three rows the size of the control group is significantly smaller than the other ones because the information concerning those variables only includes individuals who had experienced some form of mobility lasting at least 6 months in their lives. However, while by definition all the units of the treated group have experienced such mobility, only 255 units of the control group have done so (corresponding to 32% of the full control group).

Appendix 3.3   Results and robustness checks

Table A-3.4 – Robustness check (1) – Alternative specifications of the model (vertical matching)

Dep. Var.: Vertical matching	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS
Treatment	-0.190 (0.408)	-0.0552 (0.284)	-0.161 (0.294)	-0.0817 (0.275)	0.0747 (0.342)
Female	-0.000417 (0.0279)	-0.00384 (0.0271)	0.00813 (0.0275)	-0.0301 (0.0268)	-0.0294 (0.0274)
Married	-0.0140 (0.0400)	-0.0167 (0.0415)	-0.0133 (0.0422)	0.00151 (0.0407)	0.0219 (0.0474)
Age	-0.0104** (0.0043)	-0.0120** (0.0049)	-0.0122** (0.0053)	-0.0126** (0.0058)	-0.0086 (0.0072)
Master's (first level)	-0.0212 (0.106)	-0.000313 (0.0921)	0.0174 (0.0971)	0.00937 (0.0901)	
Master's (second level)	0.0532 (0.0589)	0.0580 (0.0551)	0.0714 (0.0587)	0.0732 (0.0576)	
Ph.D.	0.111 (0.0697)	0.122** (0.0602)	0.118* (0.0640)	0.175*** (0.0630)	
Economic and Statistics	-0.0835* (0.0475)	-0.0832* (0.0481)	-0.114** (0.0483)		
Other social sciences	-0.0806 (0.0739)	-0.0908 (0.0665)	-0.0921 (0.0670)		
Humanities	-0.181*** (0.0344)	-0.182*** (0.0342)	-0.168*** (0.0375)		
Public Sector	0.168*** (0.0334)	0.156*** (0.0341)			
Manufacturing	0.305** (0.145)	0.354** (0.159)			
Services	0.205 (0.145)	0.214 (0.150)			

Dep. Var.: Vertical matching	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS
Sardinia	-0.174 (0.163)				
Constant	1.061*** (0.295)	0.959*** (0.235)	1.284*** (0.232)	1.212*** (0.258)	1.078*** (0.311)
Observations	960	960	960	960	960
R-squared	0.057	0.077	0.005	0.010	0.012

Source: Author's data.
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A-3.5 – Robustness check (2) – Alternative specification of the model (horizontal matching)

Dep. Var.: Horizontal matching	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS
Treatment	0.232 (0.470)	0.244 (0.328)	0.184 (0.328)	0.212 (0.312)	0.343 (0.391)
Female	-0.0707** (0.0324)	-0.0710** (0.0320)	-0.0561* (0.0315)	-0.0730** (0.0308)	-0.0722** (0.0319)
Married	0.0695 (0.0446)	0.0692 (0.0464)	0.0687 (0.0457)	0.0745* (0.0446)	0.0936* (0.0527)
Age	-0.0147*** (0.0051)	-0.0148** (0.0058)	-0.0143** (0.0060)	-0.0138** (0.0066)	-0.0105 (0.0082)
Master's (first level)	0.0710 (0.118)	0.0729 (0.103)	0.0935 (0.106)	0.0858 (0.101)	
Master's (second level)	0.0468 (0.0665)	0.0473 (0.0624)	0.0616 (0.0646)	0.0610 (0.0635)	
Ph.D.	0.111 (0.0831)	0.112 (0.0741)	0.115 (0.0759)	0.144* (0.0765)	
Economic and Statistics	-0.0432 (0.0533)	-0.0432 (0.0536)	-0.0635 (0.0531)		
Other social sciences	-0.0972 (0.0878)	-0.0981 (0.0788)	-0.0941 (0.0775)		
Humanities	-0.0912** (0.0402)	-0.0913** (0.0405)	-0.0724* (0.0417)		
Public Sector	0.110*** (0.0364)	0.109*** (0.0377)			
Manufacturing	-0.0208 (0.134)	-0.0165 (0.152)			
Services	-0.0242 (0.133)	-0.0234 (0.136)			
Sardinia	-0.0152 (0.190)				

Dep. Var.: Horizontal matching	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS
Constant	1.143*** (0.322)	1.134*** (0.248)	1.144*** (0.263)	1.080*** (0.294)	0.974*** (0.357)
Observations	960	960	960	960	960
R-squared	0.039	0.037	0.033	0.025	-0.017

Source: Author's data.

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A-3.6 – Robustness check (3) – Alternative dependent variable (total matching)

Dep. Var.: Total matching	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) 2SLS
Treatment	0.108*** (0.0386)	0.113*** (0.0314)	0.123*** (0.0316)	0.124*** (0.0319)	0.0907** (0.0370)	0.308 (0.483)
Female	-0.0608* (0.0315)	-0.0274 (0.0261)	0.00948 (0.0265)	-0.00486 (0.0267)	-0.00370 (0.0266)	-0.0477 (0.0332)
Married	0.0415 (0.0366)	0.0190 (0.0315)	0.0127 (0.0311)	8.78e-05 (0.0307)	0.00250 (0.0308)	0.0427 (0.0465)
Age	-0.0135*** (0.00493)	-0.00988** (0.00417)	-0.00926** (0.00415)	-0.0103** (0.00406)	-0.00955** (0.00406)	-0.0134** (0.00525)
Master's (first level)		0.0490 (0.0705)	0.0801 (0.0712)	0.0366 (0.0717)	0.0321 (0.0720)	0.0706 (0.122)
Master's (second level)		0.106*** (0.0312)	0.118*** (0.0310)	0.0856*** (0.0314)	0.0862*** (0.0313)	0.0657 (0.0682)
Ph.D.		0.212*** (0.0316)	0.169*** (0.0321)	0.153*** (0.0329)	0.152*** (0.0330)	0.143* (0.0857)
Economic and Statistics			-0.135*** (0.0411)	-0.0958** (0.0431)	-0.0970** (0.0427)	-0.0996* (0.0553)
Other social sciences			-0.148*** (0.0392)	-0.127*** (0.0397)	-0.126*** (0.0396)	-0.140 (0.0905)
Humanities			-0.155*** (0.0329)	-0.176*** (0.0321)	-0.176*** (0.0320)	-0.127*** (0.0405)
Public Sector				0.162*** (0.0325)	0.167*** (0.0327)	0.130*** (0.0369)
Manufacturing				0.314** (0.144)	0.293** (0.143)	0.0428 (0.144)
Services				0.188 (0.142)	0.183 (0.141)	0.0170 (0.142)
Sardinia					-0.0635* (0.0349)	-0.00372 (0.195)

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Dep. Var.: Total matching	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) 2SLS
Constant	1.084*** (0.169)	1.060*** (0.139)	1.109*** (0.138)	0.880*** (0.195)	0.910*** (0.195)	0.991*** (0.341)
Observations	960	960	960	960	960	960
R-squared	0.021	0.041	0.069	0.102	0.106	0.042

Source: Author's data.

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A-3.7 – Robustness check (4) – Additional controls

Dep. Var.:	(1) 2SLS Vertical Matching	(2) 2SLS Horizontal Matching
Treatment	-0.206 (0.430)	0.219 (0.496)
Female	-0.00206 (0.0277)	-0.0731** (0.0322)
Married	-0.0151 (0.0404)	0.0703 (0.0453)
Age	-0.0107** (0.00440)	-0.0145*** (0.00518)
Master's (first level)	-0.0203 (0.108)	0.0652 (0.122)
Master's (second level)	0.0604 (0.0594)	0.0482 (0.0672)
Ph.D.	0.104 (0.0728)	0.108 (0.0868)
Economic and Statistics	-0.0727 (0.0487)	-0.0347 (0.0553)
Other social sciences	-0.0809 (0.0767)	-0.0965 (0.0915)
Humanities	-0.189*** (0.0346)	-0.0957** (0.0402)
Public Sector	0.170*** (0.0340)	0.116*** (0.0374)
Manufacturing	0.327** (0.144)	-0.0138 (0.138)
Services	0.213 (0.143)	-0.0314 (0.136)
Sardinia	-0.200 (0.176)	-0.0295 (0.204)
Employees 10-49	0.0374 (0.0362)	-0.0510 (0.0436)
Employees 50-99	-0.0631 (0.0656)	-0.0143 (0.0747)
Employees 100-249	-0.0764 (0.0617)	-0.103 (0.0704)
Employees 250 & more	-0.0710* (0.0390)	-0.0662 (0.0441)
Constant	1.105*** (0.316)	1.195*** (0.349)
Observations	960	960
R-squared	0.062	0.045

Source: Author's data.
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Chapter 4. Why do they return? Beyond economic drivers of student return migration

4.1 Introduction

As thoroughly discussed in Chapter 1, the European Union finances Student Mobility (SM) through various sources of funding (Education Policy, Research and Innovation Policy and Cohesion Policy) since this is expected to result in many important benefits: enhance human capital and employability of the recipients, create knowledge flows, and so on. Nevertheless, especially as far as lagging regions are concerned, SM can lead to unwanted negative effects, among which brain drain is the most studied – i.e., the asymmetric migratory flows of highly skilled individuals from where the economic conditions are worse (lagging regions) to where are better (core regions).

The potential risk of brain drain associated to SM has been acknowledged by both scholars (King and Ruiz-Gelices, 2003, Oosterbeek and Webbink, 2011, Parey and Waldinger, 2011) and policy-makers (EC, 2002). As a result, a number of schemes have been deployed to encourage mobile students to return to their lagging regions upon completion of their studies, usually through the use of economic incentives (see Chapter 1). This strategy is based on the assumption that location choices are made according to economic utility, an expectation that unfortunately is not supported by empirical evidence. In fact, the academic studies pertaining to this subject are only in their early stages and do not yet provide a clear and conclusive explanation of what fosters return migration (Milio et al., 2012, Thorn and Holm-Nielsen, 2008).

Several theories have tried to explain migration by focusing on different determinants. Traditionally, economic factors have been considered dominant (Hicks, 1963, Sjaastad, 1962). However, more recently the role of amenities (i.e., quality of life) has been given increasing attention (Graves and Linneman, 1979). Currently, there is a heated debate on whether amenities or economic factors are more relevant in determining migrants' location choice (Clark et al., 2002, Florida, 2002a, Glaeser, 2005b, Kemeny and Storper, 2012, Rodríguez-Pose and Ketterer, 2012, Scott, 2010, Storper and Scott, 2009). Yet another strand of literature has stressed the role of social networks in the migration choice since they can potentially present migrants with opportunities in different locations (Constant and Massey, 2003, Vertovec, 2002).

Regarding Formerly Mobile Students (FMS) – i.e., the target group of this thesis – there are only a few studies explicitly targeting this group and they have not arrived at a shared understanding of the determinants of location choice either (Geddie, 2010, Hazen and Alberts, 2006, Marinelli, 2011a, Venhorst, 2013), perhaps because this field of research is only in its early stages (King and Raghuram, 2013, Williams and Baláž, 2008). Therefore, this work aims to contribute to this strand of literature by comparing

the influence and interplay of different potential explanations that, over time, have been proposed in the literature.

Most of the literature has focused on *why* the location decision is taken (i.e., what factors determine it) but has tended to neglect *how* the underlying decision-making process occurs. For instance, Human Capital Theory assumes migrants to be rational actors attracted by economic utility, while Creative Class Theory assumes them to be attracted by places endowed with universal amenities – a topic that is reviewed later in the text. However, they have not analysed the individual narratives in order to shed light on how the location decisions are taken in practice. According to King (2012) this interest in the details of migration stories only emerged in the 90s, on the wake of the so called 'cultural turn' in the social sciences. However, "[this new approach does] not so much re-make theories of the causes of migration as enrich our understanding of the migrant experience" (King, 2012, p. 25). Therefore, the second contribution to the literature of this work consists in providing a more nuanced picture of the individual decision-making process underlying the location choice by Formerly Mobile Students.

In summary, this research focuses on two main and interrelated research questions:

1) what determines Formerly Mobile Students' location decision;
2) how does the individual decision-making process underlying the location choice unfold?

From a methodological viewpoint, traditional studies on return migration have tended to rely on either quantitative or qualitative methods, both of which have their set of strengths and weaknesses. For instance, while the former are good at generalising and identifying the relative strengths of different factors in determining the location decision, the latter can provide a 'thick' description of *how* the decision-making occurs by drawing from the individual experiences and narratives. Indeed, both aspects are important, therefore we claim that mixed methods can be of great help in overcoming some of the main weaknesses of either 'pure' method. As such, a specific contribution of this study consists in integrating quantitative and qualitative methods into a single framework, something that has seldom been done in this field of research (an example of mixed methods used in this field is Hazen and Alberts, 2006).

To accomplish the goals of this work, as mentioned in Chapter 1, we have access to detailed administrative data regarding all the recipients of the *Master and Back Higher Education programme,* from 2006 to 2009. These data were boosted by additional data collected through a purpose-designed web survey – whose response rate reached

44%. This composite dataset is particularly suitable to study the determinants of return migration since the recipients of this programme can be assumed to have similar propensities to be geographically mobile, particularly for two reasons. First, all participants have undergone SM for long time spans (usually at least one year, corresponding to the average length of the scheme); second, all of them are endowed with very high levels of education (either Master's or Ph.D., since the scheme consisted providing financing to attain these levels of education).

Another characteristic of the dataset that deserves mention is that, since all of the recipients have received generous scholarships covering the full cost of their programmes (fees, living costs, etc.), their "social background" should be more heterogeneous than we would generally expect to find among mobile students. Indeed, in the absence of public incentives, individuals from higher social backgrounds are more likely than others to self-select into SM (Parey and Waldinger, 2011).

In addition to these quantitative data, to support the qualitative part of this research, 28 in-depth interviews were conducted on just as many recipients of the programme, with the aim of collecting information about their SM experiences, their current employment situation, their personal and professional aspirations, the motivations underlying their location decisions and so on.

Reflecting the structure of the study, this chapter is divided into two main sections: one quantitative and one qualitative. The former section investigates whether return to Sardinia is economically convenient for the sample of the interviewees, in order to assess whether the observed outcomes agree with the predictions of Human Capital Theory, which says that migration is driven by income maximisation; the section then looks for alternative determinants that explain return migration. On the other hand, the latter section looks at the narratives of the interviewees to provide a more nuanced picture of *how*, upon completion of their student migration experience, the interviewees make their location decision.

Accordingly, the chapter is articulated into five parts, which are briefly outlined here. Section 4.2 lays the theoretical background by reviewing the most important theories that have been proposed pertaining to this topic. Moreover, it presents some empirical findings in this field of research. Then, Section 4.3 describes the design of this research and explains why a mixed method approach is particularly suitable for the problem at hand. Section 4.4 describes the dataset, outlines the statistical methods used and discusses the quantitative results. Section 4.5 describes the qualitative data and methods and presents the related results. Finally, Section 4.6 merges together

quantitative and qualitative findings in the light of the current academic debate and draws the conclusions.

4.2 Theoretical background and research questions

The literature review below provides a summary of the debate surrounding highly skilled return migration, with a particular focus on student return migration. In Sub-section 4.2.1 some important economic approaches to migration are outlined. The focus is especially on the debate amenities vs. jobs in shaping the location choice (for a review of this debate, see for example the following works: Partridge, 2010, Storper and Scott, 2009). Sub-section 4.2.2 focuses on the role of social networks both in the receiving and the sending regions (see for instance Vertovec, 2002). Finally, Sub-section 4.2.3 reviews some empirical studies which, similarly to the goal of this chapter, have compared multiple explanations of the determinants of the location decision by targeting a particular group of highly skilled individuals: Formerly Mobile Students.

4.2.1 Migrants as utility maximisers: jobs or amenities?

Traditionally – at least since Ravenstein (1885) – economic motivations have been considered the most important determinants of both migration and return migration (Arango, 2000, Cassarino, 2004). In 1932 the Nobel prize in Economics, John Hicks (1963), provided a prominent explanation according to which migration takes place from where unemployment rates are high and wages low to where unemployment rates are low and wages high.

This approach, also known as neo-classical model of migration, is a "disequilibrium model", since it explains migration as a consequence of the spatial disequilibrium of economic opportunities. However, as a result of migration, in the source region the supply of labour is expected to decrease and the wages to rise, while in the destination region the exact opposite is expected to occur. Therefore, a corollary of this theory is that, in the long run, migration leads to equilibrium.

In early 1960's an outstanding contribution to migration studies was made by Larry Sjaastad (1962). He focused on the individual decision to migrate and, by applying Human Capital Theory, he posited that migration is an investment decision in which the potential monetary and non-monetary benefits and costs are weighted. On a similar vein, according to Borjas (1990) migrants estimate the costs and benefits of moving to alternative locations and migrate to where the expected returns are higher. Therefore, individuals who migrate should achieve higher earnings, not only as a consequence of migration but also as a consequence of self-selection, since individuals with better

chances of achieving higher earnings tend to self-select into migration (for a review of this literature see Chapter 2). In addition, consistently with Human Capital Theory, migration can also occur to escape adverse regional circumstances (van Ham et al., 2001). Human Capital Theory is important, especially since it acknowledges the selectivity of migration. However, it does not depart too much from previous models with respect to the paramount importance attributed to economic factors, particularly earnings (see for instance Gibson and McKenzie, 2011, Liebig, 2003).

The role of economic factors started to be challenged especially in the light of increasing evidence that large numbers of people were migrating to areas of low income and high unemployment (Knapp and Graves, 1989). Therefore, especially regional scientists and urban economists, elaborated a more sophisticated picture of the mechanisms underlying migration and urban agglomeration (Knapp and Graves, 1989). These new studies agree with Human Capital Theory that individuals are utility maximising actors, but they provide a different definition of utility. According to them the concept of utility cannot be reduced to nominal wages but must also incorporate other factors such as cost of living – especially housing – and amenities. Concerning the former, high costs of housing and other costs of living reduce real wages (i.e., nominal wages have a lower real value where the costs of living are higher). Moreover, amenities play an important role in the migration decision since, depending on their preferences, individuals are willing to forgo part of their earnings in order to have access to amenities such as good climate, green spaces, "cultural industries", and so on (Glaeser et al., 2001, Graves, 1976, Graves, 1980, Graves, 1983, Roback, 1982).

It is interesting to note that while the traditional neo-classical theory relies on a disequilibrium model, the amenity-driven model of migration is an equilibrium model, according to which utility (usually proxied by real income) tends to equalise across locations. In these models, the source of utility is not just represented by nominal wages but by a mix of different elements: nominal wages, rents and amenities. In short, some places might be characterized by high wages, high rents and bad amenities while other places by low wages, low rents and good amenities or other mixes of these same elements. However, while across locations nominal wages are likely to diverge, real wages will tend to converge (Knapp and Graves, 1989).

An important corollary of equilibrium models is that individuals decide where to migrate according to their preferences. In fact, as utility equalises across locations, the choice to relocate depends on the evolution of the household's consumption preferences (Knapp and Graves, 1989). As such, according to equilibrium models,

individuals/households tend to locate in places endowed with the right mix of wages, housing, and amenities suiting their preferences. The importance of amenities cannot be underestimated, especially for the highly skilled (Knapp and Graves, 1989). In fact, individuals who have invested more in their human capital should achieve higher income; consequently, the marginal utility of additional income declines, thereby increasing the relative importance of local amenities.

The migration and the geographical concentration of the highly skilled have important implications for economic development and growth. In fact, highly skilled individuals stimulate innovation (Dahl and Sorenson, 2010a) and generate economic externalities (Lucas, 1988, Moretti, 2004a). In this regard, understanding what makes a place attractive to the highly skilled becomes particularly important. For instance, a seminal study by Glaeser et al. (2001) showed that cities that offer high amenity have grown faster than cities of low amenity, and that in the former rents have grown faster than wages, suggesting that immigration in these cities is not fully determined by wages but also by amenity. The study concludes that, in order to be competitive, cities should improve their amenities, as this is paramount to attract human capital and, consequently, business.

On the role of local amenities in attracting highly skilled individuals and therefore stimulating innovation and growth, the possibly most famous and controversial author is Richard Florida (Florida, 2002a, Florida, 2002b, Florida, 2004, Florida et al., 2008). According to him, "what accounts for the ability of some places to secure a greater quantity or quality [of highly skilled inflows] lies in openness, diversity, and tolerance […] to immigrants, artists, gays, and racial integration. These are the kind of places that, by allowing people to be themselves and to validate their distinct identities, mobilize and attract the creative energy" (Florida, 2004, p. 7). Beyond openness and tolerance, Florida also stresses the importance of entertainment, nightlife, culture and so on. In fact, the creative class has a high spending potential and wants to live in places where they can enjoy life (Florida, 2002b).

The view of migration driven by individual preferences falls short of being universally accepted. On the contrary, varius critiques have noted that this approach does not take into account the (economic) constraints of migration – i.e., the objective economic conditions and labour market structure of potential destinations. In the words of Storper and Scott, "any utility-maximizing calculation must always be subject to feasibility constraints" (2009, p. 161). In other words, these studies do not deny the influence of amenities, but claim that migration can take place only insofar as there are favourable

economic conditions and job opportunities in the destination country/region. Of course, individuals endowed with high levels of specialisation and human capital might struggle more to find jobs in their niche. Therefore, they might be particularly motivated to locate in large (or 'thick') labour markets, endowed with a vast array of specialised jobs (Brown and Scott, 2012).

The jobs-vs.-amenities debate is still very much alive. While in the US amenity-based explanations seem to be dominant, in Europe most studies underline the importance of economic determinants (Partridge, 2010). This distinction is probably due to the intrinsic differences between the US and Europe, since the former are characterised by higher labour mobility, less dramatic climatic differences, more concentrated cultural resources, and so on (Rodríguez-Pose and Ketterer, 2012).

Concerning Europe, despite the tendency of most studies to stress the prevailing importance of economic factors (see for instance Cheshire and Magrini, 2006, Faggian and McCann, 2009b, Ritsilä and Ovaskainen, 2001), a few studies have recently provided evidence that amenities also play an important role for urban[1] (Faggian and Royuela, 2010) and inter-regional[2] (Biagi et al., 2011) European migration. In addition, a very recent study, by Rodríguez-Pose and Ketterer (2012), has analysed data for 133 European regions between 1990 and 2006, by showing that amenities play a key role also in transnational European migration. In fact, they find that, in addition to economic aspects, also network effects and regional amenities exert a significant influence.

4.2.2 Transnationalism: the importance of individual narratives and social networks

Economic explanations have been criticised for making too strong assumptions on how the decision-making process leading to the location choice unfolds (Geddie, 2010, Mosneaga and Winther, 2012, Waters and Brooks, 2010). In this regard, Human Capital Theory assumes that individuals make location choices based on rational calculations about where higher returns can be reaped from their human capital (economic returns in particular). In contrast, amenity-based models assume them to maximise utility by locating in places having universal characteristics useful for their consumption preferences (Silvey and Lawson, 1999); for instance, Florida stresses the importance of tolerance, cultural diversity and "cultural industries" (Florida, 2002a).

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[1] The authors focus on Barcelona.
[2] The authors focus on internal migration in Italy.

Another critique is that these studies tend to overlook the importance of social networks in shaping the location decision, when in fact individuals do not act in a social vacuum but are embedded in social relations which necessarily influence and even shape their actions (Haug, 2008, Silvey and Lawson, 1999). In migration studies, social networks represent a meso-level which allows individuals (micro-level) to exploit spatially scattered (economic) opportunities (macro-level) (Haug, 2008). Moreover, they tend to overlook what Ackers and Gill (2008, p. 14) call 'migration stickiness'. In other words, individual decision-making can be restrained or enabled by contextual factors that vary in space and time.

A new body of literature called "Transnationalism" has tried to overcome these shortcomings by calling for greater appreciation of the importance of social networks, as opposed to the idea of a lone decision maker; of the complexity of individual behaviour, as opposed to excessively strong assumptions; of the centrality of individual subjectivity and experience, as opposed to the migrant as mere object of study; of the importance of migration stickiness, as opposed to automatic flows in presence of pre-set push/pull factors (Basch, 1994, Geddie, 2010, King, 2002, Mosneaga and Winther, 2012).

These new studies do not deny the importance of previous studies but, at the same time, call for a more holistic approach. For instance, according to King "an interdisciplinary [approach is needed] which brings together and integrates a range of perspectives, frameworks, theoretical stances and methodologies in order to study migration (or the various forms of migration) in a manner which is holistic (embedding migration in its social context) and which recognises its multifaceted diversity" (2002, pp. 90-91).

Possibly, the most important focus of this new strand of literature is on social networks in their broader acceptation, which encompasses a vast array of different types of social relations: partnering, parenting, family, friends, business networks and so on. Basically, every social tie that can influence migration trajectories – namely, that has a bearing on individual decisions and actions – can be included in our definition.

The literature on social networks is vast (for a review, see Arango, 2000, Massey et al., 1993). However, the strand on Transnationalism is particularly relevant to the topic of this chapter since it stresses that highly skilled migrants keep social and cultural ties not only in the destination country but also back in the sending country (Portes, 2000). In this regard, Vertovec contends that "migration itself can be conceptualized as a process of network building, which depends on and, in turn, reinforces social

relationships across space" (2002, p. 3). As such, migration can lead to both migration and return migration. The conceptualisation of the migration decision as a circular process, also referred to as *brain circulation* (Gaillard and Gaillard, 1997), contrasts with the neo-classical approach since migration is no considered a one-off decision, and also because it is no longer expected to necessarily be negative for the sending country/region. On the contrary, transnationalists claim that highly skilled international migrants can be of great value for the sending country/region, since their social ties with peers, professionals, family members, friends and so on can result in knowledge flows, foreign direct investments, return migration as well as brain circulation (Hazen and Alberts, 2006, Meyer, 2001, Saxenian, 2006, Saxenian et al., 2002, Vertovec, 2002).

In contrast to excessive assumptions made by previous literature, Transnationalism aims to arrive at a nuanced understanding of individual uniqueness through the in-depth analysis of personal narratives. In fact, the "multiple situatedness" of migrants provides them with idiosyncratic structures of constraints and opportunities that shape their professional, economic and location choices (Olwig and Sørensen, 2005). This approach conciliates individual agency and structural constraints related to multiple cultural and social frames characterizing personal trajectories in a transnational context (Ley, 2004). According to Williams et al., "migration has to be understood in terms of both structural relationships and social networks" (2004, p. 27) and King stresses the "double embeddedness of migration" (2002, p. 101) at the macro-level in social and economic structures of sending and receiving country and at the micro-level in individual life-course.

Of course, the study of multinational social and economic networks to explain migratory processes is particularly suitable for students who, after graduation, are called to make important strategic choices related to their careers and personal lives. These decisions can be enabled or constrained by the particular structure and perception of personal ties resulting from individual migratory experience (Geddie, 2010). In this scenario, social networks can be a reading key to explain why having previous migration experience can increase the likelihood of future migration (DaVanzo, 1983). For instance, various studies have showed that having studied abroad increases the probability of currently living abroad (Oosterbeek and Webbink, 2011, Salt, 1997). Furthermore, other authors showed that the recipients of the ERASMUS programme are significantly more likely to be further mobile in life (Guellec and Cervantes, 2002, King and Ruiz-Gelices, 2003, Parey and Waldinger, 2011). In a similar vein, by focusing on the impact of a scheme granting scholarships to students resident in the

Italian lagging region of Basilicata, Coniglio and Prota (2008) found that student mobility significantly increases the likelihood of future migration. These empirical findings can be explained by the fact that prior migration experiences (including SM) increase the knowledge of many aspects of the destination country, such as languages, cultures, labour markets, business environments and so on; as a result, it reduces the costs of future migration. Of course, this knowledge is usually built through a process of socialization that can be understood through the social network metaphor. As we mentioned earlier, the same holds true for return migration, in that having strong social ties in the home country can favour return migration or brain circulation (Hazen and Alberts, 2006, Meyer, 2001, Saxenian, 2006, Saxenian et al., 2002, Vertovec, 2002).

Therefore, achieving a good level of integration in the destination country/region is crucial to create social networks. For instance, Baruch et al. (2007) found that the adjustment process of foreign students in the UK and in the US was the most significant factor influencing return intention: i.e., the higher the adjustment in the destination country the lower the intention to return to the sending country.

In sum, the social network literature and, most importantly, the Transnationalism literature draft a picture in which the migration decision results from the dialectic of opposed networks in the sending and the host country that can open opportunities that otherwise would remain closed and that can lead to migration, return migration or brain circulation. However, the choice is always personal, as different individuals might interpret their surrounding opportunities in different ways, depending on their personal characteristics, life-course and previous international experience.

4.2.3 Formerly Mobile Students' location choice: empirics

In Chapter 1 we highlighted that FMS are a particular type of highly skilled individuals whose peculiarity is having experienced SM. As this particular sub-group is also the focus of this chapter, its migration behaviour is particularly relevant. Therefore, this sub-section is entirely devoted to reviewing the existing empirical works focusing on FMS. Moreover, as this chapter is based on a mixed methods research approach, the review is articulated in two parts: the first one focuses on works relying on quantitative methods, while the second one looks at works relying on qualitative/mixed methods.

In the category of the quantitative studies, the contribution of Faggian and McCann (2006; 2009b) is particularly significant. By focusing on Britain, they observe that there is a clear correlation between the geographical distribution of universities, innovation

and the migration behaviour of graduate students. In particular, they show that the main benefits of universities to regional development do not hinge so much on their capacity to generating knowledge spillovers into the surrounding economic fabric, as stated by previous literature (see for instance Caniëls, 2000), but on their capacity to lure highly skilled human capital (Faggian and McCann, 2006). Moreover, they find that there is a two-way causal link between regional innovation and graduate migration: graduates tend to migrate towards more innovative regions, which results in yet higher innovation performance in these same regions (Faggian and McCann, 2009b).

Analogously, Marinelli (2011b) confirms for Italy the same hypothesis proposed by Faggian and McCann for Britain – namely that graduates are attracted by more innovative regions. In fact, in Italy graduates tend to flow from the poor and backward South (or *Mezzogiorno*) to the rich and innovative North, augmenting the traditional economic polarisation of the country.

Again Marinelli (2011a), still focusing on Italy, compares the role of social networks and regional characteristics in explaining internal graduate migration. She finds that the former have a much stronger explanatory power than the latter. Moreover, she shows that individuals coming from different Italian regions are motivated by different factors: while those from the backward South tend to move for economic necessity, those from the rich and dynamic North tend to migrate for a choice in lifestyle.

The interplay between social networks and economic opportunities is also the focus of Venhorst (2013). He looks at Holland to investigate whether Dutch graduates are attracted by the central regions of the country or whether they seek opportunities in other regions, and particularly their home regions. His findings show that a surprisingly high number of graduates are attracted back to their home regions as a result of what Venhorst calls "regional familiarity", a concept related to having social bounds and knowledge of a region which is very similar to the concept of location-specific capital put forward by DaVanzo (1983).

Regarding the studies on qualitative/mixed-methods, most of them tend to rely on a Transnationalism theoretical framework in order to investigate why and how international students make their location choice upon completion of their studies. Hazen and Alberts (2006) and Alberts and Hazen (2005) rely on focus groups and on survey data to analyse the factors that push international students in the US to return to their respective sending countries. They find that while career ambition and professional opportunities push students to stay in the US, personal and societal factors push them toward their sending countries. In other words, whereas economic

and professional opportunities are perceived as better in the US and this leads students to locate there permanently or at least for a further period, "family connections, personal circumstances, and even personalities, account for much of the variation between students [as to their location choice]" (Hazen and Alberts, 2006, p. 214). This effect depends on the fact that personal circumstances and backgrounds influence individual reactions to structural factors like, for instance, the objective economic advantages of staying in the US.

In Chapter 2 of her Ph.D. thesis Geddie (2010) compares foreign science and engineering students from diverse national origin in two cities (Toronto and London). She investigates the range of factors and processes that impact on their migratory choices and finds that the decision-making process of her 47 interviewees is far from uniform, as previous studies seemed to suggest. On the contrary, it is based on a complex balancing of "intellectual drive, career ambition, financial considerations, and lifestyle preferences with managing relationships and migratory constraints" (Geddie, 2010, p. 115). Moreover, she finds that the interplay among these factors leads students toward different geographical directions, making their location outcome highly unpredictable.

Mosneaga and Winther (2012) come to similar conclusions. They focus on science and technology international students in Denmark to explore their mobility and career prospects upon completion of their studies. They show that migration is a dynamic process in which individual decisions are in turn enabled and constrained by the evolution of contextual factors. In other words, migration behaviour results from the dialectic between micro-level and macro-level factors, where social networks play a key role, especially in providing new opportunities and possibilities. They show that the decision making process leading to migration follows situational dynamics in which free will and contextual and enabling factors interact with each other.

In summary, all of the empirical studies reviewed above focus on FMS and try to compare different strands of literature in order to provide a more comprehensive picture of *why*, if anything, FMS return to their sending region upon completion of their studies. Moreover, the qualitative studies also try to draw a picture of *how* the decision-making process underlying FMS location choice takes place from the viewpoint of the very migrants.

This chapter aims to contribute to this strand of literature by enquiring into the relative influence of different bundles of factors on FMS return migration to EU lagging regions – economic factors, amenities and social networks – and into the nature of the

underlying decision-making process. The results will also lead to some interesting policy implications for EU lagging regions, which have been trying to contrast the negative effects of brain drain usually associated to SM by granting economic incentives to lure these highly skilled back on completion of their studies.

4.3 Mixed-methods sequential explanatory design

To shed light on the issues that have been raised earlier, a mixed methods approach is used – i.e., a research design which consists in collecting and analysing both quantitative and qualitative data and, at some point, integrating them into a unique and coherent research project (Creswell, 2009).

Despite the inability of quantitative and qualitative methods to fully capture the complexity of the migratory behaviour on their own, mixed methods have seldom been used in this types of study (King, 2002). Nevertheless, we claim that the use of this type of method can make migration studies advance, since in a well-designed mixed-methods approach quantitative and qualitative methods can complement each other resulting in a more precise and complete picture of the object of study (Greene et al., 1989, Morgan, 2007, Onwuegbuzie and Leech, 2005).

In this work, a particular type of mixed-methods approach called "sequential explanatory design" is used. It consists in the collection and analysis of the quantitative data, followed by the collection and analysis of the qualitative data. In this sequence the qualitative results are usually used to further explain and interpret the quantitative ones (Creswell, 2009, Ivankova et al., 2006).

The quantitative phase, based on administrative data and on a purpose-designed web survey, provides an understanding of the factors that favour return migration of the M&B recipients. However, it cannot be used to extract insights from the personal stories and narratives leading to the location decision. Therefore, a further qualitative sub-phase based on in-depth interviews is performed with the objective of gaining some understanding of the mechanisms behind the individual location decision.

Both the quantitative and the qualitative phases focus on the determinants of the M&B recipients' location choice upon completion of their studies. However, while the quantitative phase does this deductively, the qualitative phase does so inductively. In fact, the former provides the respondent with a fixed list of motivations, contained in the relevant questions of the web survey, while the latter relies on open-ended questions, letting the interviewees express their motivations freely. Moreover, by completing the picture drafted through the quantitative phase, the qualitative phase also allows us to

gather detailed insight into how different constraints, opportunities, aspirations etc. influence the individual decision as it emerges from the accounts of the M&B recipients.

Figure 4.1 – Visual model for mixed-methods sequential explanatory design procedures

Phase	**Procedure**	**Product**
Quantitative data collection	• Administrative data collection • Web survey	• Numeric data
Quantitative data analysis	• Data screening • OLS regression • Logistic regression	• Descriptive statistics • Economic gains/losses by location choice • Individual determinants of return migration
Qualitative sample	• Purposefully selecting 28 participants of the web survey (14 males, 14 females, 14 returners and 14 non-returners)	• Sample for in-depth interviews
Qualitative data collection	• 28 in-depth interviews • Interview transcriptions	• Text data (interviews transcripts)
Qualitative data analysis	• Coding and thematic analysis	• Codes and themes
Integration of the two phases	• Interpretation of the quantitative and qualitative results	• Discussion • Implications

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The two phases are interweaved (Creswell et al., 2003) in two stages: sampling and discussion of the results. In fact, on the one hand the sample of the interviewees of the qualitative phase has been chosen based on the results of the quantitative phase, on the other the results of the two phases are discussed jointly.

Figure 4.1 provides a visual representation of the research design: each level of the diagram symbolises a research stage and, for each stage, a brief description of the corresponding procedures and products is provided. The diagram is comprised of two types of boxes. The rectangular ones refer to research stages that are either quantitative or qualitative; the oval ones refer to stages in which the two methods are joined.

4.4 Why do they return? Quantitative evidence

This section describes the quantitative phase of this research. First, we outline the data collection process and provide some statistics summarising the observations. Secondly, the empirical strategy and analysis are presented.

4.4.1 Data collection and description

The quantitative phase of this study focuses on the recipients of the Higher Education part of the Master and Back programme which, as described in Chapter 1, provides outstanding Sardinian students with generous scholarships to pursue a post-graduate education in prestigious universities outside Sardinia – be it abroad or in other Italian regions.

The goal of this section is not to evaluate the impact of the Master and Back programme, which was done in the previous chapters, but to exploit the unique characteristics of this data sample which make it particularly suitable to study the determinants of return migration by FMS. In this regard, one of its most important characteristics is that its members can be assumed to have similar propensities to be geographically mobile.

There are several reasons that motivate this assumption. To begin, all of the recipients are FMS who have experienced student mobility thanks to the M&B scholarship for periods lasting on average more than one year – corresponding to the average length of the programme. Therefore, their costs of further mobility are comparatively lower than those of their peers with no mobility experience (Faggian et al., 2007a, Parey and Waldinger, 2011).

Further, our sample only includes individuals with very high levels of education – either Master's or Ph.D. degrees. Therefore, since education is considered one of the most important determinants of migration (Chiswick, 1999), having a sample with a narrow range of education levels allows the analysis to focus on alternative determinants of migration or return migration (Coniglio and Prota, 2008, Gibson and McKenzie, 2011, Grogger and Hanson, 2011).

Another reason is that, since the programme covered all the expenses (enrolment fees, travel and living costs), it should have favoured participation by students coming from more heterogeneous social backgrounds, including those who normally would not have been able to afford SM. This situation is rarely the case, since normally those who study outside their home region tend to hold a higher social status (Christie, 2007, Findlay et al., 2006, Halsey, 1993).

As explained earlier, we have acquired a rich dataset composed of both administrative and survey data. The administrative data contain information on what determined the selection of the recipients into the programme (see Chapter 1 for more information on the M&B selection criteria), while the survey data brings information on the characteristics and preferences of the recipients.

Our sampling frame is comprised of 2,026 records, corresponding to all the recipients of the programme M&B Higher Education in the calls 2006, 2007, 2008 and 2009. On these recipients, the web survey had an average response rate of 44%: almost 40% in 2006 and 2007 and higher than 50% in 2008 and 2009 (see Table 2.2 in Chapter 2).

Within the context of this sample of individuals, who have all completed some form of post-graduate education, special attention has been paid to those recipients who in addition to the Higher Education scholarship were also allocated the grant for returning to Sardinia through the Back part of the programme (or just the "Back"). As far as this study is concerned, the "Back" is a confounding factor since the behaviour and outcomes of those who received the grant might be anomalous when compared to the rest of the sample. This risk is particularly pronounced for the individuals that were interviewed during their "Back" phase[3].

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[3] Overall, out of 788 respondents, 290 (37%) were also granted the "Back"; of those 170 (22% of the full sample) were in the Back phase when they were interviewed while 120 (15% of the full sample) had already concluded it (see Table 2.4 for further information).

In order to minimise potential bias, the 170 observations obtained from individuals surveyed while in the "Back" phase have been discarded. On the other hand, the 120 observations from those who had already completed it have been kept. Thus, the final sample is comprised of all the recipients of the M&B Higher Education who: used the grant to enter an education programme for which at least a specialist Italian degree (or equivalent) was required; completed the programme they entered; were not in the "Back" phase when the survey was conducted. Hereafter we refer to this sample, consisting of 618 observations, as the "Standard sample". It is described through some statistics provided in Appendix 4.2. Unless otherwise specified, all the following tables and regressions use this as the reference sample.

4.4.2 Methods of quantitative analysis and empirical model

The study looks at the determinants of return migration in two steps. The first step estimates the average income differentials of the recipients, conditional on their location choice (the options being Sardinia, other Italian regions and abroad), in order to understand to what extent returning to Sardinia is economically convenient. The second step tests various sets of variables that are expected to be correlated to return migration to Sardinia on completion of M&B. Such variables proxy some of the important theories of migration that were reviewed earlier: amenities, career (or economic factors), social networks. Further information regarding these two different stages of the analysis is provided below.

To study the determinants of return migration we rely on the linear utility model proposed by Grogger and Hanson (2011), where the utility associated with working in location *h* for person *i* of skill level *j* is:

Eq. 4.1
$$U_{i,h}^{j} = \alpha\left(i_{i,h}^{j} - c_{i,h}^{j}\right) + \varepsilon_{i,h}^{j} U_{i,h}^{j} = \alpha\left(i_{i,h}^{j} - C_{i,h}^{j}\right) + \varepsilon_{i,h}^{j}$$

Where $i_{i,h}^{j}$ is the income earned in location *h*, and $c_{i,h}^{j}$ is the cost associated with migrating to location *h*, which is 0 for the home country. Assuming that the error term ε follows an extreme value distribution, the log odds of migrating from the home country h to the destination country d are:

Eq. 4.2
$$\alpha\left(i_{i,d}^{j} - i_{i,h}^{j}\right) - \alpha c_{i,d}^{j}$$

The cost term takes into account both the financial and the psychic costs of migration, including the uncertainty associated with the future income after migration. It is important to note that since the cost term cannot be directly measured, previous literature has assumed the financial cost within a narrow skill class to be constant

(Gibson and McKenzie, 2011, Grogger and Hanson, 2011). In our case, the financial cost is covered by the programme and therefore is necessarily close to zero from the recipients' point of view. This key characteristic of our sample provides the opportunity to test proxies for some of the main non-financial determinants of the cost term by considering the income gains.

Typical studies of migration selectivity assign *j* to different skill groups in terms of education outcomes. However, in our case the education decision is intertwined with the migration decision, since the Master and Back scheme consists of achieving postgraduate education outside Sardinia. As such, the ultimate education levels are themselves a function of migration.

Like in Gibson and McKenzie (2011), the first step of our analysis consists of estimating the gain in income from migrating by capturing the first term in Eq. 4.2. This is done by regressing the income earned by worker *i* on indicators for his/her current location and a vector of individual characteristics (X):

Eq. 4.3 $\qquad INCOME_i = \pi + \beta\, CURRENTLOCATION_i + \delta\, X_i + \varepsilon_i$

Where,

INCOME = Net monthly income

CURRENTLOCATION = This is a group of two dummies accounting for the current location of the interviewees:

- the first one takes the value 1 if the interviewee is currently located abroad,
- the second one takes the value 1 if the interviewee is currently located in an Italian region other than Sardinia.

Note that the reference category is Sardinia – i.e., a dummy that takes the value 1 for those currently located in Sardinia.

X = a vector of standard controls

ε = error term

The standard controls include factors which are customarily taken into consideration by the literature: individual characteristics (gender and age), education-related variables (level of education and undergraduate topic), some standard proxies for individual ability (undergraduate final mark, delays in completing undergraduate studies, father's education level and, finally, time elapsed since the start of the M&B programme – as a

proxy of the time available to the recipient of the programme to integrate in the labour market. Further information on the variables is provided in Sub-section 4.4.4.1.

To avoid potential bias all the controls were predetermined when the location decision was taken upon graduation.

The next step of the quantitative analysis (step 2) consists of estimating the determinants of return migration, which has been defined in the literature as return to the sending country/region after a "significant period in another country or region" (King, 2000, p. 18). This definition leaves open the question of what length of the period away is sufficient for the period to be considered "migratory". For the purposes of this research, we have fixed this lower bound at six months. Thus, return migration takes place after at least six months outside the sending region[4]. Accordingly, all the recipients of the Higher Education part of the scheme who decided to move back can be considered return-migrants.

Return probability is calculated through the utility maximization framework in Eq. 4.1, which allows us to test the marginal effects on return decision of variables which are associated with either the income gains or the costs of returning. We do this with a simple logistic model which is quite customary in migration literature (see for instance Coniglio and Prota, 2008, Li et al., 1996, Soon, 2008) and can be set out formally as follows:

Eq. 4.4 $\quad$ **Let $Y_i = \begin{cases} \textbf{1 if student i returns} \\ \textbf{0 if student i does not return} \end{cases}$**

The predicted probability of return is,

Eq. 4.5 $\quad$ **$P(y_i = 1 | X) = \dfrac{e^z}{1+e^z} = F(Z)$**

where $F(Z)$ is the cumulative distribution function.

The final return probability function can be written as follows:

Eq. 4.6 $\quad$ **$Z_i = \alpha + \beta\, AMENITIES_i + \gamma\, CAREER_i + \delta\, SOCNETWORKS_i + \theta X_i + \varepsilon_i$**

where,

Z = Odds of return

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[4] Actually, most of the recipients spent at least one year outside the sending region; Ph.D. students even longer.

AMENITIES = Vector of individual preferences for amenities;

CAREER = Vector of proxies to test the importance of career motivations (or economic factors);

SOCNETWORKS = Vector of proxies to test the importance of social networks both in the sending and receiving regions;

X = Vector of controls (for ability, individual characteristics and other standard controls);

ε = error term.

In short, the return probability function explores the relative influence of 3 different vectors of variables (amenities, career and social networks), which correspond to the main theoretical explanations analysed in the literature review. The independent variables included in each vector are discussed in the next sub-section.

4.4.3 Variable choice and description

In this sub-section the specification of the statistical model stated in Eq. 4.6 is discussed. The goal of this model is to test the relative influence of different sub-sets of explanatory variables that are considered crucial by different strands of literature in determining the location decision of the highly skilled: amenities, career related factors and social networks (in sending and receiving country). All of these variables were plausibly predetermined when the location decision was made. Moreover, we control for various individual factors and geographic fixed effects that are typically taken into consideration by the literature.

The first sub-set of variables, amenities, test Florida's hypothesis that the creative class is attracted by high levels of tolerance, cultural and ethnic diversity and by the presence of "cultural industries". Our explanatory variables are based on a set of questions in the web survey (7.13, 7.15, 7.16) which ask the interviewees to specify up to 3 – out of 8 – factors which had heavily influenced their location choice. This question allowed us to create as many dummy variables as the number of options offered (for an overview of the results of that question see Table 4.1). The options used to proxy Florida's theory are the following: "cultural/ethnic diversity", "tolerance" and "cultural industries". In other words, these variables take the value 1 if the interviewees have declared that the presence of cultural/ethnic diversity, tolerance, or "cultural industries", respectively, were major determinants of their location decision; 0 otherwise.

The second sub-set of variables includes career- and job-related motivations. According to the mainstream literature, as outlined in Section 4.2.1, career opportunities are crucial factors to explain migration. The first variable used to proxy career opportunities is "finding a good job", a dummy which takes the value 1 for individuals who declared that finding a satisfactory employment was a key determinant in their location decision. The variable "finding a good job" was drawn from the same question mentioned above (see Table 4.1). The second variable of this sub-group, also drawn from the question displayed in Table 4.1, is "start own business" which is set to 1 for individuals who declared that starting their own business was an important determinant of their location choice.

Consider that both of these variables refer to the individual perception of job opportunities. However, in order to take into account the objective conditions of alternative labour markets, two further controls were added: "local income at PPP" and "unemployment rate"[5]. The first variable is meant to proxy the role of income levels. Therefore, it reports the average income in the country/region where the recipients went to study while financed by the programme and has been calculated by averaging the income of all the respondents to the web survey in that particular country/region. The second variable refers to the unemployment rate in the country/region where the recipients went to study while financed by the programme and has been sourced from the EUROSTAT[6]. We expect average income to be negatively correlated with odds of return, since Sardinia is characterised by a poor labour market. Moreover, we also expect unemployment rates to be negatively correlated to odds of return, since Sardinia is characterised by high unemployment rates (see Chapter 1 for some descriptive statistics about the Sardinian labour market).

The literature also finds that highly skilled individuals tend to locate in places where they can learn and can apply their knowledge. For instance, according to Faggian and McCann (2009b) graduates tend to migrate toward regions endowed with better innovation systems and universities. To proxy learning motivations we use another option taken from the same question mentioned above (see Table 4.1) that specifies that the presence of good universities and innovative research centres and firms was a

[5] In this model we cannot use net monthly incomes as a regressor – the dependent variable of the model in Eq. 4.3 – due to the fact that this is an outcome of migration rather than a determinant; therefore, using net monthly income as a regressor could lead to reverse causality bias. Thus, economic factors are proxied by alternative covariates that do not raise concerns for endogeneity – i.e., "local income at PPP" and "unemployment rate".

[6] Due to the structure of our data, both variables were calculated at the regional level for those who used their M&B grant in Italy, and at national level for who studied abroad.

major determinant in the respondent's location decision (this variable is labelled "good universities research centres"). Incidentally, learning could also be ascribed to the sub-group of job-related variables, since it is usually also associated with highly skilled individuals' career progression.

The third sub-set of variables explores the role of social networks. The literature considers social networks a key reason for which previous migration experience increases the probability of future migration. In fact, individuals who have already undergone migration are likely to be more used to travelling, to have more information about the host country/region, to have prior knowledge of the language spoken in the destination country and so on. As such, having prior migration experience is thought to reduce migration costs. Of course, the strength of an individual's social networks in the sending country does not simply depend on the length of the migratory experience, but is also a function of individual adjustment to the host country/region. In fact, given an equal amount of time, some individuals might be able to adjust better than others and, therefore, could build better social networks.

We use three proxies to control for previous migration experience and therefore for social networks in the sending country: a dummy that takes the value 1 if the interviewee has had study experiences outside Sardinia that were longer than 6 months (the corresponding variable is labelled "study experience out"); a dummy that takes the value 1 if the interviewee has had job experiences outside Sardinia that were longer than 6 months (the corresponding variable is labelled "job experience out"); finally, a dummy that takes the value 1 if the interviewee has participated in the ERASMUS programme or other similar programmes (the corresponding variable is labelled "ERASMUS"). We also control for the level of adjustment in the receiving country/regions by using a dummy called "join none". In this respect, the interviewees were asked to tick, from a list of options, the associations/organizations they had joined during migration. They could choose among political parties, trade unions, associations and so on. One of the options was "join none", that could be ticked by who did not joined any of the organizations/associations encompassed by the various options. In practice, who has chosen this option can be assumed to have the lowest levels of adjustment in the host country/region.

The effect of social networks with respect to return migration varies depending on their location. The social networks in the host region are important to migrate or to extend migration, while the ones in the home region are important to return. For instance, having graduated in the sending region should indicate that the recipient has strong

social ties there, a circumstance which has been proxied through a dummy called "degree in Sardinia" that takes the value 1 if the recipient graduated in Sardinia and 0 otherwise. Also, individuals that are married – or involved in a stable relationship – and those who have strong family ties with parents or kin (see for instance Baruch et al., 2007, Güngör and Tansel, 2008) are expected to be more likely to return. To proxy this kind of social networks a dummy "married or unmarried partner" and a dummy "close to family" have been used. The former takes the value 1 if the respondent was married or had a stable partner when he/she applied to the scheme. The latter was created through the same question used for previous variables (see Table 4.1) and refers to interviewees who declared that being close to family was crucial in their location decision.

Table 4.1 – Return determinants

	Non-returner		Returner		Total	
Location choice determinants	%	Obs.	%	Obs.	%	Obs.
Finding a good job	0.63	342	0.15	276	0.42	618
Start own business	0.11	342	0.08	276	0.10	618
Close to family	0.27	342	0.45	276	0.35	618
Tolerance	0.15	342	0.01	276	0.09	618
Cultural/ethnic diversity	0.11	342	0.01	276	0.07	618
Cultural industries	0.09	342	0.00	276	0.05	618
Good universities research centres	0.17	342	0.01	276	0.10	618

Source: author's data

Moreover, we performed a series of controls that can be considered to be standard practice in the literature. We controlled for gender (the corresponding variable is the dummy "male"), as there is evidence that males and females might have different migration propensities (Faggian et al., 2007b). We also controlled for age when the treatment began (the corresponding variable is labelled "Age treat"), since younger people are more likely to migrate (Plane, 1993). Moreover, we controlled for both education levels (proxied by 2 dummies labelled "Higher=Master's" and "Higher=Ph.D.", respectively) and first degree's topic (proxied by 4 dummies accounting for the topic of undergraduate studies, labelled "Deg. topic Arts and Human.", "Deg. topic Econ. and Stats", "Deg. topic Science and Techn." and "Deg. topic Soc. Sciences"), given that there is evidence that education is highly correlated to geographical mobility (Chiswick, 1999). Since the labour markets are likely more favourable abroad than in Italy, another important determinant which has been controlled for is whether the individual has done the M&B abroad (as opposed to Italy); this factor is represented by the dummy "M&B abroad". Furthermore, since there is evidence that the size of the labour market is correlated to the likelihood to find suitable

employments (Glaeser and Maré, 2001), we have created a dummy which takes the value 1 when the recipient has done the M&B programme in the largest Italian cities – i.e., Rome and Milan; the corresponding dummy is labelled "M&B in Rome or Milan". There is also evidence that higher levels of unobserved ability are correlated to positive selection into migration. In this regard we would expect the less able to be the most likely not to return to Sardinia on completion of their M&B experience. In order to control for unobserved ability we have relied on three proxies: the first one, "Father university", is a dummy taking the value 1 for the interviewees whose father has completed tertiary education; the second one is a dummy accounting for whether the interviewee has achieved a final undergraduate degree mark of at least 110/110 (the dummy is labelled "Final mark: 110/110 or higher"; finally, the third one is a dummy which considers whether or not the first degree was completed on time – if it was completed more than one year late, a dummy labelled "Graduation more than one year late" takes the value 1. To conclude, the last group of dummies considers in which call the programme was taken, with the options being "Call 2006", "Call 2007", "Call 2008" and "Call 2009". In other words, these dummies proxy the time elapsed since the beginning of the programme and, as a result, how long the recipients have had to enter and integrate in the labour market before the study survey (further information about the exact definition of the variables and their source can be found in Appendix 4.1).

4.4.4 Quantitative empirical analysis

This sub-section presents the implementation and the results of the quantitative analysis: first the focus is on the income differentials among the recipients by current location, then on the determinants of return migration.

4.4.4.1 Income differentials by location choice

With regard to the economic gains/losses from non-return (step 1), the descriptive statistics of our data show that the location choice is strongly associated with income. In fact, those currently located abroad on average have a net monthly income 957 euros higher than those located in Sardinia. On the other hand, the net monthly income of those located in another Italian region (other than Sardinia) is only 139 euros higher. According to this very rough estimation, return tends to be economically very inconvenient for an individual located abroad and just slightly inconvenient for one located in other Italian regions.

However, since different locations could have different costs of living, net monthly income has also been calculated at Purchasing Power Parity (PPP). In this regard, since most of the interviewees tend to locate in the main urban centres, where the

costs of living are much higher than the regional (or national) averages, we decided to adjust for costs of living at capital cities level for individuals located abroad and at regional capital cities level for individuals located in Italy[7]. This has been done by relying on the conversion coefficients provided respectively by the EUROSTAT (EC, 2011a, EUROSTAT, 2009a, EUROSTAT, 2009b) and by the ISTAT et al. (2009)[8].

Figure 4.2 – Boxplots comparing the average current net monthly income (in euros) and current net monthly income at PPP (in euros) by current location

Net monthly income and net monthly income at PPP
by current location

Source: Author's data
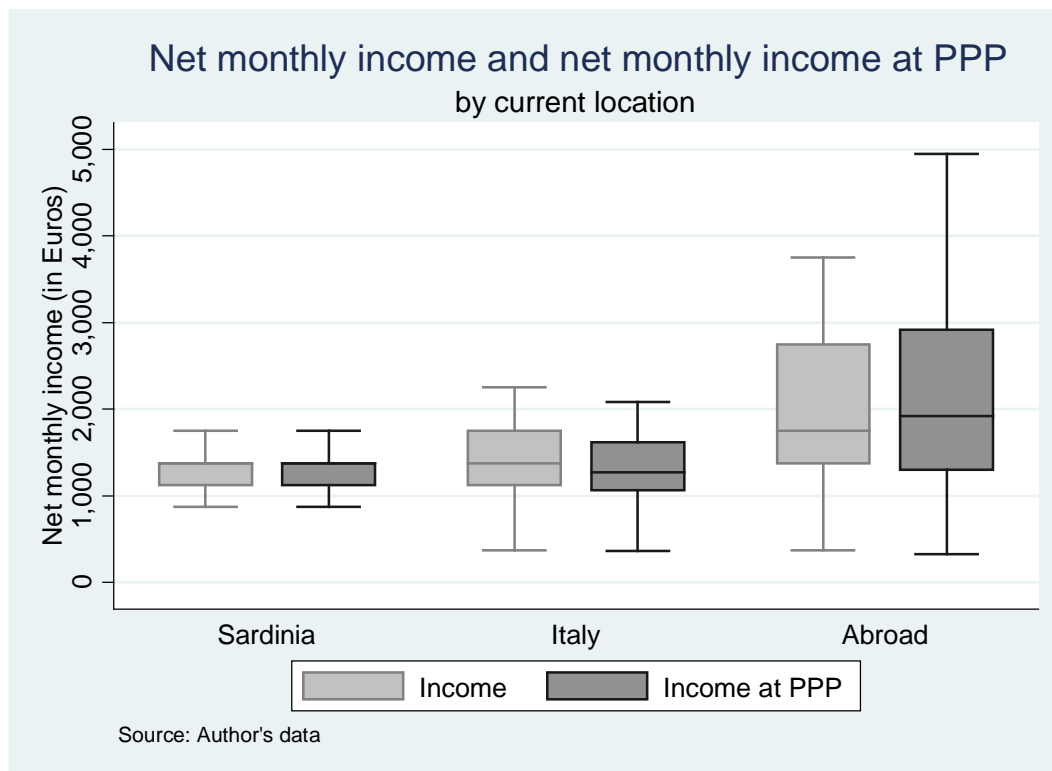
If we repeat the comparison of the average net monthly income by location choice adjusted to costs of living (i.e., at PPP), surprisingly working abroad becomes even more convenient. Individuals working abroad earn 1,003 euros more than those who have returned to Sardinia, while working in other Italian regions leads to a smaller earning advantage – on average, just 63 euros more than those working in Sardinia. Figure 4.2 summarises these results by comparing the average income of the recipients by current location and taking into consideration both the net monthly income and net monthly income at PPP.

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[7] This distinction has been made since, as mentioned earlier, we only have information at regional level for recipients located in Italy, while for the other recipients we have data at the national level.
[8] Since the only conversion factors at regional capital cities level available for Italy refer to 2009, all conversion factors refer to this year.

Since Cagliari (the Sardinian capital city) was used as the reference category, unadjusted income (light grey) and income at PPP (dark grey) are the same. On the other hand, for individuals located in other Italian regions, income at PPP is slightly lower than raw income, since most of the recipients in this category were located in Rome and Milan, where costs of living are higher than in Cagliari. Finally, for those located abroad income at PPP is higher than raw income, since a significant fraction of the recipients abroad were in places where the cost of living is lower than in Sardinia – for instance, there are many recipients currently located in Spain.

The next step consists in recalculating income differentials by location choice through the more formal method stated in Eq. 4.3, where net monthly income at PPP in euros is used as a dependent variable. There is some debate in the literature as to whether linear regression or logs of income better describe the data (see e.g. Grogger and Hanson, 2011). Rather than taking sides, we have chosen to use both, but since both techniques gave similar results, in Table 4.2 we only report the results for linear regression, whose interpretation is more straightforward. On the other hand, the logs of income are reported in Appendix 4.3, Table A-4.4.

Our dependent variable is regressed on the current location of our interviewees and on a set of standard controls which are customarily taken into consideration by the literature. In model 1 we only consider current location, which can be either Italy or abroad ("Current location: abroad" and "Current location: Italy"; the reference category is "Current location: Sardinia") and some individual characteristics such as "Male" and "Age treat". In model 2 we add the topic of the individual's undergraduate studies ("Deg. topic Econ. and Stats", "Deg. topic Science and Techn." and "Deg. topic Soc. Sciences"; the reference category is "Deg. topic Arts and Human.") and level of education ("Higher=Master's" and "Higher=Ph.D."). Model 3 also controls for individual ability through some standard proxies: "Final mark 110/110 or higher", years beyond normal completion time of undergraduate studies ("Graduation more than one year late") and father's level of education ("Father university"). Finally, model 4 adds controls for the year in which the programme began ("Call 2006", "Call 2007", "Call 2008" and "Call 2008"), which can be considered a proxy for the time available before our study for the recipient to enter and integrate in the labour market (for further information on the definition of the variables, see Appendix 4.1).

Models 1 to 4 have been estimated on the Standard sample, while models 5 and 6 have been estimated on different samples as robustness checks. In particular, model 5 also includes the recipients whose "Back" was underway when the survey was

conducted, while model 6 excludes all those who took the "Back", irrespective of whether already concluded or still underway.

Table 4.2 – Net monthly income differentials at PPP in euros by location choice

VARIABLES Dep. Var.: Net monthly income at PPP	(1) Stand. Sample	(2) Stand. Sample	(3) Stand. Sample	(4) Stand. Sample	(5) All Backs	(6) No Backs
Current location: abroad	**993.7*****	**999.1*****	**1,003*****	**1,019*****	**978.9*****	**968.2*****
	(107.4)	(103.7)	(104.0)	(103.7)	(79.19)	(134.8)
Current location: Italy	**108.8**	**86.06**	**100.3**	**149.5**	**99.07**	**94.92**
	(103.9)	(99.96)	(100.7)	(101.5)	(78.13)	(131.5)
Male	348.9***	245.4***	253.3***	254.3***	182.5***	307.4***
	(89.77)	(89.42)	(89.84)	(89.32)	(65.15)	(110.1)
Age treat	3.726	11.18	20.23	23.14	20.94*	23.68
	(14.01)	(13.72)	(15.28)	(15.30)	(11.42)	(18.91)
M&B Ph.D.		213.7*	205.7*	111.2	17.11	93.36
		(120.1)	(120.2)	(123.7)	(92.05)	(147.7)
Deg. topic Science and Techn.		315.2***	301.9***	310.4***	218.2***	344.4**
		(108.0)	(108.6)	(107.9)	(78.43)	(135.6)
Deg. topic Econ. and Stats		833.6***	820.9***	810.7***	682.4***	854.0***
		(147.0)	(147.2)	(146.4)	(118.3)	(175.6)
Deg. topic Soc. Sciences		431.3***	427.7***	434.2***	309.2***	464.1***
		(115.2)	(115.3)	(115.0)	(86.33)	(140.7)
Final mark: 110/110 or higher			36.66	59.22	102.5	42.79
			(89.59)	(89.18)	(66.75)	(107.9)
Graduation more than one year late			-148.3	-133.3	-84.10	-145.1
			(95.64)	(95.38)	(70.30)	(117.5)
Father university			-110.3	-109.2	-79.12	-119.6
			(103.0)	(102.6)	(76.01)	(123.5)
Call 2007				-91.86	-79.61	-96.19
				(129.0)	(95.98)	(163.4)
Call 2008				-141.7	-106.3	-143.8
				(119.5)	(81.68)	(146.6)
Call 2009				-328.4***	-293.5***	-352.4***
				(107.2)	(86.47)	(129.9)
Constant	1,044**	536.5	341.2	353.0	492.6	374.4
	(409.7)	(406.0)	(449.1)	(449.2)	(333.8)	(573.6)
Observations	396	396	396	396	564	320
R-squared	0.237	0.304	0.311	0.328	0.307	0.322

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

As can be seen from the table, the estimates confirm what had been suggested by the earlier analysis: being located outside of Italy seems a very rewarding choice, at least from an economic point of view. Our model shows that individuals who stayed abroad earn 968 to 1,019 euros per month more than those who decided to return to Sardinia (the reference category). This amount corresponds to roughly 60% of the average monthly earnings of the full sample, which equals 1,618 euros per month. The results

are robust since they are significant at 1% irrespective of model and sample specification.

On the contrary, being located in other Italian regions is not a good deal for the recipients of the scheme. In fact, our estimates are statistically non-significant, suggesting that the net monthly income at PPP of individuals located in other Italian regions is very close to those of individuals located in Sardinia.

According to Human Capital Theory, return migration should be higher as long as it is convenient from an economic viewpoint (i.e., when expected income, net of the migration costs, is higher in Sardinia than elsewhere). Table 4.3, which reports the rates of return to Sardinia from abroad and from other Italian regions, seems to support this claim. In fact, return rates are 14% higher for those who use the M&B Higher Education in other Italian regions (50%) than for who go abroad (36%)[9]. In other words, the data suggest that return migration from other Italian regions is higher since, on average, coming back is economically much more convenient as compared to coming back from abroad.

Table 4.3 – Rates of return to Sardinia by MB location (Standard Sample)

MB location	Non-returner		Returner		Total	
	No.	%	No.	%	No.	%
Italy	186	50	188	50	347	100
Abroad	156	64	88	36	244	100
Total	342	55	276	45	618	100

Source: Author's data

Despite the simplicity and charm of this explanation, it does not entirely portray return patterns. In fact, many recipients do not come back even though they are located in other Italian regions (i.e., where non-return is not economically convenient), while many others come back from abroad even though this could lead to economic losses.

Concerning the relatively low rate of return from other Italian regions despite the low average income, a potential explanation is that the recipients might be willing to accept lower current incomes since in the future they expect them to grow faster and to exceed potential gains in Sardinia. Unfortunately, our data do not allow us to test this

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[9] Naturally, if we also consider the recipients of the Back who were doing the back when the survey was conducted, the percentage of returners increases significantly, to 39% for who studied abroad and to 61% for who studied in another Italian region.

hypothesis empirically: the programme has been concluded recently and we do not know the evolution of the recipients' income over time.

In any case, we believe that earnings cannot be the only determinant of migration (and of return migration), but that there must also be some complementary explanations that need to be taken into account. Therefore, the question that will be addressed next is: besides income, what drives the recipients of the programme M&B to return (or not to return) to Sardinia?

4.4.4.2 Testing alternative explanatory factors

Table 4.4 reports the results of the logistic model that, consistently with Eq. 4.6, has been used to estimate the determinants of return migration to Sardinia on completion of M&B Higher Education. It is important to note that the results are reported in odds ratio, which represent the effect of the independent variables on the odds of return to Sardinia occurring. Odds ratios range from zero to infinity, therefore negative values do not exist. An odd ratio smaller than 1 should be interpreted as a negative correlation between the independent variable and the dependent variable, while odds ratios higher than 1 should be interpreted as a positive correlation (Long, 1997).

Now we can turn to the description of the models. First, in models 1 to 3 each of the three sub sets of independent variables of interest, plus the standard controls, have been regressed separately on the outcome of interest: return to Sardinia. Secondly, in models 4 and 5 all the independent variables have been regressed at once in a single model. Moreover, while models 1 to 4 were implemented on the Standard sample, model 5 is a robustness check which includes the same variables as model 4 but excludes all the recipients of the "Back".

An additional 3 robustness checks were performed and are identified as models 6, 7 and 8. Their results are reported in Appendix 4.4, Table A-4.5. Model 6 considers all the interviewees, including those whose "Back" was in progress. Models 7 and 8 respectively assess the determinants of return migration for the sub-sample of individuals who made use of the programme in Italy and for those who did it abroad. These sub-samples were again taken from the Standard sample. We would expect these two sub-samples to behave differently from each other since they have different economic incentives to return – return is more economically inconvenient for those located abroad.

Table 4.4 – M&B, determinants of return migration: odds ratios from logistic estimation

VARIABLES	(1)	(2)	(3)	(4)	(5)
Dep. Var.: Return migration	Stand. Sample	Stand. Sample	Stand. Sample	Stand. Sample	No Backs
AMENITIES					
Tolerance	0.0905***			0.234**	0.0754**
	(0.0564)			(0.167)	(0.0832)
Cultural/ethnic diversity	0.191***			0.123***	0.121**
	(0.111)			(0.0858)	(0.107)
Cultural industries	0.0475***			0.0546***	0.0789**
	(0.0491)			(0.0597)	(0.0880)
CAREER AND JOB RELATED MOTIVATIONS					
Finding a good job		0.121***		0.125***	0.145***
		(0.0263)		(0.0304)	(0.0413)
Start own business		0.461**		0.405**	0.511
		(0.155)		(0.147)	(0.220)
Unemployment rate		1.018		1.034	1.069
		(0.0364)		(0.0397)	(0.0480)
Local income at PPP		0.999		1.000	1.000
		(0.0005)		(0.0005)	(0.0005)
Good universities research centres		0.0716***		0.0469***	0.0627***
		(0.0543)		(0.0394)	(0.0531)
SOCIAL NETWORKS					
Degree in Sardinia			2.476***	2.243**	2.842**
			(0.727)	(0.806)	(1.242)
ERASMUS			1.076	0.998	1.034
			(0.216)	(0.241)	(0.292)
Study experience out			1.300	1.194	1.003
			(0.362)	(0.401)	(0.401)
Job experience out			0.386***	0.475***	0.668
			(0.0803)	(0.118)	(0.196)
Join none			1.780***	2.175***	2.395***
			(0.330)	(0.494)	(0.632)
Close to family			2.184***	0.907	1.044
			(0.424)	(0.211)	(0.279)
Married or unmarried partner			1.351	1.310	1.310
			(0.253)	(0.292)	(0.341)
CONTROL VARIABLES					
Male	1.299	1.262	1.325	1.335	1.278
	(0.243)	(0.260)	(0.254)	(0.311)	(0.339)
Age treat	1.071**	1.062*	1.077**	1.075*	1.102**
	(0.0346)	(0.0385)	(0.0357)	(0.0429)	(0.0514)
Higher=Ph.D.	0.752	0.936	0.740	0.921	2.034*
	(0.186)	(0.260)	(0.189)	(0.297)	(0.752)
Deg. topic Science and Techn.	0.975	1.077	0.841	0.858	0.855
	(0.215)	(0.261)	(0.194)	(0.234)	(0.277)
Deg. topic Econ. and Stats	0.763	0.813	0.670	0.548	0.729
	(0.245)	(0.289)	(0.221)	(0.217)	(0.328)
Deg. topic Soc. Sciences	0.793	0.702	0.601*	0.652	0.617
	(0.204)	(0.195)	(0.159)	(0.204)	(0.230)
M&B abroad	0.448***	0.537*	0.454***	0.497*	0.445*

VARIABLES	(1)	(2)	(3)	(4)	(5)
Dep. Var.: Return migration	Stand. Sample	Stand. Sample	Stand. Sample	Stand. Sample	No Backs
	(0.102)	(0.192)	(0.108)	(0.191)	(0.197)
M&B in Rome or Milan	0.617**	0.715	0.663*	0.657	0.598
	(0.142)	(0.179)	(0.156)	(0.181)	(0.192)
Father university	0.850	1.097	0.736	0.945	1.031
	(0.189)	(0.274)	(0.167)	(0.262)	(0.334)
Final mark: 110/110 or higher	1.299	1.175	1.105	1.046	0.940
	(0.247)	(0.243)	(0.214)	(0.243)	(0.253)
Graduation more than one year late	0.936	0.878	0.868	0.736	0.523**
	(0.188)	(0.194)	(0.180)	(0.183)	(0.155)
Call 2007	1.256	1.238	1.036	1.123	1.987*
	(0.352)	(0.381)	(0.287)	(0.384)	(0.825)
Call 2008	0.781	0.818	0.807	1.054	2.470**
	(0.193)	(0.225)	(0.203)	(0.324)	(0.932)
Call 2009	0.610**	0.597**	0.555**	0.553**	2.312**
	(0.141)	(0.152)	(0.132)	(0.155)	(0.809)
Constant	0.268	1.206	0.0714***	0.355	0.0173**
	(0.247)	(1.554)	(0.0719)	(0.512)	(0.0293)
Observations	618	618	618	618	497
Pseudo R-Squared	0.135	0.251	0.137	0.357	0.346

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Model 1 focuses on amenities and provides evidence that all the related variables are negatively associated with return decision and statistically significant at 1%. In short, amenities – at least those which have been tested in our analysis – lure the recipients away from Sardinia. At first glance these results might seem to confirm Florida's theory, according to which tolerance, cultural and ethnic diversity and the presence of "cultural industries" are particularly relevant to predict graduate location choice. However, due to the nature of our data, this interpretation would be misleading. In fact, while Florida relies on data at national (or regional) level and tries to proxy the objective endowment of different locations with amenities, our data are self-reported and correspond to the individual perception of the importance of amenities. In this regard, the key message that should be drawn from these estimates is that individuals tend to self-select into return migration depending on the importance they attach to amenities: who values amenities most is less likely to return.

Model 2 focuses on career- and employment-related factors. As outlined earlier we proxied these factors through two categories of variables: self-reported variables accounting for the importance attached by each interviewee to various career-related factors, and objective characteristics of alternative regional/national labour markets.

The first self-reported variable, "finding a good job" is negatively associated to return and is significant at 1%. Those who selected this option are almost ten times less likely

to return to Sardinia as those who did not. Like the previous variable, the second self-reported variable – "start own business" – is negatively associated to the outcome variable, though more weakly: it is statistically significant at 5%. Whoever ticked this option is about half as likely to return as an individual who did not.

Concerning the two indicators accounting for the objective economic conditions of the receiving country/region – "local income at PPP" and "unemployment rate" – their effect on the location decision is not statistically significant. In other words, there is no evidence that they affect the return decision of the interviewees.

The last variable of this sub-group is also self-reported and accounts for the importance attached by the interviewees to the presence of "good universities and research centres". It is meant to proxy the role of innovation in attracting graduates. The results show that this variable is strongly correlated with non-return in that, on average, those who ticked this motivation are less than one tenth as likely to return to Sardinia as those who did not. This estimate is statistically significant at 1%.

In summary, model 2 provides evidence that the location choice is highly subjective and hinges more on the perceived constraints and opportunities in alternative locations than on the objective conditions of their labour markets. Indeed, individuals who value most job-related motivations to make the location decision (as proxied by the variables job opportunities, self-entrepreneurship and innovation) are less likely to return to Sardinia (self-selection), while the objective labour market conditions in the regions which hosted the M&B-financed studies (unemployment rates and local income at PPP) do not seem to play a major role.

The statistically insignificant differences in the objective labour market conditions might depend on the labour markets' heterogeneity, whereby the same location might provide good job opportunities for some but not for others, depending on individual education, social networks and so on. For instance, a local economic system specialised in informatics might provide good opportunities for informaticians and engineers, but very few for chemists, biologists and so on. Moreover, the informaticians and engineers with good social networks might be more likely to find good employment compared to their peers with worse or no social networks, since social networks can help find and open many doors. In short, the individual perception of job opportunities might be a better predictor of return migration than objective unemployment rates and average earnings as this is more able to account for the heterogeneity of the labour markets in which the interviewees have studied. This is an important issue which we scrutinise more closely later in the text.

In model 3 we turn our attention to the last sub-group of dependent variables: social networks. The relevant literature challenges the idea that location choice is an individual choice (Vertovec, 2002). On the contrary, social relations, both in the sending and the receiving country, are believed to also influence the location decision. Not surprisingly, the strongest predictor of return migration of this sub-group is "degree in Sardinia" – significant at 1%. Individuals who completed their undergraduate degree in Sardinia are more than twice as likely to return as those who got it elsewhere.

Moreover, as expected our results show that having prior (to M&B) work experience outside Sardinia ("Job experience out") is negatively associated to return migration and statistically significant at 1%: whoever had prior work experience outside Sardinia is less than 40% as likely to return than whoever did not. On the contrary, having prior study experiences outside Sardinia (proxied by the variables "ERASMUS" and "Study experience out") unexpectedly do not seem correlated to return. The low incidence of these variables, compared to the previous ones, might be explained by the fact that a job experience outside Sardinia requires a stronger level of adjustment and integration in the host region than a study experience.

The last variable accounting for previous migration experience is "join none", which proxies the level of integration in the host region. "Join none" enhances the probability of return by almost twice and is statistically significant at 1%, by showing that low levels of adjustment are a strong predictor of return and, therefore, confirm previous findings (Baruch et al., 2007).

From our analysis it also emerges that being "married or unmarried partner" when the application to M&B was submitted is not correlated to return migration while, according to previous literature, we would expect a strong positive correlation (Baruch et al., 2007, Güngör and Tansel, 2008, Tiemoko, 2004). This result is most likely related to the fact that, due to their young average age, few recipients were married or had stable partners when the application was submitted.

Finally, the variable "close to family", proxying family ties, is highly statistically significant for model 3. However, in the full models it becomes statistically non-significant. A potential explanation for this effect is that individuals may be unable to join family despite the desire to do so, perhaps due to exogenous constraints – like the need to find a suitable job. In any case, this issue is analysed more closely in the qualitative section.

In summary, model 3 suggests that networks are highly relevant in people's location choice. In particular, having completed their first degree in Sardinia and having family in Sardinia seemed to pull the recipients back to their original location. On the contrary, having work experiences outside Sardinia – longer than a study periods – works as a push factor. However, those who did not form networks within the local environment during their migration experience proved to be more likely to return. This effect may also hinge on the fact that low levels of adjustment in the host country reduce the probability of finding a suitable job there.

Nonetheless, the most interesting results are provided by models 4 and 5, which pull together all the subsets of variables considered by the previous models in a single framework. The estimates show that the variables proxying amenities are still below 1 (i.e., they provide evidence of a negative correlation) but tend to loose significance, particularly in model 5 where individuals whose location decisions have been affected by the "Back" part of the programme have been excluded.

The individual perceptions of (self-)employment opportunities and innovation confirm to be very strong drivers of location choice, regardless of the sample considered. As expected, they tend to push the recipients away from Sardinia as, most likely, the Sardinian labour market is perceived as poor of job opportunities and Sardinia as scarcely endowed with good universities and innovation centres.

Concerning the network variables, what seems to matter most is the balance between internal Sardinia-based networks ('degree in Sardinia' variable) and the development of networks in the destination regions/country ('Join none' variable): if people do not develop networks in the destination region they tend to return. Social networks might also play a key role in shaping access to job opportunities both in the sending and in the receiving country. In particular, social networks could facilitate access to jobs, a crucial issue which is further discussed in the next section.

4.5 Expanding the results through qualitative methods

The results presented in the previous paragraph provide a good snapshot of the influence of an array of factors, individual characteristics and preferences on return decision. In practice, for each of the covariates that have been taken into consideration, we know whether it is correlated to the return decision, as well as the strength and direction of that correlation. We also know how these covariates interact with each other. What we do not know, however, is whether the recipients would have chosen the same variables had they not been forced to choose among a finite number of options in

the web questionnaire. Moreover, we do not know how the decision-making process occurred and how individual histories influenced it. Through the qualitative phase we will try to shed light on these issues by extending and completing the picture depicted by the quantitative phase.

4.5.1 Methods of qualitative data collection and analysis

The qualitative data collection for this study consisted of three steps, which are explained in order: sampling, in-depth interviews and thematic analysis. In the first step, a sample of 20 interviewees was selected. This number was then increased until no new concepts or ideas emerged from additional interviews. To put it in the words of Bauer and Gaskell (2000), until "theoretical saturation" was achieved. This level was reached at the 28th interview.

A purposive sampling approach was used which followed these criteria. First, all the interviewees were drawn from the first call of the scheme (Call 2006), since they provide scope to assess the recipients' migration choices in the light of a longer time span. Secondly, the set of interviewees was equally comprised of returners and non-returners; in fact, it was important to explore both the migratory motivations of both those who eventually returned and those who did not. Thirdly, an equal number of females and males were sampled, since migration choice is very gender sensitive. Fourthly, only Master's students were considered, since their migration motivations are most likely different from Ph.D. students. Table 4.5 summarises the sample composition:

Table 4.5 – In-depth interviews' sample

	Returner	Non-returner	Total
Male	7	7	14
Female	7	7	14
Total	14	14	28

In step number two interviews conducted through Internet-based telephony, which is inexpensive and allows conversations to be easily recorded. Fortunately, in our sample everyone had access to and was familiar with such technology. The interviewees were asked, in a very open-ended fashion, the motivations that drove them to return (or not to return) at the end of their M&B experience. This approach was taken in order to let their motivations emerge inductively, without suggestion or constraints. Afterwards they were also asked to provide an account of their migration experiences by contextualising how their decision-making process took place. This interviewing strategy allowed us to both double-check the findings of the deductive approach

followed in the quantitative phase and to explore the concrete dynamics underlying the location decision.

This leads us to the last step, thematic analysis: a research tool seldom acknowledged by scholars but broadly used in qualitative research (Boyatzis, 1998), which has been defined by Braun and Clarke as "a method for identifying, analysing, and reporting patterns (themes) within data" (2006, p. 6). In its implementation this step consisted of the following sub-phases.

First, each interview was transcribed verbatim. Second, the transcripts were carefully read and coded. The coding was performed according to the theoretical framework drafted in the quantitative part of the research (i.e., according to the variables that had been used in the quantitative phase); in addition, great attention has also been paid to the emergence of new codes. In fact, coding followed a hybrid deductive and inductive approach (Fereday and Muir-Cochrane, 2008). This strategy allowed us to check whether the push/pull factors emerged from the survey were biased by the implicit constraints of multiple choice questions, while simultaneously leaving the possibility open for the interviews to expand the findings of the quantitative analysis through the search for unexplored motivations and determinants. Moreover, the narratives were attentively read to detect the actual dynamics leading to the location decisions as they emerged.

Coding took place at the explicit level, as opposed to the latent level (Boyatzis, 1998). Therefore, a semantic approach was used, focusing on the explicit meaning of the interviewees' statements rather than on their underlying ideas, assumptions, conceptualisations and ideologies. Codes were then aggregated into themes – i.e., semantic groups capturing the key issues in relation to the relevant research questions (Braun and Clarke, 2006).

The logical interconnections among themes were unravelled in order to identify the thematic structure of the data. This was not a linear process, since the analysis involved a continuous, iterative process consisting of going back and forth from the specific to the general – i.e., from the text to the overarching structure that little by little emerged. The themes were identified according to "prevalence", meaning the explanatory power of each theme with regard to the research questions, and to its recurrence across the interviewees' narratives (for a discussion of the concept of prevalence see Braun and Clarke, 2006).

4.5.2 Qualitative results

In the quantitative phase we found that the return decision is correlated to amenities, job opportunities and social networks. In particular, those who self-reported amenities as important are less likely to return to Sardinia, even though the variables proxying amenities tend to become less statistically significant in the full models, thus showing that there is an interaction with the other subsets of explanatory variables. Also, individuals who self-reported the importance of job opportunities are significantly less likely to return, while objective labour market conditions are not significant, possibly due to the heterogeneity of the labour markets themselves. Finally, a very important role seems to be played by the dialectic between alternative social networks in the host and in the sending regions: weak social networks in the host region and strong social networks in the sending region are both correlated to return, since individuals who do not integrate tend to return to benefit from the support of the social networks in the home region.

This section aims to integrate and extend the quantitative results in order to provide a deeper and more comprehensive understanding of the phenomenon under scrutiny. More specifically, we have checked whether the motivations considered in the quantitative phase also emerge inductively or whether, by letting the interviewees freely express their motivations, different factors surface. In this regard, the qualitative results are quite consistent with the quantitative ones, as the interviewees mention roughly the same motivations: in particular, job opportunities, amenities and social networks.

Moreover, we have further studied the relative influence of different factors and their interplay by putting them into context – i.e., into the dynamics of individual life course and personal circumstances as they emerge from the interviewees' accounts. On this subject, there is evidence that some motivations are overwhelmingly more important than others. Specifically, professional motivations as well as family and partnering ties are crucial, while location characteristics have a much less important role[10]. Furthermore, from the analysis it emerges clearly that social networks play a key role in shaping access to opportunities, both in the sending and in the receiving countries.

Our findings challenge the idea that the location decision is a linear process and support the idea that it is partly shaped by prior migration experience, life course (path-dependence) and partly by unpredictable interactions with contingent factors (serendipity). Contingent factors are filtered by the individual, who takes his/her migration decisions according to his/her individual perception of migration opportunities

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[10] This is consistent with previous literature (Martin-Brelot et al., 2010; Murphy and Redmond, 2009).

and constraints. As Thomas & Thomas' said, "if men define situations as real, they are real in their consequences" (Thomas and Thomas, 1928, p. 572 in Merton, 1995, p. 395). In other words, migrants tend to go where they expect to be better off, rather than where there are objective conditions to be so. This is consistent with the quantitative results, which showed that the perception of constraints and opportunities was more important than the objective economic conditions in alternative locations.

In the following section these findings are discussed in more detail, by using the "voices of the interviewees". First, the determinants of location decision are reviewed and discussed. Then, by looking at the concrete evolution of individual life stories, evidence is provided of how the decision-making process unfolds, leading to the location choice.

4.5.2.1 Location choice determinants

Various interviewees agree that the most important determinants of location choice are family and job opportunities. "I can emigrate for two reasons: either I have a relationship away or I'm looking for a job"[i] says an interviewee; "from my viewpoint there are two determinant factors [when it comes to make a location choice]: profession, and I would move almost certainly if I had a good job proposal, and family, since if you have a family you necessarily have to find a balance [between employment and family]"[ii], adds another interviewee.

However, while professional reasons are the most important push factors, family and partnering ties as well as cultural factors are the most important pull factors. Indeed, those who return to join family, a partner or, more generally, to be where they "feel home" are aware that this could lead to missing job opportunities – which outside Sardinia are perceived to be more abundant. For instance, according to an interviewee, male, researcher, currently located in Sardinia: "if you return to Sardinia you must compromise, you know well that you won't be able to achieve exactly what you whished [from a professional viewpoint], but you must settle for less"[iii]. When he decided to return he knew he was going to make professional sacrifices; nevertheless he returned anyway. Another interviewee states that to return she would forgo the ambition of finding a job consistent with her competences (mismatching)[iv].

Another finding that has emerged clearly and is particularly insightful for the purpose of this research concerns the interplay between social networks and job opportunities. In fact, there is evidence that social networks are particularly important to exploit the existing job opportunities. On the one hand, people with strong social networks in the

sending region tend to return since social networks are seen as a source of support to enter and progress in the local labour market. On the other hand, people who have built solid social networks in the receiving region are likely to exploit them to find a job there and, as a result, are less likely to return. Indeed, there seems to be a dialectic of alternative networks which can open employment opportunities in different geographical areas and, as such, can influence the location choice.

In the next sub-sections each of the key drivers of our sample's location decision are discussed in detail.

4.5.2.1.1 Career/professional factors

The importance of career/professional factors and economic motivations in discouraging return has already emerged in the quantitative phase. However, our qualitative data provide the means to further extend these results.

First of all, professional factors are by far the most important non-return motivation highlighted by the interviewees. They can have different connotations depending on the interviewees' needs, preferences and expectations (high earnings, good career opportunities, job stability, learning prospects and so on), and their influence on the return choice hinges on the individual perception of the Sardinian labour market as opposed to alternative labour markets.

For instance, a male working at a consultancy firm in Sweden points out that upon completion of his Master's he searched for a job in Sardinia. He found a position that paid 1,200 euros per month. However, earnings in Sweden were much higher and job opportunities much better, which led him not to return to Sardinia.

Through the analysis of the interviewees' accounts our qualitative data allow us to make causal claims on what determined their location decision. In this example, the causal relationship between job opportunities and location decision emerges clearly: "I had to weigh two things: great [job] opportunities in Rome and family. Though homesickness was quite strong I chose the former. What was I supposed to do?"[v], says a female, working at a large consultancy company in Rome. This last statement reveals the inevitability of the choice. In a similar vein, another female, currently doing research in Sardinia, but who would like to emigrate again because she is dissatisfied with her current job, says: "if I had the possibility to have a decent job in Sardinia, I would stay"[vi]. Nevertheless, in this case as in others, it appears that even though the interviewee wished to stay she felt forced to leave since finding a decent job was a key priority in her life.

Almost all the interviewees tend to depict the Sardinian labour market as poor and inefficient, as opposed to more buoyant alternatives. A female working at a consultancy firm in Bologna posits that there is a big difference between the labour market in Sardinia and in Bologna[11] since while in Sardinia you only "get doors slammed in your face, in Bologna employers contact students in their universities".

Very often it is reported that the expertise developed through the M&B programme cannot be imported into Sardinia simply because there are no firms/organisations that need it. For this reason, it can prove to be very hard to find a job in Sardinia suitable for highly skilled individuals. For instance, an interviewee, female, currently based in Northern Italy, working in a large multinational consultancy firm, states that "[in Sardinia] the level of the business fabric is very limited and therefore consultancy at certain levels is not acknowledged nor valued. [When I think of returning to Sardinia,] I see my friends who live there working in call centres and I tell myself: what the hell would you do there?"[vii]. An engineer doing IT research in Boston says: "if I were to come back I would make professional sacrifices and forget about the things I'm doing here"[viii]. Another male based in Milan and working in marketing says: "in Sardinia it's impossible to do my job because there it just doesn't exist"[ix].

Another problem of the Sardinian labour market, which seems to have pushed various interviewees to leave, is unpaid work – a phenomenon that is particularly frequent in the first career stages. For instance, various people report the practice by firms to activate unpaid internships to fill vacancies, instead of hiring proper members of staff. Sometimes, the same person could end up working without retribution for very long times. A female working in Bologna reports that she tried to work in Sardinia after graduating by starting an internship in a business consultant's office. She continued her story, laconically: "you know how it works: the usual exploitation without giving you any chance to improve your competences, […] asking a lot and not paying you at all"[x]. The same point has been made by others as well. For instance, a male, engineer, reports that upon graduation he was looking for his first job but in Sardinia he was only offered unpaid jobs, so he decided to emigrate.

Various interviewees also criticise the Sardinian labour market for being inefficient: "what concerns me most is the lack of professionalism in doing business", says a marketing consultant currently working in Sardinia and Lazio. "Firms should stop seeking assistance from the region, the provinces and the municipalities; they should

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[11] Bologna is a rich and dynamic city located in Northern Italy.

try to stay in the market with their own strengths", says a marketing consultant based in Milan[xi]. Another interviewee, female, based in Sardinia is convinced that the Sardinian labour market is very "poor" since it does not provide many job opportunities, particularly for individuals endowed with high skills. She adds that "the thing that is really sad is the waste of skills and experience of the highest level. A society that does not invest in these things has a really dark future ahead"[xii]. A male, currently based in Milan, adds that though he tried to find a job in Sardinia he could only find vacancies in call centres or other very low-skilled jobs: "I felt too young to end life in a call centre"[xiii]. As a result, he decided to move to Milan where career opportunities were brighter.

Another aspect related to the Sardinian labour market is lack of meritocracy, a very popular word in the Italian media. According to a male, engineer, located in Sardinia, younger workers are marginalised, especially in small firms, since firms are run in an old-fashioned and non-innovative way and they tend not to value new skills. On the contrary, various interviewees currently working outside Sardinia state that meritocracy is a value in their current working environment and that this is one of the reasons why they have decided not to come back.

The perceived lack of meritocracy is particularly stressed by researchers who depict the Sardinian academic system as nepotistic and ripe with clientelism. It must be said that this critique can be extended to the Italian academic system as a whole, which has also been defined as a "baron system" – i.e., an academic system that is a legacy of the past and "based on a feudal-like system where a professor uses his power to foster or stop a young scientist in his/her career" (Foadi, 2006, p. 217)[12]. In this regard, a researcher based in Sardinia, female, posits that "ineptitude, corruption and clientelism result in lack of meritocracy: this is why I am planning to leave again"[xiv].

Another male, researcher, based in Sardinia, says: "what I don't like about the academic career, at least here in Italy, is that it's not the best who advances, but the ones supported by the most powerful patronization or the ones with the right sponsors that let them work and appear in many publications in a short time compared to other who don't have the same opportunity. [Working in academia in Italy] is a very precarious condition which can last for many many years, so it's a very risky path. […] I don't feel like waiting any more, if you do not give me a chance to work now I'll go somewhere else!"[xv]. This quotation underscores how strong the repulsive power of the Sardinian academic system is, due to both the lack of meritocracy and to the very

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[12] On this topic see also Gill (2005).

precarious job conditions. The lack of meritocracy of the Italian academic system has also been empirically documented: a recent study (Allesina, 2011), based on the statistical recurrence of surnames among Italian professors, found strong evidence of nepotism in the Italian university system, especially in some academic sectors. Furthermore, nepotism seems to be more serious in the South than in the North of the country. Sadly, in this ranking based on the level of nepotism, the universities of Sassari and Cagliari – the two main Sardinian universities – occupy the second and the third position respectively.

In the quantitative phase of the study it emerged that the search for innovative areas and good universities is a key push factor, discouraging return to Sardinia. Our qualitative results tend to confirm this finding. For instance, a male, who after his Master's also completed a Ph.D. in Spain and now is doing a post-doc in informatics in Boston, points out that "professionally [Boston] is absolutely great: Harvard and MIT are there, which are heaven for engineers […]. If you want to pursue a successful career in any field, [in Boston] you can do it"[xvi]. This is consistent with previous studies according to which graduate migrants tend to be attracted by large cities, endowed with top-ranked universities and research centres (Faggian and McCann, 2006).

4.5.2.1.2 Social networks

In the quantitative phase we found evidence that opposite social networks lured the recipients back to Sardinia or away from it. These results are confirmed by the qualitative phase which, in addition, provides new details on the mechanisms leading to these outcomes.

According to our results, social networks play two main roles in shaping the location choice of former mobile students: they simultaneously work as both drivers and facilitators. They become "drivers" when they motivate the location choice, which usually occurs when there are strong family and sentimental ties. Of course, since most families and partners are located in Sardinia, these variables work as powerful pull factors.

Social networks become "facilitators" when they favour the access to opportunities. This is usually the case when the location decision is made in the pursuit of employment. In fact, depending on their quality and strength, social networks can open important job opportunities both in the sending and in the receiving region. Therefore, in this case the driver of the location decision is finding employment, while its achievement is facilitated by social networks. On the one hand we found evidence that

some recipients returned to Sardinia since they expected their social networks there to help them find a job or start a new business. On the other hand, we found that other recipients extended their stay in the receiving country/region thanks to their social networks there, which had been determinant in finding suitable jobs. The double role of social networks as push and pull factors is further discussed below.

Concerning the role of social networks as "drivers" of the location choice, in our in-depth interviews almost every interviewee mentioned family as an important motivation to locate in Sardinia. This was the case for returners but also for non-returners, who mentioned family as one of the things they missed the most about Sardinia: "far away from family, friends, seeing your parents maybe twice a year. […] I miss all of them every day, but I understand that given the job I've chosen it will be very difficult [to be physically close to family]" says an interviewee currently located abroad[xvii]. Family ties can be of variable strength and, as a result, also return propensity can vary. However, as shown by the quotation above, the wish to be close to family can be strongly hindered by the need to find an employment.

The accounts provided by the interviewees also allow us to understand that family is important not only for affective but also for economic reasons, since it can provide social and economic support. Various interviewees mentioned this motivation for staying in Sardinia. For instance, an interviewee currently located in Sardinia claims that family is important to provide economic and social support since "if you're outside [Sardinia] all the burden is on your shoulders, [which is] a great risk"[xviii]. "[In Sardinia] I got a social network [i.e. family] so that if I were to have a child I wouldn't have to spend billions for day care"[xix], adds another interviewee currently located in Sardinia as well. Another female, engineer, working in Sardinia, also reports that when she decided to come back the economic aspect played a key role, since in Sardinia her family could support her – a place to live with no rent, food, etc. It must be noted that this role of family as provider of economic support in times of hardship can be the main motivation driving the location decision. In fact, being close to family might be the only way to keep a decent standard of living.

Contrary to our expectations, the quantitative estimates did not provide any evidence that sentimental partners influence the location decision. As we noted earlier, this might depend on the fact that due to their young age very few interviewees were married or had partners when they applied to the scheme. Nevertheless, our qualitative data show that, as far as the few interviewees in a stable relationship are concerned, this factor is a very important driver to return to Sardinia. For instance, an interviewee, female,

currently located in Sardinia but unsatisfied with her job, on the one hand would like to migrate again to have better professional opportunities, but on the other her relationship in Sardinia does not allow her to do so. "[In Sardinia] I have a house, I got married and my husband's job is better than mine: he is a lawyer and his parents own a law firm. In order to do that kind of work you need to be well established in a place, so to justify relocating his firm I would need to find a really good job. My husband would be even willing to move, but it should be convenient for us. At this point we really plan according to what is economically convenient for the family as a whole"[xx].

As can be seen from this example, having a stable relationship can significantly affect the location decision, since the goal of the good of the family as a whole is prioritised over the good of its single members. Another example of a location decision made as a couple is provided by another interviewee: "I was in a relationship with a girl in Milan who had been presented a good job opportunity in Sardinia, and at the same time I was offered a job which looked interesting and I thought it could be a good opportunity for both of us to return"[xxi]. Like the previous case, in this example the location decision concerns the couple rather than the singles. In fact, return occurred when both partners were offered a job opportunity in the same place. The influence of marital status in migration decision is not surprising. Indeed, the literature has highlighted that often wives tend to follow husbands (see for instance Mincer, 1977) even though, as a result of the empowering of women and depending on the culture and social structure of the sending region, the opposite can also take place (Hanson and Pratt, 1995, Smits et al., 2003).

As we outlined earlier, the second way in which social networks can influence the location decision is related to their role as "facilitators" in creating opportunities (particularly job opportunities) that otherwise would remain inaccessible. In fact, we have found evidence of recipients both returning and staying due to the influence of their social networks. Some recipients have returned to Sardinia where they had strong social networks that could help them find (or create) a job; others, who had built good social networks in the location where they studied, had a smoother transition from education to work there.

Concerning the role of social networks as facilitators in accessing the labour market, an interesting example is provided by a male, engineer, currently working in both Barcelona and Cagliari: "for me the chances of opening a design studio are higher [in Sardinia than in Barcelona]. This, obviously, since a system of social networks comes into play that are paramount in my job. I can get projects only insofar as I know people

and those people, at least in the start-up phase of a design studio, are relatives, friends and other contacts you get through who you already know"[xxii].

Another engineer, self-employed, female, currently living and working in Sardinia, remarks that the lack of social networks outside Sardinia for an engineer can be a great handicap: "[as far as my job is concerned, working outside Sardinia] is very hard, especially in the beginning and if you are not well networked in the city where you wish to work"[xxiii]. She also specifies that, by being networked she means having friends, social relations and knowledge of the labour market. On completion of her studies, she returned to Sardinia – in part due to her lack of social networks in the host region. This account recalls the concept of location-specific capital put forward by DaVanzo (1981).

Other interviewees stress the importance of their social networks built over the course of their study mobility experience. For instance an interviewee, female, working in a large insurance company in the north of Italy reports that after her Master's she was able to find a job thanks to the social networks of her university, which was in contact with numerous important firms. She feels that this direct channel with the employers was a major advantage, in fact "if you send an email with your CV [to the potential employers] they rarely even notice it, while thorough your Master's you have the opportunity to get in direct contact with them and, unless you are a very unreliable person, they'll given you a chance [to work]"[xxiv]. The same concept is expressed by a male currently located in Milan: "the value of a Master's does not actually lie in what you learn, but in the internship at the end which gives you the opportunities to network with good firms and of have a special communication channel with them"[xxv].

Networking is also very important in academia and can lead to job opportunities. A male currently based in the US is a very good example of how this can occur. He completed the ERASMUS in Spain and, thanks to the good social networks he had built there, he was offered the opportunity to start a Master's there. Upon graduation he was invited to do a Ph.D. in the same university, during which his social network became even larger and stronger, eventually leading him to a post-doc position in Boston where his supervisor had good contacts. Another interviewee, a female currently based in France, provides further evidence of the importance of social networks when working in academia: "[during my Master's in France] I got to know the director of the department of languages. He is an Italianist and, the year after, he got me a job at the university"[xxvi].

Last but not least, there is yet another factor which deserves to be mentioned, especially in the light of its very important role in determining return migration to

Sardinia: cultural proximity. In fact, living where one was socialised, where one can speak his/her mother tongue and can "feel home" is particularly valued by the interviewees. This theme includes aspects that go beyond rational decision-making and involves the emotional sphere of the interviewees: "my connection to Sardinia has more to do with emotional issues than objective ones", says a female, researcher, currently based in Sardinia; "[About Sardinia I miss] the possibility to feel home, in the sense that when I'm outside Sardinia I feel like a guest, when I'm back I feel like I own the place"[xxvii], reports a male currently working abroad; "it was my emotional bond to Sardinia that pushed me to return […] with the places in which I grew up […], the landscape, the towns… maybe a somewhat romantic perception of my being born and growing up [in Sardinia]"[xxviii], adds another male, marketing consultant, mainly based in Sardinia. Possibly, the clearest description of cultural proximity is provided by a researcher, male, currently located in Sardinia: "[while I was abroad] I became convinced that even though one can appreciate their lifestyle even if it's so different from ours [i.e. the Dutch lifestyle], in the end I had the feeling of being a foreigner in the place where I was living, and on my scale of values this was significant. Spending time abroad convinced me that I could only feel at home here [i.e. in Sardinia]. Social relations are easier with people who have grown in your context, it is easier to understand each other, there is a shared irony, etc."[xxix].

There is a tight link between cultural proximity and social networks, as building the latter is far more unlikely in the absence the former. The capacity of a migrant to integrate in the host region, including the ability to find a good job, hinges on how well he is able to communicate and interact with the people in the new environment. Therefore, being culturally close, having a good knowledge of the language and so on are all assets that can significantly increase the likelihood of becoming well integrated and building good social networks.

To sum up, opposite social networks lure former mobile students to the sending or to the receiving regions, depending on their relative strength. Social networks can be either drivers or facilitators of the location choice. Their role as drivers is usually related to the desire to be close to family, the need to receive economic support from family and the constraints related to being in a relationship. Concerning their role as facilitators, social networks can be very important to open (job) opportunities, both in the sending and in the receiving regions. Finally, we have highlighted the role played by cultural proximity, which can favour the building of social networks in the receiving region and, as a consequence, favour extended or permanent migration.

4.5.2.1.3 Amenities

As reviewed from the literature, it is generally accepted that amenities are an important determinant of the location decision. In the quantitative phase of our study some of these factors were tested, particularly those put forward by Richard Florida, according to which the creative class tends to locate where there is ethnic and cultural diversity, tolerance and "cultural industries" (Florida, 2002a, Florida, 2002b, Florida et al., 2008).

A few interviewees mentioned ethnic and cultural diversity, which they mainly understood as the possibility to meet different cultures. For them it was seen as a reason to leave Sardinia, which is considered to lack this type of amenities. According to a female, who is currently working in South America at a global consultancy corporation characterised by a multicultural environment, "dealing with people who weren't born near you and who have lived different experiences […] benefits a lot both you as a person as well as your career" [xxx]. Another interviewee, currently located in Sardinia, mentioned the availability of "cultural industries" as something she has missed since she returned to Sardinia: "if you want to see exhibitions or shows of high quality you can't find them [in Sardinia] so you need to take an airplane"[xxxi].

Despite these rare cases in which amenities were mentioned by the interviewees, there is little evidence that these were determinant drivers for their location choice. This represents a net discrepancy with the quantitative results, where amenities emerged as push factors with high statistical significance. This discrepancy underlines the limitations of deductive methods when used to study individual behaviours and preferences. They force the interviewees to select from a pre-set list of options even when none of them may exactly capture their desired answer. However, when the subjects are asked to express their preferences freely these pre-selected options might not emerge as significant factors or, at least, prove non-determinant in the location decision. This suggests that individual preferences for amenities are not universal, since different individuals can have different preferences, which can themselves derive from both individual characteristics as well as social and cultural background.

In our opinion, this observed lack of amenities in the accounts of the interviews might also be due to their particular stage in life. In fact, at the time when the interviews were conducted most of them had recently entered (or were still trying to enter) the labour market and, therefore, their main concerns were either to find a (suitable) employment or to progress in their careers.

In summary, amenities have not emerged as an important theme through this inductive part of the study. The inconsistency of these findings with what emerged in the quantitative phase raises some concerns on the validity of deductive methods to study individual preferences. In our view, the substantial lack of amenities in the accounts of the interviewees might depend on their young age. Therefore, this does not exclude that amenities might acquire more importance in a later phase of their life.

4.5.2.2 Within the black box of decision-making: the individual dynamics of the location decision

In this section we turn our attention to identifying how the decision-making process underlying the location decision unfolds in practice, depending on individual life course and personal circumstances.

Both Human Capital and Creative Class Approaches tend to assume fluidity of migration. However, our quantitative results have already provided evidence of "path dependence". For instance, consider that individuals endowed with more migratory experience tend to be more mobile, while family ties often hinder migration. Our qualitative data provide scope to further extend these findings.

The idea that migration is fluid stems from the assumptions underlying different streams of literature. In particular, Human Capital Theory tends to depict migrants as rational decision makers willing to locate where they can get higher returns from their human capital. Similarly, the Creative Class Approach tends to depict migrants as mechanistically attracted by locations endowed with universal characteristics. In both cases the individual is depicted as an object of analysis responding in standard ways to external stimuli (Silvey and Lawson, 1999).

In contrast, according to the analysis of our in-depth interviews, the location decision unfolds over time and depends on individual perception of external opportunities and constraints. Moreover, it is contingent on past migration and on general life experience, which determine how constraints and opportunities are perceived (see for instance Geddie, 2010). Serendipity has also an important influence, since contingent factors interact with individual agency and lead to unexpected or undesired location outcomes. This complex interplay between different factors makes migration look more like a "trajectory" than as the linear process supposed by the studies reviewed earlier.

To illustrate what this idea means in practice, we refer to our interviewees' accounts. For example, a female currently located in Sardinia provides evidence that many contingent factors can shape the location decision and their interplay can lead to repeat

migration. In particular, her account shows that the presence (or the absence) of social networks can significantly affect the location choice. In addition, from her account we also see that the location decision is a matter of individual perception of constraints and opportunities, which can vary over time as a function of new information and life experiences. "As a matter of fact, I can say that there was no choice in my decision to return to Sardinia because of my contingent situation. I studied in Florence, continued my studies there [Master's] and worked there; I spent 15 years of my life in Tuscany. I was very comfortable, it was like home and I liked everything about Florence: opportunities, multicultural environment […] and also as far as work was concerned it didn't go too badly. I had my life and I was happy, [I had] friends and business networks. At a certain point of my life, [I made] a series of choices which, if not wrong, were at least untimely. For instance, leaving for a work experience abroad penalized me instead of rewarding me […]xxxii. In short, after about one year of work abroad she wanted to return to Florence (not to Sardinia) which was the city in which she wanted to live, but reintegration in the labour market was very hard since she had partly lost her business networks and since the economic crisis had reduced job opportunities. However, unexpectedly, after six months of unemployment, she was offered a position in Sardinia. To conclude, she wanted to live in Florence, nevertheless she was forced to return to Sardinia for work reasons. As a result, after three years she still lives in Sardinia but is unhappy and wishes to return to Florence at some point.

This example is quite peculiar since it is the only interviewee who had never thought of returning to Sardinia after her Master's. However, her account is insightful since it shows that the migration decision is a non-linear process. Instead, individual agency interacts with contingent factors which are specific in place and time. The combination of these can lead to completely unexpected or unwanted location outcomes. For instance, this last person's work experience abroad, which in general should be an asset for future career progression, transformed into a constraint due to the economic crisis. Moreover, the leaving Italy, if even for a relatively short time, resulted in a substantial loss of her social networks and therefore reduced the opportunities of reintegration. As a result, the interviewee was forced to locate where she did not want to go, forced by the fact that the need to work was stronger than her individual preferences. As a final remark, it should be noted that serendipity played a key role, an aspect which is often neglected by mainstream migration studies.

The unpredictability of migration trajectories and their dependence on contingent factors also emerges clearly in another interviewee's account. This individual, male, is specialised in European public relations and is currently located in Sardinia; he said:

"on completion of my Master's in Rome I did an internship in a theatre […]. I realised that in Rome there were few job opportunities for me. I was in contact with friends in Dublin who convinced me to join them and I spend four very important years there. Afterwards, I kind of got tired of that job and a friend of mine informed me about some job opportunities that were opening in Sardinia."[xxxiii] So, he eventually returned to Sardinia.

In this case, as in other ones, it is quite clear how migration can be shaped by contingent factors. This interview also confirms the importance of social networks in providing access to job opportunities: the interviewee left Rome to Dublin on advice of friends and then returned to Sardinia – always on advice of friends.

Overall, we find evidence of a decision-making process which is influenced by individual preferences (living where one feels comfortable), but constrained by objective limitations (particularly the need to find a job). In the balance between preferences (micro-level) and constraints (macro-level) a key role is played by social networks (meso-level).

4.5.2.3 Brain circulation

Following the study of the decision-making process, we wonder whether the resulting migration is a permanent or a temporary phenomenon.

As we remarked in the literature review, several scholars have argued that highly skilled migration has become more and more temporary. Often the highly skilled have international careers and during their lives can experience mobility number of times: for learning, work or personal reasons. In this regard, the concept of "brain circulation" has made its way in migration studies, since it is able to depict the circular and temporary nature of modern migration flows (Baláz et al., 2004, Gaillard and Gaillard, 1997, Saxenian, 2005).

Indeed, as long as our interviewees are concerned, there is strong evidence of brain circulation: many of them have experienced mobility several times and are willing to be mobile again in the future. Some of those currently located in Sardinia are willing to migrate again; many of those currently located outside Sardinia wish to return; finally, various interviewees are currently living across countries or regions.

Usually, the first situation, being currently located in Sardinia but wishing to leave again, is experienced by people who are unhappy with their employment and therefore want to find an alternative occupation elsewhere. Of course, though the willingness to

leave does not necessary result in migration, it makes it much more likely. A good example of this situation is provided by a male researcher in biology. Although he has strong personal ties in Sardinia – for instance, his family and friends are there – he is very critical about the local labour market in his field and is planning to migrate abroad: "It is really hard [to make up my mind], but I'd like to find a [job] opportunity abroad […], I have even thought of [moving to] emerging countries like Brazil"[xxxiv]. In short, this interviewee wants to leave since he is unsatisfied with his employment condition and this motivation seems to be stronger than the presence of family and friends in Sardinia.

The second situation, regarding individuals located outside Sardinia but willing to return, occurs as current migrants, forced to migrate by the lack of job opportunities in Sardinia, are bound to Sardinia by strong social and cultural ties. Therefore, these individuals are ready to return as soon as more favourable professional conditions are found. A good example is represented by a female, currently located in Lyon and working in academia as a philologist: "I really would have liked to return to Sardinia [on completion of my Master's], but when I realised that there were more opportunities for pursuing a doctorate in France than in Italy, I opted to stay in France. However, I have done a double Ph.D. programme, French-Italian, since my idea was to complete my doctorate in France and then see if any opportunities presented themselves in Sardinia. I still keep an eye on Sardinia, but I haven't seen anything encouraging so far […]"[xxxv]. Currently, this interviewee works in France, but still wishes to return to Sardinia for personal reasons. It must be stressed that many others interviewees – almost all of them – tried to return on completion of their studies but, since they could not find a suitable employment, they were forced to extend their migration. Naturally, as time goes by the likelihood of returning decreases, since adjustment in the host country increases and bounds to the sending region weaken.

The third and final situation, living across countries, occurs when individuals are strongly bound by professional or personal ties to both the destination and the sending country/region. About 20% of our interviewees fell into this category as they, after completing their studies, repeatedly experienced migration between Sardinia and the country where they studied. In order to understand what motivates them to articulate their lives in multiple locations we report some of their stories.

The first example is represented by an engineer, male, who did his Master's in Spain. On completion of his studies he returned briefly to Sardinia to give the state examination to become a professional engineer and then left again to Barcelona where

"the economic conditions were good at that time" and where he started a long collaboration with an engineering firm. Nevertheless, he also kept strong social ties in Sardinia since his family was there and since, at some point, he hoped to open his own engineering firm exploiting his social networks there. During the peak of the economic crisis he returned to Sardinia for a couple of years and then left again for Barcelona. Currently, he works both in Sardinia and in Spain: his family is in Sardinia but his girlfriend lives in Barcelona. Today he would like to live and work across countries: "I believe that in my profession keeping in touch with different societies is important […]. I do not see why I should only work in Sardinia when the most important design firms work in various continents"[xxxvi].

Another example can be found in another male, architect. In this case his working and private life also unfolds between Barcelona and Sardinia. Since the end of his Master's in Barcelona he tried to "keep his feet on both sides". He wanted to return to Sardinia since that is where his family was, and he also wanted to do start his own business there. At the same time, he was attracted by professional opportunities in Barcelona since, according to him, while in Sardinia building projects are usually quite basic and standard, in Barcelona it is more likely to get involved in more creative and challenging work. Currently he is professionally bound to both Sardinia and Barcelona and in the future, he says, "with some friends [we are] trying to open a [design] studio in Barcelona comprised of people of various nationalities, which gives us contacts in each of our respective countries"[xxxvii].

A third example is represented by a social scientist, researcher, male. On completion of his M&B experience in the Netherlands he returned to Sardinia since his girlfriend, family and friends were all there, in addition to admitting that in Sardinia he felt more "at home". Despite his return, his current work activity requires frequent contacts with professional collaborators outside Sardinia, which he would like to keep and increase. He is working on a research project which involves various universities and, though he has been hired by the University of Cagliari, he communicates daily with his referent outside Sardinia. He also collaborates with his brother, who is partner in a firm specialised in solar panel installations. To perform this work he needs to constantly coordinate his activities with another partner of the firm who is German and lives abroad. When asked about the reason why he values so much exchanging ideas with contacts outside Sardinia, his reply was: "[Being connected with people outside Sardinia is important since] it makes it easier to access ideas at the professional and personal levels. It is important to be close to the technological frontier, so every place where there ideas circulate enriches us both professionally and personally. Whatever

your job is, you can improve it if you work with others and if these others belong to your broader social networks"[xxxviii].

In summary, all of these examples provide evidence of brain circulation. For personal and professional reasons the lives of these interviewees are currently articulated in multiple geographical locations. There is evidence that having good social networks in multiple countries is a key condition for the occurrence of brain circulation. In fact, social networks provide access to job opportunities that would not otherwise be accessible.

To conclude, these examples of brain circulation challenge the idea of migration as a one-off decision and open up new possibilities, in particular for lagging regions, to reap the returns to their investment in human capital, even if proper return migration does not take place. In fact, various studies have provided evidence that highly skilled individuals coming from lagging regions could benefit their sending regions, even if they do not return, through the generation of inward knowledge flows and FDI (see for instance Baláz et al., 2004, Le, 2008, Saxenian, 2006).

4.6 Discussion and conclusions

This chapter has relied on a mixed method sequential explanatory design to combine quantitative and qualitative data in order to enquire into the motivations and decision-making process leading our sample of mobile postgraduate students to return (or not to return) to Sardinia on completion of their studies.

The quantitative phase first assessed the extent to which the location choice of the recipients affects their income. In fact, according to neo-classical economics geographical income differentials are the main determinants of migration. In this respect, we find that individuals currently located abroad tend to gain significantly more than those who have returned to Sardinia. In contrast, being located in other Italian regions – instead of Sardinia – is almost irrelevant from an economic viewpoint. Consistently with neo-classical economics, this could explain why, on average, students who pursued their Master's or Ph.D. abroad are less likely to return than those who completed their studies in other Italian regions. Nevertheless, this effect does not explain why many of those who were located abroad did return as well, while many of those located in other Italian regions did not.

In this respect, we believe that economic factors are not the only drivers of highly skilled location choice, though they certainly are important. In fact, the literature provides an array of alternative explanations. Therefore, we performed a logistic

analysis to test the relative importance of three different sub-sets of factors: amenities, career/professional motivations and social networks. We find evidence that all of them are important in explaining the return decision, even though both the amenity and the social network variables tend to become less significant when they are pulled into a single model with the other explanatory variables, providing evidence of some kind of interaction.

How the interviewees perceive job opportunities in Sardinia (as opposed to alternative locations) proves to be more important than the objective regional characteristics. In fact, while perceived job opportunities are highly statistically significant in determining the location choice, unemployment rates and average income of alternative labour markets are irrelevant.

A story emerges from our study, according to which the interviewees tend to return to Sardinia in order to re-join their family, partner or, more generally, pre-existing social networks. On the contrary, the main motivations pushing them away from Sardinia are the lack of job opportunities. However, the willingness to work outside Sardinia does not seem to be a sufficient condition to settle stably in the host region. In fact, job opportunities might not be easily accessible to everyone. In this regard, a key role seems to be played by social networks, and there is evidence that individuals who do not integrate well in their host country are forced to return to Sardinia.

We acknowledge that there are some weaknesses in our quantitative analysis, which also existed in other previous similar works (Coniglio and Prota, 2008, Güngör and Tansel, 2008, Soon, 2011, Soon, 2010). First, the analysis is purely deductive and is limited to detecting factors that comply with the author's initial expectations. Generally, deduction is a good tool for migration studies, since it allows the same theory to be tested multiple times leading to results that can be generalised. However, it has a major drawback in preventing the discovery of new alternative explanations. A second weakness in our quantitative analysis lies in the fact that it is unable to investigate the processes leading to the location choice from the viewpoint of those who are actually choosing where to locate. Finally, a third weakness we detected is that quantitative methods usually tend to make strong assumptions regarding how the decision-making process unfolds, which can be misleading as they ignore the multiplicity and complexity of economic geographies in which the study's subjects are embedded. To overcome these shortcomings, we performed a further analysis based on qualitative data. This complementary approach enabled us to investigate whether the same push and pull factors tested in the quantitative phase would also emerge inductively. In addition,

through this same approach we were also able to investigate how FMS perceive opportunities and constraints and how these elements concur to shape their personal life and migration course and, finally, what is the nature of the decision-making process underlying the location decision – i.e., how it occurs in practice.

With regard to the location choice determinants, most of the variables that had been used in the quantitative phase also emerged in the qualitative phase. However, through the latter we were able to extend the findings of the quantitative phase by drawing a more nuanced and comprehensive picture of the phenomenon under scrutiny.

Concerning the personal dynamics of migration as they emerge from the narratives of the interviewees, we found evidence that some factors are overwhelmingly more important than others. In particular, professional reasons are by far the most important non-return motivation, while family and sentimental ties are the most important return motivations. In contrast, amenities were less significant than expected: very few interviewees mentioned such motivations and, when they did, never as key drivers. This finding disagrees with the quantitative results from our study, where amenities proved important. The discrepancy suggests on the one hand that deductive methods might be misleading, as they force the respondents to choose from pre-set answers, and on the other amenities might not be universal as claimed by Richard Florida. We explain the lack of amenities in the accounts provided by the interviewees as probably being due to the fact that they are in a stage of their lives – they have entered recently the labour market – where finding a (suitable) employment and progressing in their careers is by far their most important goal.

With regard to the nature of the decision-making process, we have found evidence that some of the assumptions made by part of the literature are inaccurate. This is the case for both neo-classical economics, according to which migration takes place from where the economic conditions are worse to where they are better, and for the Creative Class Approach, according to which highly skilled individuals are attracted by places endowed with universal amenities. On the contrary, consistently with Transnationalism literature, our findings show that in making the location decision human agency is constrained or enabled by the individual perception of contingent factors. Location choice usually depends on prior migration experience and the course of personal life, which affect individual perception of migration constraints and opportunities. As such, migration behaviour should always be contextualised in time and space.

A very interesting finding concerns the role of social networks. The quantitative results suggest that the presence of strong social networks could provide access to

opportunities and, as such, facilitate migration. The qualitative results tend to confirm and to extent this finding. It emerges that social networks are particularly important to access labour opportunities. In fact, on the one hand many recipients returned to Sardinia because they expected their social networks there to be a fundamental source of support both in finding a job and in starting a new business. On the other hand, for many of the non-returners, having established good social networks in the destination country proved to be extremely important to finding employment there.

In our analysis we also find strong evidence of brain circulation, which disproves the idea of migration as a one-off decision: various interviewees who have already returned to Sardinia are willing to migrate again and others, currently located outside Sardinia, wish to return. Moreover, we find evidence that various interviewees are currently living across countries and wish to continue living this way for professional and personal reasons. There is also evidence that the circularity of migration behaviour is related to the role played by social networks in creating (job) opportunities in different locations.

These findings allow us to draw some lessons that can be useful for policy-makers investing in SM in lagging regions. They seem to assume that economic incentives are the most effective lever to motivate individuals who have undergone SM to return to lagging regions. This same assumption is also present in the design of the M&B programme which, through the so called "Back" (i.e., an economic incentive), tries to favour return migration. Our analysis provides evidence that economic incentives are not the only important factor, since individuals can be influenced differently by different factors. In this regard, alternative levers should also be tested in order to foster return migration (in particular, social networks and emotional attachment to the sending region). Moreover, since migration is a process which evolves over time, for the same individual different factors might be successful at different stages of life.

Another policy implication of this work is that closer attention should be paid to brain circulation. In fact, triggering return migration might not be the only way to reap the returns from the regional investment in human capital. For instance, the creation of job opportunities which allow teleworking or flexible location should be favoured. Moreover, opportunities for networking between Sardinian firms and highly skilled migrants should be supported in order to favour inward knowledge flows towards Sardinia. This strategy in policy-making is usually referred to as "diaspora option" (Thorn and Holm-Nielsen, 2008).

Appendix 4.1   Description of the variables

The table below provides a description of the variables that are used in this chapter, their sources and, if relevant, the web survey question from which they have been drawn. For some variables the column Source reports multiple sources. This indicates that the variable was created by integrating the content of different sources. This has been done since some records from the Regional Employment Agency were incomplete. Therefore, the missing information was collected through the web survey system, which included or skipped questions depending on the completeness of the interviewee's record.

A further remark concerns the column Q. which, when relevant, reports the question/s of the web survey from which the variables were drawn. For some variables there are multiple questions since, due to the structure of the web questionnaire, they might have been built by integrating information from different questions.

Table A-4.1 – Description and source of the dependent variables

Dependent Variables	Description	Source	Q.*
Net monthly income at PPP	The net monthly income of the interviewee when the survey was conducted, in euros, adjusted at Purchasing Power Parity (PPP)	Web survey + ISTAT + EUROSTAT	5.7
Return migration	A dummy which takes the value 1 if the recipient of the M&B HE programme had returned to Sardinia when the Web survey was conducted	Web survey	1.2

Table A-4.2 – Description and source of the independent variables

Independent Variables	Description	Source	Q.*
Age treat.	Age of the interviewee when the M&B application was submitted	Regional Employment Agency	
Call 2006	A dummy identifying the recipients of the Call 2006 of the programme M&B Higher Education	Regional Employment Agency	
Call 2007	A dummy identifying the recipients of the Call 2007 of the programme M&B Higher Education	Regional Employment Agency	

Independent Variables	Description	Source	Q.*
Call 2008	A dummy identifying the recipients of the Call 2008 of the programme M&B Higher Education	Regional Employment Agency	
Call 2009	A dummy identifying the recipients of the Call 2009 of the programme M&B Higher Education	Regional Employment Agency	
Close to family	A dummy identifying the interviewees who declared that "the desire to return to family" was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Cultural industries	A dummy identifying the interviewees who declared that "the presence of a good choice of leisure activities (theatres, cinemas, night life, etc." was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Cultural/ethnic diversity	A dummy identifying the interviewees who declared that the presence of "Ethnic and cultural diversity" was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Current location: abroad	A dummy identifying individuals located abroad when the survey was conducted	Web survey	1.2
Current location: Italy	A dummy identifying individuals located in an Italian region other than Sardinia when the survey was conducted	Web survey	1.2
Current location: Sardinia	A dummy identifying individuals located in Sardinia when the survey was conducted	Web survey	1.2
Deg. topic arts and human.**	A dummy identifying individuals who had an undergraduate degree in Arts and Humanities	University of Cagliari + Regional Employment Agency + Web survey	1.5.2
Deg. topic econ. and stats	A dummy identifying individuals who had an undergraduate degree in Economics and Statistics	University of Cagliari + Regional Employment Agency + Web survey	1.5.2
Deg. topic Science and Techn.***	A dummy identifying individuals who had an undergraduate degree in Science and Technology	University of Cagliari + Regional Employment Agency + Web survey	1.5.2

Independent Variables	Description	Source	Q.*
Deg. topic Soc. Sciences****	A dummy identifying individuals who had an undergraduate degree in other Social Sciences (i.e., other than Economics and Statistics)	University of Cagliari + Regional Employment Agency + Web survey	1.5.2
Degree in Sardinia	A dummy identifying individuals who had his/her first degree granted by a Sardinian university	Regional Employment Agency + Web survey	1.5.1
ERASMUS	A dummy identifying the interviewees that had participated in the ERASMUS or other similar programmes	Web survey	3.4
Father university	A dummy identifying the interviewees whose father had a university degree	Web survey	6.2
Final mark: 110/110 or higher	A dummy identifying the interviewees with a final graduation mark of 110/110 or 110/110 cum laude	Web survey + University of Cagliari + Regional Employment Agency	1.5.1
Finding a good job	A dummy identifying the interviewees who declared that "Finding a good job" was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Good universities research centres*****	A dummy identifying interviewees who declared that "the presence of good universities and/or being in proximity of innovative firms and/or research centres" was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Graduation more than one year late	A dummy identifying the interviewees who have graduated later than one year beyond normal completion time	Web survey + University of Cagliari + Regional Employment Agency	1.5.1
Higher= Master's	A dummy identifying the interviewees whose highest level of education is a Master's degree	Web survey + Regional Employment Agency	2.3, 2.a.3, 2.11 , 2.19
Higher= Ph.D.	A dummy identifying the interviewees whose highest level of education is Ph.D.	Web survey + Regional Employment Agency	2.3, 2.a.3, 2.11, 2.19
Ideal job – High earnings	A dummy identifying the interviewees who declared that their ideal job should have high earnings	Web survey	5.1

Independent Variables	Description	Source	Q.*
Job experience out	A dummy identifying the interviewees who have job experiences outside Sardinia	Web survey	5.25, 5.38
Join none	A dummy identifying the interviewees who declared that during their mobility experiences outside Sardinia they did not join any political party, organization or association	Web survey	7.11
Local income at PPP	The average income at PPP in the country/region where the recipients went thanks to their M&B programme benefits. It was calculated by averaging the income at PPP of the interviewees who are currently working in that country/region. This variable is calculated at the regional level for participants who stayed in Italian regions and at the national level for those who went abroad.	Web survey + ISTAT + EUROSTAT	5.7
M&B abroad	A dummy identifying the recipients who took the M&B programme abroad	Regional Employment Agency + Web survey	2.a.4
M&B in Rome or Milan	A dummy identifying the recipients who took the M&B programme in Lazio or in Lombardy	Regional Employment Agency + Web survey	2.a.4
M&B Master's	A dummy identifying the recipients of the programme M&B that completed Masters' degree	Regional Employment Agency	
M&B Ph.D.	A dummy identifying the recipients of the programme M&B that completed a Ph.D.	Regional Employment Agency	
Male	A dummy identifying males	Regional Employment Agency	
Married or unmarried partner	A dummy identifying married or unmarried partners	Web survey	2.a.1
Mother university	A dummy identifying interviewees whose mother holds a university degree	Web survey	6.1
No job experience	A dummy identifying interviewees without any job experience	Web survey	5.24, 5.37
Start own business	A dummy identifying interviewees who declared that "starting a new business" was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Study experience out	A dummy identifying the interviewees with study experiences outside Sardinia	Web survey	2.4, 2.12, 2.20

Independent Variables	Description	Source	Q.*
Tolerance	A dummy identifying the interviewees who declared that "Being in places where people are open minded and tolerant" was a decisive factor in their location choice	Web survey	7.13, 7.15, 7.16
Unemployment rate	The unemployment rate in the country/region where the recipients went thanks to their M&B programme benefits. This variable is calculated at the regional level for who stayed in Italy and at the national level for who went abroad.	ISTAT + EUROSTAT	
Years since graduation	Number of years since the first degree	Web survey + University of Cagliari + Regional Employment Agency	1.5.4

*Question of the Web survey (if relevant).

** This dummy has been created by aggregating the following topics drawn from the relevant questions of the web questionnaire: Literature, Linguistics, Teaching, Psychology.

*** This dummy has been created by aggregating the following topics drawn from the relevant questions of the web questionnaire: Scientific, Chemistry Pharmaceutical, Geo-biological, Engineering, Architecture, Agriculture.

**** This dummy has been created by aggregating the following topics drawn from the relevant questions of the web questionnaire: Political-social, Law.

***** This dummy has been created by merging the options 3 and 8 of the questions reported in the Q. column. In other words, it takes the value 1 if at least one of these options was ticked by the interviewees.

Appendix 4.2 Descriptive statistics

Table A-4.3 – Descriptive statistics of the Standard Sample

Variable	Mean	S.d.
Male	0.39	0.49
Age treat	28.59	3.08
M&B abroad	0.39	0.49
Degree in Sardinia	0.71	0.46
ERASMUS	0.37	0.48
Study experience out	0.40	0.49
Job experience out	0.31	0.46
Current location: Sardinia	0.45	0.50
Current location: Italy	0.28	0.45
Current location: abroad	0.27	0.44
M&B Master's	0.83	0.38
M&B Ph.D.	0.17	0.38
Deg. topic Science and Techn.	0.37	0.48
Deg. topic Econ. and Stats	0.10	0.30
Deg. topic Soc. Sciences	0.22	0.41
Deg. topic Arts and Human.	0.31	0.46
Father university	0.21	0.41
Final mark: 110/110 or higher	0.62	0.48
Graduation more than one year late	0.44	0.50

Observations: 618
Source: Regional Employment Agency and author's data.

Appendix 4.3 Robustness check monthly income by location choice

Table A-4.4 – Logs net monthly income differentials at PPP in euros by location choice

Dep. Var.: Logs net monthly income at PPP	(1) Stand. Sample	(2) Stand. Sample	(3) Stand. Sample	(4) Stand. Sample	(5) All Backs	(6) No Backs
Current location: abroad	0.505***	0.504***	0.506***	0.516***	0.461***	0.501***
	(0.0581)	(0.0558)	(0.0558)	(0.0551)	(0.0437)	(0.0695)
Current location: Italy	0.0908	0.0783	0.0785	0.115**	0.0579	0.0979
	(0.0562)	(0.0537)	(0.0540)	(0.0539)	(0.0431)	(0.0678)
Male	0.169***	0.110**	0.110**	0.111**	0.0774**	0.126**
	(0.0486)	(0.0481)	(0.0482)	(0.0474)	(0.0359)	(0.0568)
Age treat	4.72e-05	0.00401	0.00619	0.00838	0.00991	0.00715
	(0.00758)	(0.00738)	(0.00820)	(0.00813)	(0.00630)	(0.00975)
M&B Ph.D.		0.150**	0.150**	0.0829	0.00176	0.0803
		(0.0646)	(0.0645)	(0.0657)	(0.0508)	(0.0761)
Deg. topic Science and Techn.		0.180***	0.176***	0.181***	0.133***	0.208***
		(0.0581)	(0.0582)	(0.0573)	(0.0433)	(0.0699)
Deg. topic Econ. and Stats		0.459***	0.454***	0.446***	0.367***	0.470***
		(0.0791)	(0.0790)	(0.0777)	(0.0653)	(0.0905)
Deg. topic Soc. Sciences		0.262***	0.261***	0.264***	0.184***	0.286***
		(0.0619)	(0.0618)	(0.0611)	(0.0476)	(0.0725)
Final mark: 110/110 or higher			-0.0210	-0.00456	0.0329	-0.0288
			(0.0480)	(0.0474)	(0.0368)	(0.0556)
Graduation more than one year late			-0.0721	-0.0620	-0.0473	-0.0641
			(0.0513)	(0.0507)	(0.0388)	(0.0606)
Father university			-0.114**	-0.114**	-0.0928**	-0.130**
			(0.0552)	(0.0545)	(0.0419)	(0.0637)
Call 2007				-0.0477	-0.0360	-0.0307
				(0.0685)	(0.0530)	(0.0842)
Call 2008				-0.0901	-0.0630	-0.0717
				(0.0635)	(0.0451)	(0.0756)
Call 2009				-0.233***	-0.213***	-0.228***
				(0.0569)	(0.0477)	(0.0670)
Constant	7.004***	6.718***	6.725***	6.727***	6.755***	6.767***
	(0.222)	(0.218)	(0.241)	(0.239)	(0.184)	(0.296)
Observations	396	396	396	396	564	320
R-squared	0.204	0.284	0.295	0.325	0.269	0.331

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Appendix 4.4 Robustness check odds ratios of return migration

Table A-4.5 – Determinants of return migration: odds ratios from logistic estimation

Dep. Var.: Return Migration	(6) All Backs	(7) MB Italy	(8) MB Abroad
AMENITIES			
Tolerance	0.226**	0.237	0.0759*
	(0.141)	(0.227)	(0.103)
Cultural/ethnic diversity	0.0725***	0.137**	0.0597**
	(0.0489)	(0.121)	(0.0799)
Cultural industries	0.112***	0.0803**	
	(0.0811)	(0.0939)	
CAREER AND JOB RELATED MOTIVATIONS			
Finding a good job	0.109***	0.128***	0.0724***
	(0.0242)	(0.0387)	(0.0388)
Start own business	0.385***	0.428**	0.785
	(0.127)	(0.185)	(0.630)
Unemployment rate	1.013	1.023	1.037
	(0.0354)	(0.104)	(0.0511)
Local income at PPP	0.999	0.998	1.000
	(0.000460)	(0.00151)	(0.000605)
Good universities research centres	0.0810***	0.0907*	0.0125***
	(0.0492)	(0.118)	(0.0158)
SOCIAL NETWORKS			
Degree in Sardinia	2.077**	2.080	4.733**
	(0.655)	(0.996)	(3.158)
ERASMUS	0.968	1.469	0.591
	(0.210)	(0.480)	(0.251)
Study experience out	1.320	0.980	1.447
	(0.394)	(0.460)	(0.827)
Job experience out	0.527***	0.650	0.282***
	(0.115)	(0.212)	(0.128)
Join none	2.345***	2.300***	3.100**
	(0.483)	(0.659)	(1.531)
Close to family	0.808	1.425	0.372**
	(0.172)	(0.415)	(0.176)
Married or unmarried partner	1.277	1.245	1.823
	(0.259)	(0.349)	(0.791)
CONTROL VARABLES			
Male	1.580**	1.633	1.233
	(0.334)	(0.493)	(0.546)
Age treat	1.039	1.024	1.167**
	(0.0383)	(0.0521)	(0.0861)
Higher=Ph.D.	0.901	1.378	0.643
	(0.263)	(0.671)	(0.329)
Deg. topic Science and Techn.	0.863	0.965	0.777
	(0.215)	(0.344)	(0.388)
Deg. topic Econ. and Stats	0.346***	0.653	0.540

Dep. Var.: Return Migration	(6) All Backs	(7) MB Italy	(8) MB Abroad
	(0.130)	(0.328)	(0.441)
Deg. topic Soc. Sciences	0.783	0.706	0.617
	(0.219)	(0.283)	(0.360)
M&B abroad	0.475**		
	(0.167)		
M&B in Rome or Milan	0.628*	0.739	0.193
	(0.157)	(0.221)	(0.559)
Father university	1.120	0.783	1.400
	(0.283)	(0.284)	(0.684)
Final mark: 110/110 or higher	1.162	1.165	0.517
	(0.247)	(0.339)	(0.255)
Graduation more than one year late	0.906	1.005	0.415*
	(0.204)	(0.319)	(0.203)
Call 2007	1.049	1.877	0.575
	(0.330)	(0.902)	(0.341)
Call 2008	1.590*	0.680	1.590
	(0.424)	(0.284)	(0.869)
Call 2009	0.479***	0.466**	0.744
	(0.128)	(0.158)	(0.448)
Constant	2.042	8.704	0.0338
	(2.712)	(23.88)	(0.0891)
Observations	788	374	228
Pseudo R-Squared	0.379	0.34	0.428

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Appendix 4.5 - Original quotes in Italian

This appendix reports the original quotations in Italian of the in-depth interviews.

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i "Le ragioni per cui emigro sono due: ho una relazione fuori e vado a cercare lavoro".

ii "Determinante dal mio punto di vista sono due cose: la professione, ed io mi sposterei quasi sicuramente se avessi una buona proposta di lavoro e poi la famiglia, perché se tu hai una famiglia devi per forza contemperare".

iii "se torni in Sardegna devi scendere a certi compromessi […] sai bene che non potrai ottenere magari esattamente quello che volevi ma che ti devi accontentare".

iv "Sarei disposta anche a mettere da parte le competenze didattiche che ho acquisito [pur di tornare in Sardegna]".

v "Ho dovuto mettere due cose sul piatto della bilancia: le opportunità così grandi a Roma e la famiglia. Anche se la nostalgia di casa era forte ho scelto la prima. Cosa potevo fare?".

vi "Se io avessi la possibilità in Sardegna di avere un lavoro decente resterei".

vii "La realtà aziendale sarda è molto limitata quindi anche la consulenza di un certo tipo non serve o magari non è neanche riconosciuta, non gli si dà neanche il giusto valore [Quando penso di tornare in Sardegna] vedo tutte le mie amiche che stanno lì e che lavorano nei call center e mi dico: che cacchio ci fai.

viii "per tornare dovrei fare sacrifici professionali e dimenticare queste cose che stavo facendo [a Boston]".

ix "In Sardegna non si può fare il mio lavoro perché lì non esiste".

x "sai come funziona: il solito sfruttamento senza darti una professionalità e allo stesso tempo pretendere molto senza pagarti per nulla insomma".

xi "le imprese dovrebbero smettere di cercare assistenza [economica] dalla regione, dalle province e dai comuni e dovrebbero stare sul mercato con le loro forze".

xii "La cosa più triste è vedere lo spreco di competenze, di esperienze di altissimo livello. Una società che non investe su queste cose ha davvero davanti a sé un futuro molto oscuro".

xiii "Mi sentivo troppo giovane per finire la mia vita in un call center".

xiv "inettitudine, corruzione e clientelismo si trasformano in mancanza di meritocrazia: è per questo che ho intenzione di partire nuovamente".

xv "Quello che non mi piace della carriera accademica, almeno qui in Italia, è che non va avanti il più meritevole ma chi è il più "accozzato" o chi ha lo sponsor giusto che ti permette di lavorare e di avere tante pubblicazioni in breve tempo rispetto magari a chi non ha questa possibilità. [Lavorare in accademia in Italia] è una condizione molto precaria che si può protrarre per tanti e tanti anni quindi è un percorso molto rischioso. […] Io non ho voglia di aspettare, se non mi dai la possibilità adesso di inserirmi e di fare io vado da un'altra parte!"

xvi "a livello professionale, la città, se vuoi restare nel settore è una bomba. C'è Harvard, l'MIT che per gli ingegneri è il paradiso, vengono fuori dei genietti, c'è un buon livello culturale e il sistema è molto buono. Qua se vuoi fare carriera in qualsiasi campo la puoi fare".

xvii "lontano dalla famiglia, dagli amici, vedere i propri genitori magari due volte l'anno. […] Sento la mancanza praticamente ogni giorno però mi rendo conto anche che per la professione che ho scelto sarà difficile o non facilmente compatibile".

xviii "se sei fuori, tutto pesa sulle tue spalle. […] un bel rischio".

xix "ho anche una rete sociale che mi consente se dovessi avere un figlio di non spendere miliardi in asilo nido".

xx "io ho una casa già, mi sono sposata e mio marito ha una situazione lavorativa tutto sommato migliore della mia, è libero professionista, è avvocato e i suoi genitori hanno uno studio da avvocato per cui logicamente per fare il suo lavoro devi essere radicato in una città o in un territorio quindi spostare lui per il mio lavoro dovrebbe essere proprio un lavoro sicuro. […] Mio marito si sposterebbe pure ma ci dovrebbe convenire, noi in questo momento ragioniamo veramente con ragionamento economico al sistema famiglia".

xxi "stavo con una ragazza qua a Milano che aveva avuto una buona opportunità qui in Sardegna contemporaneamente al momento in cui mi era stata fatta l'offerta di questo lavoro che a me sembrava interessante ed ho pensato che fosse un'ottima opportunità per tornare tutti e due".

xxii "Nel mio campo le possibilità di avviare uno studio di progettazione sono maggiori qua. Questo ovviamente perché entrano in gioco tutto un sistema di parentele, di amici e di contatti che sono fondamentali nel mio lavoro. Io posso avere dei progetti nel momento in cui conosco delle persone e quelle persone all'inizio, soprattutto in uno studio di progettazione, sono i parenti, gli amici e i contatti che prendi così".

xxiii "è difficile specialmente all'inizio e se non hai un legame forte con la città dove vai a vivere".

xxiv "anche se mandi un curriculum sul sito internet o magari anche per posta raramente vieni notato invece col master vieni proprio in contatto con loro, per cui a meno che non ci siano problemi particolari su qualche persona particolarmente inaffidabile ti danno un'opportunità".

xxv "il valore di un master alla fine non è tanto quello che ti insegna […] quanto il placement che fanno dopo ovvero la possibilità di metterti in contatto con aziende di un certo spessore ed avere una canale privilegiato con questo tipo di aziende".

xxvi "ho conosciuto il direttore del dipartimento di lingue che è un italianista mi ha fatto lavorare all'università l'anno dopo".

xxvii "[A proposito della Sardegna mi manca] la possibilità di sentirsi a casa nel senso che fuori dalla Sardegna è come se fossi un ospite invece, quando sono lì sono a casa, sento di essere padrone del posto".

xxviii "legame affettivo con la Sardegna che mi ha spinto a tornare […], con i posti in cui sono cresciuto […], il paesaggio, i paesi o un aspetto forse un po' romantico dell'essere nato e cresciuto [in Sardegna]"

xxix "mi sembrava di dovermi immaginare una vita da emigrato tutta la vita e quindi anche questo mi spinto a fare questa scelta. Mi sono convinto che per quanto uno possa apprezzare il loro stile di vita così diverso dal nostro alla fine però alla lunga uno ha la sensazione di vivere una vita da straniero lì dove vive e nella mia scala di valori

personali questo contava. […] Stare fuori m ha fatto maturare l'idea che mi sarei sentito a casa solo qua, o perlomeno là non mi sentivo a casa. […] Hai più facilità nelle relazioni, con persone che sono cresciute nel tuo contesto ci si capisce di più, si ha un'ironia simile ecc".

xxx "aver a che fare con persone che non sono nate vicino a te e che hanno vissuto esperienze differenti […] fa bene si a te come persona che alla tua carriera".

xxxi "Se tu vuoi andare a mostre e spettacoli di un certo livello di certo non li trovi quindi devi prendere un aereo".

xxxii "Di sicuro posso dire che la scelta di tornare in Sardegna non è stata per me una vera scelta ma una costrizione dettata da una situazione contingente. Io ho fatto l'università a Firenze, ho proseguito gli studi lì, ci ho lavorato e ci ho passato in totale quasi 15 anni della mia vita […]. In Toscana mi trovavo benissimo, era diventata casa mia ormai e di Firenze mi piaceva tutto: le opportunità che mi aveva sempre offerto, l'ambiente multiculturale […] e anche dal punto di vista lavorativo non era andata malaccio. Avevo la mia vita ed ero felice, [avevo] i miei amici ed i miei contatti lavorativi. [… Poi ho] fatto una serie di scelte, se non sbagliate, intempestive, ad un certo punto della mia vita. Ad esempio il fatto di avere svolto un'esperienza all'estero anziché premiarmi mi ha poi penalizzata […]".

xxxiii "Finito il master a Roma ho fatto uno stage in un teatro […]. Vedevo che a Roma possibilità di lavoro ce n'erano poche, sentivo degli amici a Dublino che mi hanno convinto a salire e ci ho passato quattro anni molto importanti […]. Dopodiché mi sono un po' stancato di quel lavoro, alla fine non si era aperta la strada e un mio amico mi ha segnalato che si stavano aprendo delle posizioni in Sardegna."

xxxiv "E' veramente molto difficile […] quello che penso ora è di trovare una possibilità all'estero[…], addirittura avevo pensato anche a paesi emergenti tipo il Brasile".

xxxv "A me sarebbe molto piaciuto tornare in Sardegna [alla fine del mio master] ma quando ho visto che qui era molto più semplice entrare in un dottorato su un progetto che a Cagliari o si entrava con borsa o molto difficilmente si sarebbe entrati ho optato per la Francia ma considera che io ho avuto la co-tutela proprio per mantenere un piede anche in Sardegna, quindi io ho fatto un doppio dottorato franco-italiano per cui l'idea era di fare il dottorato in Francia e poi vedere che possibilità si potevano aprire in

Sardegna, per cui l'occhio ce l'ho sempre puntato anche se non vedo nulla di incoraggiante".

xxxvi "Credo che assolutamente nella mia professione sia sempre fondamentale restare in contatto con altre realtà […] non vedo perché dovrei lavorare solo per la Sardegna visto che i più grandi studi di progettazione lavorano per i vari continenti".

xxxvii "fare qualcosa sia qui che lì. Ad esempio con alcuni amici stiamo tentando di aprire uno studio avendo base a Barcellona, ma essendo formato da persone con diverse nazionalità potrebbe avere contatti con i diversi paesi di ognuno".

xxxviii "E' più facile avere accesso alle idee sia a livello professionale che a livello umano […]. E' importante infatti stare vicini alla frontiera tecnologica ovvero qualunque luogo ove ci sia circolazione di idee a qualunque livello arricchisca personalmente e professionalmente. […] qualunque lavoro fai migliori se lavori con altri e se questi altri fanno parte di una rete più ampia".

Chapter 5. Conclusions

According to the OECD (2011) over the past three decades the flows of international students have increased sharply as a result of the globalisation of economies and societies. For this reason, Student Mobility (SM) has received increasing scholarly attention (see Chapter 1, Section 1.2 for a review).

In particular, this research work focused on Europe, where SM is related to the process of economic and political integration of the European Union (EU). The EU has deployed various schemes aimed at stimulating the mobility of students and they are expected to have a number of beneficial effects both on students and on the EU as a whole (see Chapter 1, Section 1.3 for a review).

However, at the same time SM could also lead to important downsides, such as brain drain. In fact, there is evidence that students tend to migrate from lagging to core regions and that they are inclined not to come back on completion of their studies. For this reason, on the one hand the EU aims to stimulate SM, on the other to encourage return migration on completion of studies abroad.

In this chapter we discuss the main findings and contributions of this thesis, both from an academic and from a policy-making point of view. We begin with Section 5.1, where the research questions are re-examined in terms of current literature and the main findings and contributions to the literature of this doctoral study are discussed. Then, given that this thesis is framed in EU SM policies, Section 5.2 highlights the policy implications that emerge from this work and provides suggestions to the policymakers in charge of the M&B programme useful to improve its design and implementation and also to policymakers in charge of SM programmes in other EU lagging regions that might be experiencing similar problems to those described in this work.

5.1 Main findings

As revealed in the literature review presented in Chapter 1 and in each of the subsequent chapters, there are significant weaknesses in current academic literature, both in terms of empirical investigation and theoretical underpinnings. We have contributed to fill some of these gaps through the findings summarised in this section.

In Chapter 2 we studied the extent to which participating in SM schemes can increase individual labour market outcomes, as proxied by odds of employment and net monthly income.

From a theoretical point of view, we expect SM to favour the transition from education to work and to lead to higher earnings. This expectation is based on Human Capital

Theory, according to which studying abroad, especially in elite colleges and universities, should increase individual levels of human capital more than studying in one's home country. In fact, having experiences in a different location can increase language skills, relational skills, can grant access to different cutting edge knowledge and so on.

Moreover, Formerly Mobile Students (FMS) are expected to be more spatially flexible in their job search than their non-mobile peers, since their previous migration experience should reduce psychic costs of further migration and increase cultural, social and economic ties with multiple locations. As a result, FMS are likely to search for a job in a larger geographical area, which enhances their chances of achieving better labour market outcomes.

However, there are also strands of literature challenging this expectation. For instance, Dual Labour Market Theory implies that being endowed with high levels of human capital and spatial flexibility are not sufficient conditions to lead to a successful career, since individual careers are governed by the socio-institutional characteristics of the labour markets. In fact, this theory suggests that, due to discrimination and institutional rigidities, individuals with the same levels of human capital could achieve very heterogeneous labour outcomes.

Moreover, the ineffectiveness of SM programmes is also predicted by studies focusing on the geographical portability of human capital, which claim that human capital is place-specific. As such, studying in a different country may not pay off domestically. At the same time, initially establishing one's self in a new location can be unsuccessful too, since one's own human capital would be mostly domestic and could hardly be valued in the new location.

Empirical studies on the microeconomic impact of SM are scarce in number and provide mixed results. Moreover, most of them either do not have data about any suitable control group or do not apply appropriate statistical techniques to isolate the impact of the programme from other confounding factors.

This work brings innovation to the existing literature body since, unlike most previous studies, we relied on data and methods explicitly meant to minimize potential sample selection bias. To begin, we used a suitable control group composed of individuals that were also eligible for the programme and had graduated from the same university as most of the programme recipients. In addition, we were endowed with administrative data accounting for the selection criteria of the scheme: namely, how the recipients had

been selected was partially known. Furthermore, through a purpose-designed web survey we collected detailed information on the characteristics and motivations of the recipients – a very important asset to control for recipients' self-selection. Finally, we relied on a statistical technique, the Propensity Score Matching, that is explicitly meant to control for potential pre-treatment differences between treated and control groups. In the end, we did not find any evidence of sample selectivity. Nevertheless, due to the quality of the data and to the research method used, our results can be considered more reliable in identifying a causal link than those of most previous studies on this topic.

According to our results, the Master and Back programme has been ineffective in enhancing both the odds of employment and the net monthly income of the recipients and, though no generalisations can be made due to the characteristics of our data, interesting theoretical insights emerge from our analysis.

From a theoretical point of view, a key issue concerns the relative influence, on individual labour market performance, of institutional factors as well as individual ones. Regarding this matter, our findings show that SM schemes do not necessarily enhance individual levels of human capital. Moreover, achieving higher levels of education and being more spatially flexible might not be sufficient to increase individual success in the labour market. In fact, institutional factors (socio-institutional barriers and discrimination) might also play a major role.

Our explanation for these observations has multiple facets. One concerns the quality and type of human capital developed by the programme. It is possible that the scheme may have been unable to select the best universities and, therefore, not have equipped the recipients with human capital of appropriate quality. A complementary explanation is that human capital is not portable across locations. As such, the recipients are unable to take full advantage of the human capital they acquired in the sending region when looking for work in the receiving region of their student mobility experience; on the other hand, they are unable to fully exploit their human capital acquired during their student mobility experience if they decide to return to the home region.

A second facet regards the rigidity of the labour markets. There might be social and institutional barriers at play, hindering access to attractive jobs, irrespective of individual levels of human capital. This might especially be the case since the allocation of the job-seekers to available vacancies does not hinge on their levels of human capital but on social and institutional factors. In our specific case, the recipients

of the M&B programme are quite young and come from a lagging region, so it is quite possible that they suffer discrimination in the receiving countries.

In summary, our findings provide evidence that SM schemes are unable to enhance the labour market outcomes of their recipients. There might be two explanations for this: either these schemes are unable to enhance the employability[1] of the recipients, or the higher employability of the recipients does not results in better careers due to institutional and market demand factors.

Chapter 3 investigated whether SM schemes can improve the matching (both vertical and horizontal) between skills and jobs. Although there are various reasons why we would expect this to be the case, whether this actually occurs in practice needs to be determined by empirical investigation.

According to Human Capital Theory overeducation is just a temporary phenomenon. In fact, high numbers of overeducated individuals in the labour market should discourage further investment in education and, as a result, should reduce the incidence of overeducation. In contrast, both Job Competition Theory and Assignment Theory suggest that overeducation steams from market failures and is therefore persistent.

Numerous studies have compared different theories in order to explain overeducation. Many of them have challenged the assumptions of neo-classical economics (i.e., Human Capital Theory) by providing evidence that the market does not adjust automatically to imbalances between skills an jobs.

One of the most important mechanisms through which job mismatching can be contrasted is geographical mobility. In fact, the larger the job search radius the higher the probability of achieving a good matching. Various studies have shown that in large labour markets (particularly global cities) the highly skilled can achieve better job matching, since these labour markets are usually characterised by high levels of specialisation and, therefore, opportunities to apply highly specialised skills are more abundant. As such, those willing to relocate to global cities should be more likely to achieve a good job matching.

Despite the clear evidence of a strong correlation between geographical mobility and job matching, a major gap in this literature concerns the lack of studies focusing on the possibility of artificially stimulating job matching through mobility policies. This issue is

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[1] Here the word *employability* is understood as "the potential to achieve good labour market outcomes".

very relevant for policy-making as well, especially in light of the significant efforts made by the EU to support geographical mobility of students, workers and so on.

By focusing on the case of the M&B programme, our study contributes to this body of literature and sheds new light on the impact of SM schemes on job matching. We compared the outcomes of the recipients of the M&B scheme to those of a suitable control group through an Instrumental Variable approach, a technique that is able to adjust for potential selection bias by controlling for unobservable heterogeneity.

Our results provide evidence that the recipients of the scheme are significantly less likely to be both overeducated and overskilled. However, when we instrument our regression through mother education (the instrumental variable), we realize that the positive impact of the programme does not depend on the programme itself but on unobserved ability. In fact, all the estimates go from being highly statistically significant to being insignificant, showing that the programme tends to select beneficiaries that would have achieved a good job matching irrespective of the programme. We also find evidence that the mismatching is higher for the recipients who return to Sardinia. These results are fraught with important policy implications that are discussed in the next section.

Chapter 4 focused on the determinants of student return migration and on the nature of the underlying decision-making process. In this study we applied a mixed-methods approach – which has almost never been used in this kind of study – on the grounds that this technique is able to overcome some of the main weaknesses of the "pure" methods (i.e., quantitative and qualitative methods). On the one hand, the quantitative data allowed us to test the relative strength of different determinants of the location decision, on the other the qualitative data provided scope to extend these results through the "thick description" of the interviewees' individual narratives.

Concerning the determinants of return migration, neo-classical economics tends to assign an overwhelming importance to economic factors and expects migratory flows to take place from where the economic conditions are worse to where are better. In this framework, return migration should occur only when either the actual gains from migration do not match the original expectations or when more favourable economic conditions can be found in the sending region than in the receiving one.

Over time, migration theories have received important new contributions, focusing on alternative or complementary determinants. For instance, great importance has been attached to amenities. In this area, the influential work by Richard Florida and his

supporters posited that the highly skilled (the creative class in Florida's words) are attracted by locations endowed with "cultural industries", tolerance and so on. Unfortunately, this strand of literature tends to neglect the role of job opportunities, as it assumes highly skilled individuals to be easily employed everywhere. Therefore, according to this theory, the location decision of the creative class should be only dependent on the individuals' preferences for particular amenities. For this reason, this theory has been harshly criticised on the grounds that jobs do not follow people – rather, the opposite is true.

Furthermore, in this chapter a great amount of attention has been paid to studying the effects of social networks which, according to the literature, can be very influential in determining both migration and return migration. In fact, social networks can open opportunities and provide support in the receiving region; on the other hand, despite the potentially more favourable economic conditions of the receiving region, mobile individuals might be attracted back to their home region by their social ties.

The few existing empirical studies focusing specifically on the determinants of students' return migration have compared and tested different theories. However, their findings have not resulted in any shared understanding of the phenomenon at hand.

Therefore, our empirical strategy for studying the determinants of student return migration began with testing the importance of earnings in explaining the location decision, since this is the main determinant put forward by neo-classical economics. With this objective in mind we regressed the current location of the recipients of the programme (the categories being Sardinia, other Italian regions and abroad) on their net monthly income. We found evidence that individuals located abroad at the time of the study had significantly higher income than those located in Sardinia, while the same was not true for those located in other Italian regions. In other words, non-return to Sardinia is economically beneficial only if the recipients are located abroad.

However, this is only part of the story, as we know that the desire to obtain higher income is not the only driver of the location decision. Therefore, the next task consisted in regressing multiple variables proxying the relative influence of different strands of literature – career/professional reasons, quality of life, social networks and so on – on the return decision (as proxied by a dummy identifying returners). These results have been interpreted also in light of additional qualitative data, collected through almost completely unstructured qualitative interviews.

Our findings show that economic factors are the most important push factors, while family, relationships and cultural proximity are the most important pull factors. In addition, social networks, both in the sending and in the receiving regions, can provide support by procuring opportunities that otherwise would not be accessible to the recipients. Finally, according to our findings, amenities play a less relevant role than highlighted by previous literature[2].

An additional contribution of this work concerns the distinction between objective and subjective location characteristics. Often the literature tends to rely on variables proxying the objective characteristics of possible destinations in shaping the location decision. However, our findings show that the objective economic conditions of alternative locations (in our study proxied by average income at PPP and unemployment rates) might be less important than expected. In contrast, the variables proxying the subjective perception of economic opportunities appear to be far more influential, since they attain a high degree of statistical significance.

Usually migration studies tend to focus on *why* return migration takes place, but they seldom look at *how* the underlying decision-making process unfolds. Instead, strong assumptions are generally made regarding this matter: Human Capital Theory tends to assume that migrants are rational decision-makers aiming to maximise utility, whereas Creative Class Theory tends to assume that migrants are attracted by locations having universal characteristics (amenities). In short, both of these approaches treat migration as a linear one-off process and tend to neglect the importance of social networks.

On the contrary, other migration theories, particularly Transnationalism Theory, pay more attention to the viewpoint of the migrant and portray migration as a process influenced by past migration experience and by the individual perception of the constraints and opportunities present in the potential destination. Moreover, the location choice is not assumed to be made once and for all; instead, it is seen as a continuous process which can result in migration, return-migration, repeat migration or brain circulation.

Our findings are consistent with Transnationalism literature, as they highlight that migration is not a single event but a process in which the migration behaviour evolves along with the evolution of individual social ties and the perception of opportunities and

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[2] It should be noted that we did not test amenities in general but only the kinds of amenities discussed by Richard Florida: tolerance, ethnic/cultural diversity and "cultural industries".

constraints of alternative locations. For this reason, the same person could make different migration choices at different stages in life. We find strong evidence of brain circulation as there are many recipients currently located outside Sardinia that wish to return, recipients who have returned but wish to leave again and recipients whose lives are articulated across locations, since they simultaneously work and have social ties in different places.

5.2 Policy implications

SM schemes raise numerous policy issues that need to be well understood and resolved to make these types of policies work better and avoid potential geographical drawbacks. In this section we discuss the implications of these policies, devoting particular attention to how the M&B programme was implemented in order to identify what could be improved in the future editions.

In Chapter 1 we described how SM was supported by the EU through multiple and often contradictory policy tools: education, research and innovation on the one hand, cohesion policy on the other. However, while the former are space-neutral policies (or people-based policies) aiming to enhance the competitiveness of the European economic system as a whole, the latter is a place-based policy that aims to untap unexpressed regional potential in a spatially balanced way. This distinction is going to be very relevant for the following discussion. In fact, while some shortcomings of the programme might be harmful from the viewpoint of the recipients, since they could keep them from achieving high labour market outcomes (space-neutral perspective), others may be harmful to the regions that finance the policy, as they might keep them from reaping the returns to their investment in SM (place-based perspective).

The M&B scheme aims to simultaneously pursue objectives that are typical of people-based policies (i.e., increasing the labour market outcomes of the recipients) and of place-based policies (i.e., exploiting the new skills created through the programme to foster economic development in Sardinia). Therefore, it might exacerbate the potential trade-offs and contradictions between the underlying rationales of these two different families of policies.

Accordingly, the next two sub-sections are devoted respectively to discussing the shortcomings of the programme from space-neutral and place-based points of view, respectively. However, this distinction is artificial and has been made solely for the purpose of aiding the description of the shortcomings, since in practice the same problems are likely applicable to both points of view.

5.2.1 Space-neutral perspective.

From a space-neutral perspective there are various factors that might have reduced the effectiveness of the programme. Indeed, the programme failed to significantly increase both the odds of employment and the net monthly income of the recipients (see Chapter 2). However, in our view, these disappointing results deserve to be contextualised to be better understood. In particular, there were major shortcomings in the implementation of the programme, which are discussed below, that are likely to have heavily contributed to determine the observed outcomes.

A first consideration concerns the timing of the calls. In this regard, as already outlined in Chapter 2, the fact that the time periods to submit applications for the programme were too short and did not coincide with the usual recruitment times of most world universities was a key problem. As a result of this scheduling decision numerous potential M&B candidates willing to apply to these universities might have been either discouraged from applying or forced to apply to different (and perhaps less prestigious) universities. Of course this might have jeopardised the ability of the programme to finance top-quality education and, as a result, to increase the labour market outcomes of the recipients.

Sadly, this problem applies to all the calls analysed by this research work, except for the first one (2006). The time windows to submit the applications decrease progressively from the least to the most recent calls: while the first call remained opened for an entire year, the second one for about 4 months, the third one for 2.5 months and, finally, the fourth one for only 2 months (see Table 1.2). Surprisingly, in the last call the applications had to be submitted in the middle of summer time (half July to half September), when most universities were not recruiting new students – for instance many US universities start recruitment in December-January while in the UK recruitment usually starts in spring.

Another scheduling problem relates to the fact that higher education programmes were eligible for financing even if they began in the months prior to the publication of the calls. For instance in 2008, though the applications could only be submitted from February to April, all the education programmes that started on or after 01/10/2007 were eligible (see Table 1.2 for further information). This practice of financing programmes which had already begun when the calls were published was meant to overcome the time lag problem outlined earlier. However, in our view, this practice mainly benefitted students from high social backgrounds that could afford to pay for their education irrespective of the scholarships. Of course, financing something that

would have been financed anyway by the privates is not a suitable strategy from a policy-making viewpoint.

Another aspect that deserves attention concerns the selection of the recipients. Despite the objective to only support the studies of the brightest students who had already been accepted by the world's top ranking universities, eventually almost all the applicants got financed. This was the case for all the calls taken into consideration and resulted in a significant increase in the budget spent for the programme. For instance, the initial budget for call 2006 was 10.5 million euros, but it was subsequently increased up to about 21 million euros. For call 2007 the budget was increased from 8.5 to 10 million euros, while call 2008 was initially endowed with a relatively small budget (just 2.25 million euros), but in the end resulted in almost all the eligible applicants being financed[3] leading to an overall expenditure of about 16 million euros. On a similar vein, in call 2009 the budget was increased from just 6.5 million euros to about 16 million euros[4]. Of course, the sharp (and perhaps unjustified) increase of the budget of most calls is likely to have reduced the average quality of both the students and their education paths, resulting in lower labour market outcomes.

As already discussed in Chapter 2, both the over-budgeting (and consequent lack of selection) of the calls and the time lags between calls and university recruitment sessions were favoured by the rules by the European Commission for the expenditure of the funds which are, in our opinion, too rigid. Specifically, according to the so-called N+2 rule EU funds must be spent within two years from when they are allocated, a principle that incentivises the managing authorities to spend quickly rather than effectively. In the context of the M&B programme, the N+2 rule had a duplicate effect: it incentivised the over-budgeting of the calls, as the scheme represents a relatively fast way to spend; it also resulted in a reduction of the time windows to submit the applications as it enforced hard deadlines.

Another criticism, already mentioned in Chapter 3, concerns the delays in the payment of the scholarships, consisting in both the time elapsed from the submission of the application to the awarding of the scholarship and from the awarding of the scholarship to its actual payment.

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[3] This decision was authorised by the deliberation 44/34 (dated 06.08.2008).
[4] This decision was authorised by the deliberation 47/24 (dated 20.10.2009).

The timely payment of the scholarships is absolutely crucial for the correct functioning of the programme, since the delays particularly affect students coming from more disadvantaged social backgrounds which, presumably, have fewer financial resources to devote to the expenses for their education. As such, these "disadvantaged individuals" might have either abandoned the programme or faced major budget constraints. This might have favoured the selection of the recipients based on their social background, undermining the principle of individual equity that is an underlying objective of the programme.

Further, the rule introduced in the call 2007 according to which the scholarships had to be paid in only two instalments – a first one in the amount of 90% of the value of the scholarship and a later 10% of settlement – is full of negative policy implications. Although this rule may have provided for more efficient administrative procedures to manage the payments[5], it surely was not in the best interest of the recipients nor of the programme at large. In fact, this concentration of resources in few instalments determined a significant increase of the recipients' tax base and, as a consequence, of their income tax rate (*aliquota irpef*). In fact, M&B scholarships are not tax exempt and income tax is progressive as a function of income. This problem was particularly pronounced for the recipients of Ph.D. scholarships – due to the considerable size of their grants – and determined significant diversion of resources from the objectives of the programme to the payment of unfair income taxes to the National Treasury (see also Chapter 3 on this issue).

Both the delays in the payment of the scholarships and the concentration of the payments in only two instalments are related to the administrative capacity of the bureaucratic apparatus in charge of the programme. It should be stressed that administrative capacity is usually considered a key asset for the efficient expenditure of public resources, including structural funds. In fact, higher levels of administrative capacity can significantly improve and accelerate the procedures for the implementation of public policies.

We are unable to provide a detailed analysis of the underlying causes of the shortcomings in the administrative capacity of the offices in charge of the programme, since it would require a detailed analysis of the human resources, procedures and technologies involved in its management – all internal information that is currently

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[5] It could significantly reduce the workload of the administrative staff as compared to making the payment through higher numbers of instalments. Moreover, it could accelerate expenditure.

unavailable to the writer. However, the need to significantly improve this aspect emerges clearly from our analysis.

Another aspect that must be mentioned concerns the excessive interference of politicians in in the management of the programme for electoral purposes. There are various episodes where their undue interference can be detected. In particular, the allocation of additional resources to the calls occurred either immediately before the regional elections or was preceded by lobbying and bargaining activities between the would-be beneficiaries and politicians[6].

Indeed, for an efficient implementation of such public programmes, their management needs to be protected from electoral bargain. While politicians should certainly set the general objectives and verify the results, the administrative authority should be fully responsible for the management of the programmes. In theory, according to the Italian law, it should already be this way[7], but in practice it is not.

5.2.2 Place-based perspective

This sub-section discusses shortcomings of the programme that might have kept Sardinia from reaping the expected returns to the programme (place-based perspective). As illustrated in Figure 5.1, there are two ways for lagging regions to reap the returns to their investment in SM: boosting the physical return of the recipients (return migration) or setting up remote collaborations with them (diaspora option). In turn, the physical return of the recipients can be stimulated by targeting either the recipients themselves (individual approach) or by making Sardinia more attractive for them (structural approach). The individual approach tries to influence the individual willingness to return and is expected to produce results in the short-term, while the structural approach tries to fix the structural problems that determine the unattractiveness of the sending region and is expected to produce results in the medium/long-term (for an overview of these options see Thorn and Holm-Nielsen, 2008).

As far as the M&B programme is concerned, Sardinia mainly tried to trigger the physical return of the recipients through economic incentives (individual approach).
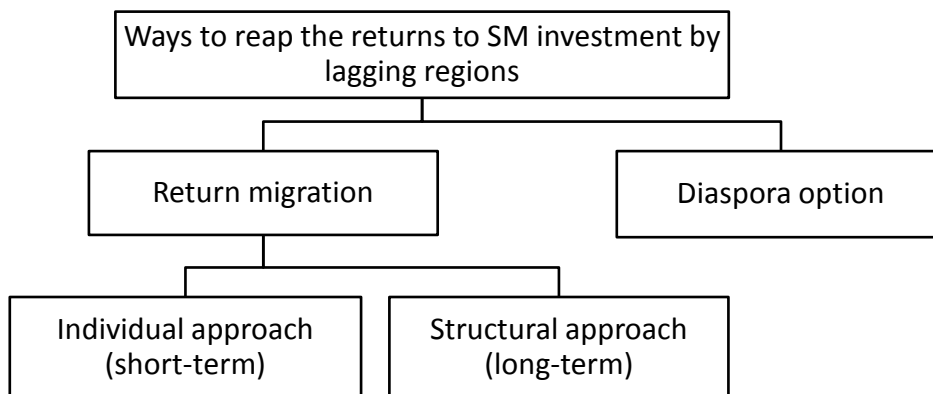
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[6] Evidence on this bargaining can be found in the unofficial Facebook group of the Master and Back programme https://www.facebook.com/groups/8729424091/?fref=ts

[7] D.Lgs. 3 febbraio 1993 n. 29; D.Lgs. 31 marzo 1998 n. 80; legge 15 maggio 1997 n. 127; legge 16 giugno 1998 n. 191; D.Lgs. 18 agosto 2000 n. 267; D.Lgs. 30 marzo 2001 n. 165; D.Lgs. 27 ottobre 2009 n. 150.

This was done through the Back part of the programme, which was described in Chapter 1.

Figure 5.1 – How lagging regions can reap the returns to their investment in Student Mobility.

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                ┌─────────────────────────────────┐
                │  Ways to reap the returns to SM  │
                │    investment by lagging regions │
                └─────────────────────────────────┘
              ┌──────────────────┴──────────────────┐
     ┌──────────────────┐              ┌──────────────────┐
     │  Return migration │              │  Diaspora option │
     └──────────────────┘              └──────────────────┘
        ┌──────────┴──────────┐
┌──────────────────┐  ┌──────────────────┐
│ Individual        │  │ Structural        │
│ approach          │  │ approach          │
│ (short-term)      │  │ (long-term)       │
└──────────────────┘  └──────────────────┘
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Though the assessment of the "Back" is beyond the scope of this research, some general considerations deserve to be made. Like all individual-based approaches to return migration, the "Back" raises major concerns. In particular, it does not address the root cause of the problem – i.e., the structural problems which make Sardinia unattractive for the highly skilled. As such, even though it might convince some recipients to return to Sardinia, return migration might just be temporary – i.e., it might just last for the duration of the economic incentives. As a result, considerable resources may be spent with little long-term impact.

Moreover, return-migration policies might prove to be endowed with scarce additionality. Chapter 4 provided evidence that the recipients of the scheme were strongly committed to home: some of them wished to return as they had strong family and sentimental ties in Sardinia, others wanted to return to exploit their potential professional networks in Sardinia and still others wanted to locate in Sardinia just because they wished to live in a place where they could "feel home" (cultural proximity, knowledge of the language and so on). This implies that a significant share of economic incentives might have been misallocated, as they have been granted to individuals willing to return irrespective of the incentives.

A further problem is that individual approaches might favour adverse selection. In fact, the size of the grants to make return migration attractive from an economic point of view could vary significantly depending on the opportunity costs of the recipients. In particular, recipients whose skills are more valued in the labour markets might have

higher opportunity costs to return to Sardinia. As such, the economic incentives provided by the "Back" might just be sufficient to lure back the least bright recipients.

Another reason why economic incentives might be unsuitable is that they provide scope for rent-seeking. Various interviewees complained that, during their work experiences, they did not perform tasks consistent with their levels of education and ability (overskilling). This waste of human capital was most likely determined by the fact that the full salary of the recipients was covered by the public incentives while firms did not have any co-financing obligation[8]. As such, the latter did not have any real incentive to fully exploit the human capital of the recipients. Moreover, no effective inspections were ever made in order to discourage and avoid rent-seeking.

A further issue that deserves attention concerns the fact that, even if return migration takes place, the regional labour market might be unable to exploit the skills of the returners. For this reason highly skilled return migration might not result in higher productivity and innovation but in brain waste. With regard to M&B, Chapter 3 provided evidence that the returners were more likely to become both overeducated and overskilled than the non-returners. This might have occurred either because there were no job vacancies consistent with their skills in the regional labour market or because, due to rigidities and inefficiencies, their skills were misallocated.

As discussed in Chapter 3, the regional government tried to improve the matching between recipients' skills and regional job vacancies by identifying priority sectors for the allocation of the resources. However, due to the over-budgeting of the calls and to scarce transparency and methodological rigor in the identification of the priority sectors the idea did not work.

In addition, unlike more advanced labour markets, the Sardinian labour market is characterised by very disorganized public employment services, unable favour proper matching between skills and jobs through effective assistance to job-seekers and employers. As discussed in Chapter 3, Sardinian employment services are delivered by two twin, scarcely coordinated and overlapping networks of public offices that lack of an efficient information system to track job vacancies.

Highly skilled return migration can be stimulated through both individual and structural approaches. However, only the latter act on the root causes that make Sardinia

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[8] Only in 2010 for the first time the firms hosting the recipients of the scheme were asked to pay 15% of their wages.

unattractive (institutional and contextual factors) and, therefore, are effective in the long-term.

Concerning the structural constraints to return migration, as highlighted in Chapter 4, a very important push factor for the recipients of the scheme is the lack of opportunities for applying their skills in Sardinia. This problem is likely related to the lack of absorptive capacity of new human capital by the Sardinian labour market, since Sardinia has a poor innovation system (see Chapter 1). Therefore, a first important step to structurally improving the attractiveness of Sardinia consists in significantly improving its innovation system by increasing R&D investment.

In particular, the impact of highly skilled return migration would be maximised by coordinating the investments in R&D and in human capital: on the one hand R&D investment should be targeted towards priority sectors which are considered strategic for Sardinia; on the other investment in education should be targeted to support the innovation strategy. In fact, the most successful cases of return migration policies are found in countries (such as Singapore, South Korea, and Taiwan) with systems of innovation already quite advanced where the highly skilled can be employed effectively (Meyer et al., 1997).

Many interviewees, especially researchers, complained about the lack of "meritocracy" in Sardinian universities. In this regard, action should be taken to make the Sardinian academic system more attractive. In particular, procedures to hire new academics should be made more open and transparent. Moreover, resources for research should be allocated on a more competitive basis, depending on research outputs. This would encourage research quality and, as such, orient recruitment procedures towards the most productive researchers.

More generally, better labour conditions should be promoted for all the highly skilled. For instance, the World Economic Forum (2014) highlights that one of the main reasons why employers struggle to find highly skilled human capital depends on the lack of attractive employment conditions. In this regard, recall from Chapter 4 that the unattractiveness of the employment conditions in Sardinia was stressed by the interviewees as a key push factor.

So far the regional government has tried to reap the returns to its investment in SM mainly by boosting the return of the recipients on completion of their studies. However, we stressed that return migration might be either impossible – since the gains of non-

return might be higher than the incentives provided by the regional government – or unsuitable – since the return of the recipients might result in brain waste.

Therefore, new and alternatives ways to take advantage of SM investment should be experimented by the regional government. A policy strategy aiming to achieve this objective, which has become particularly popular in recent years, is known as the "diaspora option" (Meyer and Wattiaux, 2006). This relies on the observation that highly skilled emigrants tend to organize themselves into networks that can generate knowledge flows towards their home country/region (Meyer and Wattiaux, 2006). In this regard, it should also be remarked that the possibilities of collaboration by distance have been strongly boosted by the rapid evolution of modern ICTs (Hiller and Franz, 2004).

Recent theoretical contributions showed that "collective learning" can take also place among people that are not spatially co-located. These individuals can collaborate in globally stretched knowledge networks through flexible forms of communication and interaction: meetings, e-mails, phone calls, etc. (Creplet et al., 2001, Faulconbridge, 2006). Some scholars are sceptical about the effectiveness of diaspora networks to trigger economic development in the sending country/region (Lowell and Gerova, 2004), others maintain that their effectiveness is demonstrated by abundant empirical evidence (Meyer and Wattiaux, 2006). We do not take sides in this debate, but we make the point that the diaspora option should also be experimented in Sardinia, as there seem to be favourable conditions for this to work.

In particular, Chapter 4 showed that the recipients of the scheme are strongly committed to Sardinia, which suggests that they might be willing to network and collaborate with Sardinia while they are overseas. Furthermore, they are endowed with high levels of institutional and social proximity with Sardinia, a very important factor to overcome the lack of geographical proximity in knowledge circulation (Boschma, 2005, Granovetter, 1985).

There are different ways through which the recipients of the scheme overseas could be mobilised. As stressed earlier, one way is establishing networks and collaborations with them, in order to generate inward knowledge flows. Another way consists of stimulating brain circulation, particularly by supporting highly skilled emigrants in starting new

businesses in Sardinia[9]. The advantage of this strategy is that it does not rely on the existing job vacancies but creates new ones and might stimulate innovation.

Many international experiences show that the start-ups created by expatriates in their sending countries/regions boosted important economic development processes. In this regard, a very influential account is provided by AnnaLee Saxenian (2005 and 2006). She points out that since the 80s Israeli and Taiwanese engineers educated in the US, after a period of work abroad started to go back to their home countries, incentivized by an overall improvement of the economic conditions. Something similar happened to Chinese and Indians, though later in time. Not only these highly skilled individuals went back, but many of them started investing in their home country (Saxenian, 2006).

Investments by emigrants based in the US toward their home countries were very beneficial for local economic development, since these people had an important competitive advantage, as compared to other potential investors: they knew local market and institutions both in their home country and in the US. This, associated to their global networks of relationships and knowledge of cutting edge technologies, steadily increased the payoffs of their investments. The returners brought back not only technical skills but also organizational and managerial know how (Saxenian, 2006).

Of course there is no guarantee that providing economic grants to the recipients of the M&B scheme to create new start-ups would result in virtuous processes of economic development similar to those described by Saxenian. Nevertheless, we are convinced that this strategy should be experimented in Sardinia. The return of the recipients should not only be boosted just after the end of their studies. On the contrary, postponing it to when there are better economic conditions might avoid brain waste and increase the economic impact of return migration. This might also allow the recipients to further accumulate human capital and social networks outside Sardinia, which could further enhance the economic impact of their future return migration.

5.2.3 Final considerations

In conclusion, there are many steps that should be taken by the regional government to improve the M&B programme. Some of them could contribute to improving the private returns of the programme to the recipients (space-neutral perspective), while others

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[9] As highlighted in Chapter 1, this hypothesis is not new: it was mentioned since 2005, by the very deliberation n° 27/13 which introduced the scheme, but sadly it has never been implemented.

could boost Sardinia's possibilities to reap social returns from the programme (place-based perspective).

Concerning the first aspect, there are various issues that deserve attention. First, the timing of the calls should be extended and scheduled in order to be compatible with the recruiting periods of most world top-ranking universities. Second, the budget of the calls should be proportional to its objectives and should not be increased excessively only to comply with the N+2 rule or for electoral purposes. Third, the administrative capacity of the managing authority should be significantly improved in order to avoid the serious drawbacks associated to the delays in the payments of the scholarships and the diversion of programme's resources to pay unfair taxes.

From a place-based perspective, the current strategy to reap the social returns to the programme – mainly consisting in providing economic incentives to the recipients willing to work in Sardinia (so called "Back") – is characterised by major potential shortcomings: scarce additionality, adverse selection and rent-seeking.

Moreover, the current regional economic fabric seems to be unable to absorb the skills of the recipients. As such, return migration might result in overskilling and overeducation. To avoid these potential problems the resources should be targeted to acquire skills for which there is demand in Sardinia and the regional employment system should be substantially improved.

The worst drawback of the individual approaches to trigger return migration is that they do not address the structural problems that make the sending region unattractive and, as such, are ineffective in the medium- and long-term. Thus, such actions should always be associated with actions that aim to improve the general economic context and the institutions of the sending region. In this respect, increasing R&D investment would be extremely beneficial since it would improve the regional absorption capacity of human capital.

It is important to also remember that the recipients do not necessarily need to physically return to benefit the sending region. In fact, they might also be mobilised through their involvement in networks and remote collaborations with Sardinia by generating inward knowledge flows.

Last but not least, technical assistance and economic support should be provided to trigger the recipients to create new start-ups in Sardinia. In fact, this would allow the creation of new jobs rather than attempting to fill existing vacancies and would stimulate innovation.

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