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Inequality, Migrations, and Black Swans: The Case of Italy

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Approval of the Dissertation Committee

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Giacomo Di Pasquale as fulfilling the scope and quality requirements for meriting the degree of Doctor of Philosophy in Economics and Political Science.

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by Giacomo Di Pasquale

Claremont Graduate University, 2021

Abstract

This dissertation focuses on an empirical analysis on how inequality, internal and international mobility, and exogenous shocks interact with each other. With a focus on Italy, I provide an important contribution to existing literature on migration and inequality, through a comparative analysis at the subnational level. This characteristic of my work provides a unique opportunity to better understand inequality within countries. Using rigorous econometric and spatial techniques, as well as qualitative material, gathered from case studies and reports from international organizations, my dissertation contributes to the literature in social sciences on the causes and effects of inequality and on how it is shaped by state capacity, sudden events like earthquakes, international and internal mobility, and personal networks. Following the obtained results, I posit that it is up to local and national governments to implement effective policies of redistribution of wealth and services to reduce horizontal and vertical inequality. Furthermore, I believe particular attention should be dedicated to the least wealthy areas of the country, like the Center and the South, historically and consistently less developed than the North.

To my Mum and Dad, always by my side.

Povera patria

Schiacciata dagli abusi del potere

Di gente infame, che non sa cos'è il pudore

Si credono potenti e gli va bene quello che fanno

E tutto gli appartiene

Povera Patria – Franco Battiato

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Introduction

For decades, social scientists have been interested in understanding the causes of inequality and in finding successful solutions to reduce it, within and across countries. Researchers have proposed solutions on how to promote paths of sustainable growth to help the poor exit the poverty trap and reduce their distance with the highest tiers of the society. The approach followed has differed not only across disciplines, but also within the same field.

Recently, Economics and Political Science started to interact with each other and other disciplines (Psychology and Neuroscience, e.g.) and systematically look to the factors that affect inequality in poor, developing, and developed countries.

This dissertation aims to follow that path and look at both economic and political factors that affect and interact with inequality. In particular, I focus my attention on the role of internal mobility, international mobility, and natural disasters and their relationship with each other and with inequality. I posit that internal mobility and international mobility reduce inequality in receiving regions and increase it in sending regions. One of my goals is to successfully deal with the problem of endogeneity that scholars constantly have to deal with, when studying these issues. My work proposes strategies to help deal successfully with endogeneity. One of these strategies, which I will analyze in Chapter 3, is the consideration natural disasters (like earthquakes), instead of, for instance, economic shocks (like currency, or bank crises), as natural disasters are normally considered as an exogenous, unpredictable shock, not influenced by national politics and policies.

As mentioned before, Italy is the main focus of this dissertation. The country is divided into twenty regions (very different from each other, economically, politically and socially) and represents an interesting and diversified case. In this work, different subnational analyses are developed, taking into account that Italian regions present wide variation in terms of state capacity, inequality and development. This approach, as posited by Soifer (2012), allows to incorporate information about Italy as a whole, along with information about the extent to which differences are present in any given local context. Italy experienced great incoming and outgoing flows in the last decades and, given their fragile economic and social structures, some of its regions have experienced issues dealing with the effects of natural disasters.

I will now provide a brief overview of the dissertation, what lies behind it and the general research objective. I will then move to a more specific analysis of each paper that is part of this work. All the chapters include specific information about the research question, the methodology used, and the general hypothesis. I also include descriptive statistics, when possible, and provide arguments to show how the papers contribute to the existing literature.

Overview

The general motivation behind this work is to understand how phenomena like migrations and natural shocks interact with each other and inequality at the national and subnational level in Italy. The final purpose of the dissertation is to suggest policies that can help Italy to solve the problem of high inequality within and across its regions and to use migration as a resource and incentive to recover, in a country suffering an enduring social and economic crisis.

The research question of this dissertation can be articulated into three different sections:

1. How is internal mobility affected by different levels of income inequality across the territories of a country?
2. How does international mobility affect income inequality in host countries?
3. How do natural shocks, such as earthquakes, affect internal migrations, at the regional level?

Too many times, in too many places around the world, immigrants are seen as a threat to stability and prosperity. I am interested in understanding if, on the contrary, mobility can be seen as resource and if the regions, or countries, to get penalized are those that lose migrants. One of the purposes throughout the three chapters is to find a causal relation between inequality and migrations.

To answer the questions above, I use different methodologies and indicators, which adapt to different contexts and data availability. The main focus of the paper of this dissertation is Italy and its regions; I acknowledge that the levels of development of these regions vary greatly and that the methodology I use needs to adapt accordingly.

Chapter 1

Determinants of Internal Mobility in Italy: A Panel Data Analysis

Key words

inequality, internal mobility, Italy, North, regions, South

Abstract

Italy has historically suffered a gap between the South (less developed) and the North (more developed). This gap became accentuated during the crisis of 2007-2008, giving rise to different patterns of interregional migration. This paper investigates the effects of past migration flows and income inequality on interregional mobility in Italy. I apply an instrumental-variables approach using bilateral gross migration flows for the 2007-2016 period to capture the effects of income inequality on internal mobility in Italy. Previous research shows that life in highly unequal regions is associated with both increased mistrust and increased anxiety about social status, and people who live in such regions are reportedly unhappier than people living in more equal areas across levels of wealth. This study analyzes how interregional migration evolved in the years following the crisis of 2007-2008 in the twenty Italian regions, as a consequence of past migration flows and high levels of inequality. The instrumental approach used in the analysis aims to control for the potential endogeneity between internal mobility and inequality. The results show a positive relationship between high levels of inequality and interregional out-mobility. These results indicate the need for the Italian government to design policy that shrinks horizontal and vertical inequality within and among Italian regions.

Introduction

This paper focuses on how high inequality at the subnational level is an important driver of bilateral migration flows in all the twenty regions in Italy. Existing research has considered mobility an important cause of inequality, but this perspective does not take into account the inverse relationship. I argue that inequality might instead be an important cause of mobility; specifically, pre-existing unequal redistribution of income and opportunities across territories might push people from poorer to richer regions of the country, exacerbating the already existing gap between developed and developing areas.

Buttrick and Oishi (2017) found that living in regions with high levels of inequality has psychological consequences for individuals, including increased mistrust and anxiety about the future and one's social status. These psychological consequences can help explain the reasons behind mobility decisions. Specifically, having poor health, living in neighborhoods with high rates of crime, feeling unhappy, or desiring higher social cohesion may prone individuals to move somewhere else in an attempt to change these experiences. For example, Bell and Freeman (2001) found that residents of more unequal regions generally worked longer hours than those of more equal ones, in an effort to earn higher monetary rewards, indicating that they are willing to dedicate more effort to increasing their social status. Therefore, inequality seems to have real psychological consequences that affect individuals' decisions. However, most times individual effort does not necessarily translate into social and economic satisfaction. For example, employees' salaries do not always reflect the effort dedicated to their work (Buttrick & Oishi, 2017). When this occurs, high levels of disappointment and frustration might trigger mobility decisions.

Mobility is affected by multiple factors, including personal, environmental, demographic, and economic aspects. While some of these factors have been studied extensively (e.g., Etzo, 2008

and 2011, Mussida & Parisi, 2016), there is little research studying the effect of inequality on internal mobility. Specifically, Edmark (2009) suggests that the lack of proper governmental policies that foster equitable development could be related to increased mobility. This is especially relevant in places where there is stark inequality. In fact, internal mobility within a country might be the result of a number of other economic and social factors. One clear example is Italy.

Internal mobility in Italy has always been an important phenomenon due to the persistent economic and social differences between the North and the South of Italy (Zamagni, 2008; Bank of Italy, 2010), with Northern regions being consistently wealthier and more developed than Southern regions (Faini, et al. 1997; Checchi and Peragine, 2010; Gagliardi and Percoco, 2011). Specifically, residents of Southern regions have a history of internal mobility to Northern regions in search of more prosperous lives.

While internal mobility has occurred consistently in Italy over the years, two large waves are particularly notable. The first one, between the 1950s and the 1960s was characterized by great outflows of people from the South to the North and was mainly due to greater economic opportunities and lower unemployment rates in the North (Fiaschi & Tealdi, 2018). The second one, took place in the mid 1990s and was characterized by high levels of inequality across regions. That is, unlike in the first wave, residents of the South did not necessarily move due to economic or employment opportunities, but due to the obvious stark differences in welfare/lifestyle between the regions. Past research has studied the Italian case as an example of how mobility causes inequality and how it is affected by a number of factors. However, it has not been considered whether pre-existing inequality can largely drive individuals' mobility.

Concretely, Etzo (2011) found that Italian regions with higher social and economic development tend to be more attractive (in terms of quality of life and job offer) than less

developed regions, and therefore tend to experience higher inflows of citizens. On the contrary, regions with scarce development tend to suffer lower redistribution of income and higher unemployment, making them less attractive and more prone to outflows of citizens. Larger outflows of citizens lead to a widening of the existing gap between the wealthier regions of the country (typically in the Center/North) and the less wealthy ones (the South and the islands of Sicily and Sardinia). Importantly, persistent outmobility from less wealthy areas to wealthier ones might lead to a vicious cycle that hinders the development of the regions that lose citizens, such that they are unable to offer opportunities and increase wealth. This vicious cycle is not only problematic for the less developed regions, but has negative consequences for the whole social and economic system of the country.

Further, already existing differences can be largely accentuated by unexpected economic events. For example, inequality between Italian regions was strongly aggravated by the financial crisis of 2007-2008, that had large but uneven repercussions (Etzo, 2011). In fact, while the more developed North of the country reacted in a fast, efficient way, the regions in the Center-South of the peninsula –which experienced lower levels of socio-economic development-- suffered significantly more the consequences of the Great Recession. The result of this event was an increase in unemployment and inequality in less developed regions and, thus, an increase in the out-mobility to regions that offered better economic opportunities and where the redistribution was less uneven. According to Etzo (2011), this extreme example constitutes evidence of how different factors can lead to increased mobility. However, even though Etzo (2011) posited that both inequality and mobility increased in Italy after the Great Recession due to a number of economic and social factors, like different demographics, unemployment rates, and population size, he did not consider that inequality could also be one of the causes of mobility.

As mentioned above, inequality is affected by multiple factors and has a number of consequences. For example, personal perceptions of inequality, such as noticing stark welfare differences between the North and the South can lead citizens to move to more prosperous regions, without necessarily being driven by general economic factors. In other words, inequality in and of itself could be driving some of the decisions to move. This reasoning is supported by Harris and Todaro (1970)'s rural- urban model, according to the which increased out-mobility from highly unequal areas to low-inequality ones has important consequences for the future levels of inequality. This is because out-mobility hinders the already precarious development of disadvantaged regions and exacerbates existing differences between the *haves* and *have nots*, contributing to the development of a permanent gap between rich and poor that cannot be adequately closed without appropriate redistributive policies, such as investments in health, education, and creation of employment. Given that mobility is largely studied as one of the causes of inequality, it is of interest for the field to understand whether, in some instances, mobility is in fact the result of inequality. This crucial theoretical difference is necessary to understand, among other things, how governments should implement redistribution policies. That is, if inequality is indeed what causes mobility (hindering in turn the development of the sending regions), then redistribution policies should be aimed at reducing existing levels of inequality, preventing thus out-migrations.

Another factor that existing literature has discussed is the importance of interpersonal networks in affecting migrations. For instance, Piras (2020) investigates the role of migration networks at internal level in Italy and compares them with the same phenomenon in the United States. Piras' findings prove that network effects play a crucial role in explaining migration flows at internal level. The same issue has been analyzed by several scholars in the past who reached the

same conclusion: migration networks (also known as *diasporas*) as a key determinant of migration flows. Literature has extensively shown that moving costs are generally lower when migrants can count on an existing network of people at the target destination (Munshi 2016; Beine et al. 2011, 2015; Bakewell et al. 2016; Garip and Asad 2015; King 2012a, b; Haug 2008; Amuedo-Dorantes and Mundra 2007).

Networks are important as they provide migrants useful information to nudge a smooth transition from home to a new destination; for instance, networks can provide insights on available jobs and accommodation and, once established, become a sort of self-perpetuating mechanism (Massey et al., 1993).

In the next sections, I will provide an overview of supporting literature on internal mobility and inequality, illustrate the methods and models used to conduct the analysis, and discuss in detail the obtained results.

Literature Review

Pickett and Wilkinson (2015) have labeled inequality a cause of insecurity and asymmetric accumulation of wealth, driven by the non-inclusiveness of technological development. Especially in rich, developed countries, inequality compromises the stability of socio-economic systems, both nationally and locally. In the last decade, protests against economic inequality have erupted in many countries around the world (Solt, 2015). Although inequality has been the target of many protests around the world, interestingly, it has not been studied in the context of another important phenomenon that has historically shaped and altered socio-economic systems in different countries: internal mobility.

Internal mobility is important because it can shape the social and economic structure of a country, especially if the country is heterogeneous, with important differences across areas and social classes. This is specifically relevant in the case of Italy, a country that has historically experienced, and is still experiencing, significant internal mobility and high levels of regional inequality (compared to other developed countries), mostly due to different levels of development between the North and South of the country, resulting in income inequality.

While internal mobility might be affected by income inequality, mobility is also strongly influenced by its perception among citizens. For example, Rotte and Vogler (1998) established that perceptions of relative poverty trigger migrations more than poverty in areas when poverty levels are equal across the population, suggesting that "there is a higher incentive to migrate if one is poor among rich than if one is poor among poor". In these cases, income inequality could act as a push factor. Push and pull factors in geography refer to the causes of mobility among people. Specifically, Kimutai (2017) describes push factors as factors that drive people *away* from a particular environment due to unsustainable conditions, such as insecurity or unemployment. Instead, pull factors attract people *to* a particular environment due to desirable factors, such as security, employment, and political stability and climate. The reasons behind these factors can be social, economic, environmental or political in nature. While inequality can be a push factor, it can also be intended as a pull factor; specifically, high-skilled potential migrants may be attracted to countries, or regions, where their skills are adequately rewarded and where the gap between the wealthy and the poor is not as substantial. To this respect, the case of Italy represents a good example. Average salaries, productivity, and career opportunities are higher in the North of Italy than in the South, making Northern regions more attractive to people in search of good opportunities (Aiello & Scoppa, 2001).

Generally, Italy constitutes a relevant case study of regional inequality and internal mobility, because it has experienced important flows of migrations from poorer to richer areas in the last decades, due to both economic and non-economic reasons (Etzo, 2008). For example, Cannari et al. (2010) and Mocetti and Porello (2010) found that factors like house prices, employment rates, and immigration from abroad all play an important role in internal migration-decision making in Italy. For example, when they have the means to, individuals and families tend to move to regions where rates of unemployment are lower, housing is more affordable, and immigration is low (Simpson, 2017). These factors are in turn influenced by other aspects that influence decisions of mobility, such as distance. According to Biagi et al. (2011), long-distance mobility is determined by economic factors, while short-range mobility is related to quality of life and amenities. Therefore, mobility in Italy is influenced by a number of economic and non-economic factors and is driven by distance.

While a number of factors are known to affect mobility based on previous research, this is mostly based on studies that focus on South-North mobility, without considering more heterogeneous routes, such as bilateral flows across the twenty Italian regions (Fiaschi & Tealdi, 2018). This is a limitation because it does not take into consideration all the possible movements across the country. For this reason, it is important to consider bilateral mobility flows and studying each of the twenty Italian regions as both origin and destination of internal mobility.

Specifically, one important factor necessary to understand inequality is unemployment. A number of studies (Harris & Todaro, 1970; Withers & Pope, 1985; Sato, 2004) have found that high unemployment rates are an important factor for mobility decisions. This is in line with standard economic theory claims suggesting that larger employment disparities among regions imply higher migration flows (Greenwood, 1975; Greenwood & Hunt, 1984). While this is an

extended view, Faini et al. (1997) did not find support for the theory's claims. In their study they showed that increasing unemployment differentials between the North and the South of Italy were associated with lower migration flows and high mobility costs between 1970 and 1990 (i.e., the years between the two large mobility waves mentioned above), indicating that inter-crisis periods might not follow standard mobility trends. Thus, more research is needed to understand the effect of unemployment on internal mobility, in both sending and receiving regions.

Another important factor with respect to mobility is the level of skills and education of the migrants. For example, during the first large wave of migrations (1950s-1970s) that Italy experienced, most citizens moving from the South to the North were individuals with low levels of education (i.e., elementary school or middle school diploma), migrating in search of employment in the primary and secondary sector (Fratesi & Percoco, 2014). These years corresponded to the Italian *Economic Boom* that resulted in a change from a mostly rural country to one of the most important industrial powers in the world, mainly due the level of development achieved in the North (Zamagni, 1993). On the contrary, the second wave of internal migration that Italy experienced (mid 1990s) was characterized by high-skilled individuals with higher levels of education (i.e., high-school or university degrees) in search of employment in the tertiary sector that was more prominent in the north of Italy (Etzo, 2011). In fact, a report from the Bank of Italy (2005) about mobility during the second wave, "while only 7% of the total working-age population in the South has a degree, 25% of migrants from the South to the Center-North has one", suggesting that most individuals with higher degrees in the South moved to the North during this wave, likely driven by the inability to achieve their the needs and desires in the South of Italy.

One of the needs of people with higher education is to earn wages that are proportional to the time and the money spent to obtain their degrees. Etzo (2008, 2011) proposed that the mobility

flows during the second wave of the mid-1990s were largely due to the desire of educated people from the South to move to regions with higher GDP per capita (i.e., Northern regions) that allowed them to meet social and economic satisfaction. Thus, by moving to the Northern regions, migrants could have access to higher wages, better opportunities, and excellent levels of industrial development (Percoco, 2018).

All the factors that contribute to mobility from less developed to more developed regions of Italy fall within the rural-urban model developed by Harris and Todaro (1970). The model attempts to explain that the industrial development that characterized increased labor supply in the Northwest of Italy gave the opportunity to people living in the South (which remained essentially rural) to see their labor demand satisfied in the North. As a result, most of the labor demand from the South moved to the North, therefore the already existing inequality between the North and South increased steadily through the years.

While a number of factors are known to affect mobility based on previous research, this is mostly based on studies that focus on South-North mobility, without considering more heterogeneous routes, such as bilateral flows across the twenty Italian regions (Fiaschi & Tealdi, 2018). This is a limitation because it does not take into consideration all the possible movements across the country. For this reason, it is important to consider bilateral mobility flows and study each of the twenty Italian regions as both origin and destination of internal mobility.

Thanks to its geographical and administrative structure, the case of Italy can help explain the relationship between inequality and internal mobility. The stark differences between the North and the South of the country constitute a clear example of economic, social, and demographic inequality. The analysis of inequality as a trigger of mobility is relevant for current theoretical

frameworks that have not considered inequality a determinant factor of mobility decision-making in Italy, but only as a result.

In conclusion, the goal of the study is to analyze how pre-existing levels of inequality affect internal mobility across the twenty regions of Italy, together with other economic and demographic factors. The final purpose is to suggest policies that could favor equal levels of development in the most unequal regions to eventually stimulate wealth redistribution across the whole country.

Methods

One important reason behind the choice to analyze internal mobility at the regional level is that internal migrants are usually easier to capture. This is because unlikely undocumented international migrants (arriving, in the case of Italy, mostly from the Middle East and North Africa), they enjoy normal legal status. The censuses and population registers often provide detailed information about within-country flows, offering the chance to model internal flows as a function of origin and destinations at relatively fine spatial scales, such as at the regional, provincial, and even municipal level (Casacchia et al. 2010; Lamonica & Zagaglia 2013). Such approach allows to focus on questions and methods useful to analyze the structure of the population and spatial distribution of flows. Previous approaches to the topic include the use of a dynamic model, where a lagged version of the dependent variable is used as the main regressor to control for the impact of social networks (intended as migratory phenomena in the recent past as drivers for today's mobility) in migration decision-making (Etzo, 2008). This, however, is not the case of this paper; while acknowledging the relevance of Etzo's model, here I focus on the analysis of inequality as the main driver for internal mobility.

In order to understand the drivers behind internal mobility in Italy, this paper employs a detailed set of interregional migration data within an empirical framework that considers economic and social factors at the regional level. Data for this paper were gathered from the Italian Institute of Statistics (ISTAT), the European Institute of Statistics (Eurostat) and the database Comuni Italiani (Italian Municipalities), which contain important information on the variables of interest in Italy at the regional level.

Migration flows in this paper are intended as transfers of residence, throughout the twenty Italian regions (2007-2016); local population registers and censuses often provide detailed information about within-country flows, allowing to model internal mobility in terms of origin and destinations at relatively detailed spatial scales, whether at the regional or provincial level, and, in some cases, even at the municipal level (Casacchia et al. 2010; Lamonica & Zagaglia 2013). Thanks to this approach, it is possible to try to assess questions more suited to highly detailed and large national datasets, thus facilitating the analysis of the population structure, in terms of, among others, education, unemployment, and income level and the temporal and spatial distribution of flows.

Figure 1 below represents the trend of interregional migration flows among all twenty Italian regions in the years between 2007 and 2016. As the graph shows, there is a peak in migration flows in almost all the regions in 2012. Such increase in migration flows is considered as a result of the delayed manifestation and long-lasting effects of the financial crisis (Di Quirico, 2010; de Belvis et al., 2012).

Figure 1 here

Figures 2 to 4 below, created using data from the Italian Institute of Statistics, represent trends of inequality, according to the three different indexes used in the paper. The figures

highlight how the regions of the south of Italy suffer from higher levels of income inequality, confirming Impicciatore & Strozza (2016).

Figure 2 here

Figure 3 here

Figure 4 here

Unemployment rates follow a growing pattern all over the country, highlighting how the negative effects of the Great Recession are suffered everywhere. On average, however, the unemployment rates in the south of Italy are higher than unemployment rates in the north and center, consistently with what highlighted by Etzo (2011) and what shown by Istat (2017) and Eurostat (2017, 2018). Figure 5 below, realized using data from the Italian Institute of Statistics, offer a graphic representation of the unemployment rates in Italy (2007-2016).

Figure 5 here

The model

OLS

The baseline empirical analysis is based on a standard dynamic OLS model. The dependent variable of the proposed model is represented by changes of residence from region *i* to region *j*, for each of the twenty regions in Italy over time. The dependent variable was built as a matrix of interregional dyads, with each region included as both an origin and destination of mobility (Etzo, 2008). As a result, the model employs a total of 3800 observation on gross internal migration

flows. Panel models account the cross-provincial and overtime dynamics and can be adjusted to account for omitted variables and individual heterogeneity (Hsiao, 2007).

The model used to describe bilateral migration flows and to identify each of the twenty Italian regions as both migrants senders and migrants receiver is similar to the model developed by Etzo (2011), with the exception that Etzo does not consider measures of inequality as one of the possible causes of interregional migrations in Italy. A list and brief description of all the variables used in this model is provided:

MF_{ijt} = Migration Flows: inflows and outflows to and from each of the 20 Italian regions from 2007 to 2016;

$Ineq_t$ = Inequality Indexes at Origin and Destination: index of inequality level in each of the 20 Italian regions considered both as senders and receivers of migrants, from 2007 to 2016;

UNR_t = Unemployment Rate at Origin and Destination: level of unemployment in each of the 20 Italian regions considered both as senders and receivers of migrants, from 2007 to 2016;

Pop_t = Population at Origin and Destination: number of residents in each of the in each of the 20 Italian regions considered both as senders and receivers of migrants, from 2007 to 2016;

CR_t = Crime Rate at Origin and Destination: perception of crime in the neighborhood for each of the 20 Italian regions considered both as senders and receivers of migrants, from 2007 to 2016;

$DegOwn_t$ = Degree owners over the citizens of each of the 20 Italian regions, at time t;

D_{ij} = Distance between each of the 20 Italian regions.

The model is expressed by the following econometric form:

$$MF_{ijt} = \beta_0 + \beta_1 MF_{ijt-1} + \beta_2 ODInequality_{t-1} + \beta_3 ODDemogr._{t-1} + \beta_4 ODDistance_{ij} + \varepsilon_{it} \quad (1)$$

- MF_{ijt}: Bilateral Gross Migration Flows, from region *i* to *j,* at time *t*;
- MF_{ijt-1}: Bilateral Gross Migration Flows from region *i* to *j,* at time *t-1*;
- $Inequality_{t-1}$: The three different indexes of Inequality used in the paper, at time *t-1*;
- $Demogr._{t-1}$: The one-year lagged demographic explanatory variables above listed, at time *t-1*;
- $Distance_{ij}$: Distance between origin and destination region.

As mentioned, the model is dynamic; this means that a lagged version of the dependent variable is used as independent variable. The main reason to use a dynamic model is to verify the effect of existing networks and determine whether past migrations have a significant impact on migrations today (Piras, 2020). The dynamic model used in the paper considers three different measures of inequality to show robustness given known limitations of the Gini coefficient. As clearly explained by Mussida and Parisi (2016), the Gini Coefficient is one of the most popular measures adopted in the literature. However, this index is often criticized, due its sensitivity to differences (and transfers) in the middle portion of the income distribution, and because of its non-sensitivity to differences in the bottom or upper tails, for instance when very high, or very low levels of income are observed. Capturing such sensitivity is an important issue, especially when the analysis aims to observe the distributional effects of an economic crisis. The other two measures of inequality are the index of relative poverty and the rate of the number of people in the top 20% of the income scale, over the number of people in the bottom 20% of the income scale

(the higher the ratio, the lowest the existing level of inequality). The following table provides a summary of the proxies used in the model for inequality.

Table 1 here

2SLS

In order to control for a potential endogeneity bias, a dynamic instrumental approach is used when the OLS method is suspected to be inconsistent, due to the potential endogeneity of the regressor (in this case, regional inequality). This means that, with a simple OLS regression, changes in the measures of inequality, not only would cause changes in the dependent variable (migration flows) but also in the error term. An instrumental approach allows the use of instruments which cause direct changes in the endogenous regressor, but only indirect changes (via the endogenous regressor) in the dependent variable. The variables chosen for the analysis as instruments for inequality represent the rate of people who purchase items online, compared to how many people have access to the internet and the rate of people who go to the theatre, compared to how many people go to the cinema. The rationale behind this choice is that the two instruments represent indexes of inequality, as it is relatively easy, nowadays, in a developed country like Italy, to get access to the internet, or go to the cinema (price are quite low, for instance, for students and the elderlies, and many cinema offer promotions on ticket on weekdays), but it is not so easy to have the money necessary to purchase goods online, or to go to the theatre (tickets are rather expensive and the number of available seats limited). Despite describing a certain level of inequality, it is fair to assume that the inability to purchase goods online, or to go to the theatre, due to the price of tickets, represent reasons good enough to nudge people towards migration.

The 2SLS model is expressed by the following econometric form:

$$MF_{ijt} = \beta_0 + \beta_1 MF_{ijt-1} + \beta_2 ODInequality_{t-1} + \beta_3 ODDemogr._{t-1} + \beta_4 ODDistance_{ij} + \varepsilon_{it} \quad (2)$$

$$Inequality = \gamma_0 + \gamma_1 Cinema + \gamma_2 Theatre + \eta_{it} \quad (3)$$

• MF_{ijt}: Bilateral Gross Migration Flows, from region *i* to *j,* at time *t*;

• MF_{ijt-1}: Bilateral Gross Migration Flows from region *i* to *j,* at time *t-1*;

• $Inequality_{t-1}$: The three different indexes of Inequality used in the paper, at time *t-1*;

• $Demogr._{t-1}$: The one-year lagged demographic explanatory variables above listed, at time *t-1*;

• $Distance_{ij}$: Distance between origin and destination region;

• *Cinema*: Inequality instrument encompassing people who can afford an inexpensive cinema ticket;

• *Theatre*: Inequality instrument encompassing people who can afford an expensive theatre ticket;

The instruments used in this model have proven to be poorly correlated with the dependent variable (Bilateral Gross Migration Flows) and satisfyingly correlated with the three indexes of inequality. The following table provides a list of the used instruments for inequality, descriptive statistics, as well their correlation with the dependent variables and the three different inequality measures used in the model.

Table 2 here

As mentioned before, both models are dynamic, to verify the presence of existing migration networks and due to the medium-to-long term effect on migrations expected in variables like inequality and unemployment. To provide more robustness to the models and to verify long-term effects, the analysis has been carried with models containing two- and five- time lags (tables in the Appendix). In both OLS and 2SLS models, an important trigger for migrations is represented by

unemployment rate. I expect very high levels of unemployment to disincentivize mobility from the origin, as the lack of liquidity and means to leave (resulting from long periods without a job and a salary) would make mobility rather complicated, given the very high cost of living and housing in the wealthiest regions. The unemployment rate, in this case, also represents a good measure of different employment opportunities in different regions (Biagi et al., 2011).

Following the same logic, another one of the explanatory variables used in this model (Education) has a double purpose. First of all, it is important as it represent a proxy of human capital in the population , but also as a variable that describe the perception that people have of inequality, assuming that the higher the level of education, the more people should be aware of inequality patterns around them. This variable is important, as it is arguable that people would not migrate, due to inequality, if they were not aware of it (Biagi et al., 2011).

Distance in the model is intended as the linear distance in kilometers among the capitals of the regions (Etzo, 2008). Previous literature on migration widely recognizes the important role of distance in migration decision-making (Greenwood, 1997; Cushing & Poot, 2004; LeSage & Pace, 2008). In this paper, following Juarez (2000), distance is also used as a proxy for the general cost of moving. It is important to notice that even for a relatively small country like Italy, distances are important, as they connect regions with very different costs of living, thus representing an obstacle for those individuals or families who do not have enough liquidity to afford moving.

An important demographic variable included in this model is represented by the total population in each region. Following previous literature, and in particular the equilibrium approach (Graves, 1976; Roback, 1982; Blomquist et al., 1988) mentioned earlier in the paper, the model includes one amenity-related (or disamenity, in this case) individual variable, represented by the perception of crime in each region. Such data are provided by annual surveys on the quality of life,

realized by the Italian Institute of Statistics and aim to make the model more robust and complete, not limiting the analysis to the mere study of economic drivers of interregional mobility.

All the explanatory variables contain one-time lag. The reason behind this choice is that it is not easy to see immediate effects of some of the controls of this model on migration (such as inequality itself, unemployment, and education level), as they produce medium-term effects, rather than short-term ones. Thanks to this technique, the model analyzes the effects of time-variable explanatory controls at time *t-1* on gross bilateral migration flows at time *t*.

The analysis takes into consideration the years 2007-2016. While acknowledging the importance of analyzing longer periods, the choice was driven by the lack of data available for one of the instruments used in the 2SLS model (Internet Index), for which data are only available from 2007.

With the purpose of increasing the robustness of the model and verify the validity and reliability of the 2SLS approach, I use four additional different Instrumental Variables Estimators. These estimators can be used in case of an instrumental approach where the chosen instruments (which need to be exogenous and weakly correlated with the dependent variable) are not considered to be strongly enough correlated with the endogenous regressor (Bartolucci et al., 2018). The table below provides a brief description of the four IV Estimators used in the paper.

Table 3 here

Results

The empirical analysis in the paper was carried through two models: OLS and 2SLS. The latter was performed given the risk of endogeneity between the dependent variable and the regressor in the OLS model, which could have provided biased results. The outcome of the OLS

analysis seems to confirm the initial hypothesis and provides indeed some biased estimates that can be observed in the table at the beginning of the appendix. The bias is due to the potential reverse causality between internal mobility and inequality. On the contrary, the 2SLS model provides consistent results across the three measures of inequality taken into consideration.

The results of the model described in the equation (2) above offer interesting insights. As expected, all three measures of inequality (Gini Index, Relative Poverty Index and Income Ratio) show that high levels of inequality at the origin represent a significant push-factor for interregional outmigration and, at the same time, low levels of inequality at the origin disincentive out-migrations. Conversely, inequality levels at the destination do not represent a significant pull-factor for in-migrations. In both OLS and 2SLS pre-existing migrations (therefore the existence of migration networks) proved to have a significant positive effect on migrations at time *t,* as posited by Piras (2020). The next paragraphs will provide detailed summaries of the results for the 2SLS model, for each of the three indexes of inequality.

Gini Index

In the case of the Gini index, high levels of inequality at the origin are associated with higher bilateral migration flows. As in the previous model, long distances disincentive migrations (with the estimated threshold at about 825 km). The model establishes higher levels of education at the origin as a significant push-factor for interregional migration in Italy; this result suggests that migration tends to be high-skilled and that the perception of existing inequality plays a role in people's migration decision-making. Results corroborate the hypothesis that people (provided the presence of enough liquidity) migrate to regions where they believe unemployment is low and wages are higher. In accordance with literature and the previous models, high perception of crime

(low quality of life) at the origin represents an important push-factor in people's migration decision-making, while high education levels at the destination is a significant pull-factor.

Relative Poverty

The analysis shows that, as mentioned above, inequality at the origin constitutes an important push-factor for interregional mobility. As expected, distance between regions represents an obstacle to migration, suggesting that people tend to migrate to regions in proximity to their home (with the estimated threshold at around 770 km). Financial constraints and the absence of sufficient liquidity to move far from home might play a role, given the different cost of living and housing between the North and the South; high rates of unemployment at the origin seem to disincentive migration, following the results obtained by Biagi et al. (2011). The higher the perception of crime at the origin, the more people tend to migrate, highlighting how the quality of life and the perception of safety plays an important role in people's migration decision-making. High levels of education in migrant-receiving regions constitute an important pull-factor for internal mobility.

Income Ratio

The Income Ratio, consistently with the previous two models, suggest that lower levels of inequality at the origin are associated with lower bilateral migration flows, suggesting that a fair redistribution of wealth disincentives interregional mobility. As in the previous cases, people are more attracted by short-distance mobility (estimated threshold at about 826 km) and high levels of education. People are attracted by regions with low unemployment and higher education, expecting higher wages and better life conditions. The perceived presence of a disamenity like

high crime rates (associated with low quality of life) represents a significant push-factor for outmigration at the regional level.

Tables 4 and 5 below present the detailed results of both OLS and 2SLS models used in this paper.

Table 4 here

Table 5 here

In general, the three different models analyzed in this paper suggest that the included economic variables (Inequality and Unemployment rate) have an important weight in migration decision-making at the regional level in Italy, together with the presence of disamenities like high crime rates. In accordance with existing literature (Etzo, 2008, 2011; Biagi et al, 2011), migration in Italy is associated with short distances and higher levels of education, highlighting how migration has evolved through the years, from low-skilled labor (during the 1950s-1970s) to today's high-skilled labor.

As anticipated earlier in this paper, an instrumental approach has been used to control for the possible endogeneity of the three indexes of inequality. The performed endogeneity tests (results at the bottom of each table) fail to reject the null hypothesis that the instrumented regressors may be treated as exogenous. In other words, endogeneity does not seem to be a major problem in this model.

This paper used four additional estimators for instrumental variables (LIML, FULL, HLIM, and HFUL), in order to provide robustness and corroborate the results obtained by the instrumental approach, performed through the 2SLS model. The analysis of these additional estimators confirms the reliability of an instrumental approach, highlighting a better fit for this analysis, compared to the standard OLS approach, whose results suffer from endogeneity issues.

Discussion

The purpose of the study was to analyze the effect of regional inequality, together with economic, social, and demographic factors on mobility at the regional level in Italy. The main hypothesis was that high levels of inequality would increase bilateral migration flows in the country. This analysis constitutes a first and explorative attempt to consider inequality as an important driver for assessing interregional mobility in Italy. The initial results provide some interesting insights for future research. The positive effect that income inequality at the origin has on interregional mobility suggest that the perception of the existing gap between rich and poor represents a driver for mobility at the regional level. This means that wealth redistribution policies can shape the social and economic setup of the different regions of a country and exacerbate, or shrink existing levels of inequality (Zhang et al., 2019). To this respect, for future analysis, it would be interesting to analyze inequality from a different point of view, taking into consideration the first and ninth decile of the population, in terms of income level, and verify their effects on regional migrations. Unemployment provides interesting information about migrations. When unemployment levels at the origin are very high, people migrate less. These results seem to confirm what previous literature reports about the importance of conditional cash transfers (Angelucci, M., 2012), social networks (Epstein, GS., 2004), and remittances (Garcia, A.I.L., 2018), with respect to mobility. In accordance to what emerged from the analysis of levels of unemployment, results also suggest that distance is a factor in the evolution of migration trends and that people tend to migrate to regions that are closer to their homeland, even if these regions might not be the solution in terms of improvement of the quality of life.

Distance is an important factor, with respect to migration decision-making in Italy; people tend to avoid moving to places that are further than around 800 km (500 miles) away from the

homeland. This result suggests the necessity to hold enough liquidity to move from one place to another and, as claimed by the equilibrium model approach, that people tend to migrate to adjacent or close regions, for reasons that are not strictly economic, but also personal, climatic and environmental (Etzo, 2011; Biagi et al., 2011). Last, but not least, I posit, in accordance with existing literature, that the presence of existing personal networks nudge migrations, as it helps migrants adjusting to a new life in the target destination, providing information on jobs and housing, among others (Piras, 2020). This paper analyzed a complicated and challenging moment for the global and the Italian economies: the years after the financial crisis of 2007-2008. All the results obtained in this paper could be influenced by the uniqueness of the situation. In order to isolate the effect of the crisis, the model contains time and region-to-region fixed effects. For future research, it would be convenient to gather data at the regional level for the years before the crisis, when available. The analysis of interregional migration trends during the years before and after the recession would help better isolate the effect of the financial crisis and provide more information on the drivers of interregional mobility in expansionary and recessionary periods.

The paper highlights the important social and political consequences of migration from poor to wealthy regions and its perception. The results obtained suggest the need of important investments in areas where inequality and outmigration are high, in order to increase wealth redistribution, reduce the gap between the rich and the poor, and create better living conditions in those regions that are still suffering the consequences of the Great Recession. The reduction of vertical inequality within regions would indirectly reduce horizontal inequality among regions, allowing more uniform levels of development across the country.

To my knowledge, this paper represents the first attempt to analyze how inequality affects mobility at the subnational level in Italy and it would be instructive to analyze whether similar patterns can be identified in different contexts such as, for instance, other European countries.

Chapter 2

The Effects of International Immigration on Inequality in Host Countries: The Case of Italy

Key words

Immigration, Inequality, Italy, Regions, SUR

Abstract

The phenomenon of international immigration has been studied in depth through the years from different disciplines, such as law, geography, sociology, medicine, politics, and economics. Economic studies have analyzed the effect of international immigration on labor markets, on how it affects economic growth and on public finances. In recent years, the struggle of many people around the world against the negative, enduring effects of the Great Recession of 2008, enhanced the rise of anti-immigration, nationalist parties across the world, and especially in Europe. Immigrants are increasingly identified as the source of today's issues, i.e. rising poverty and inequality in host countries. This research aims to analyze the effect of immigration on inequality in host countries, in order to verify whether immigration exacerbates or reduces the existing gap among social classes. The paper analyzes the effect of immigration on inequality at the subnational level in Italy. The results suggest no significant effect of immigration on inequality in Italy. The economic and the political implications of these mobility flows are discussed at the end.

Introduction

The purpose of this research is to study whether the role of international immigration on income inequality in host countries and if so, how the redistribution of income is affected by the presence and work of immigrants across social classes. By attaining this objective, the paper intends to contribute to existing literature on the effects of international immigration on inequality within and between regions in host countries. First, through an analysis of Italy, this research will shed a light on how immigration produces different results in different political, social and economic systems, namely the different Italian regions (first tier of subnational division in Italy). Second, the paper adds to the existing literature by suggesting policies aimed at favoring and improving the integration of immigrants in Italy, together with equitable development across the country.

Significant waves of immigrants represent a pressing matter for many Western European countries; researchers and policymakers have tried to understand how immigrants can be successfully integrated into Western European society, without having to suffer economic and social discrimination (Hellwig & Sinno, 2017). Issues related to integration are especially urgent given the rising tensions between the locals and immigrant groups, following the financial crisis and the recent refugee flows. These phenomena have led to the rise of nationalist movements all around Europe that advocate for closed borders and for a strong reduction of the number of immigrants who access the continent, claiming that only the ones escaping wars and terrorism should be authorized to come to the Europe. According to nationalist movements, the presence of immigrants, and particularly undocumented immigrants, causes the disruption of the nation state and the destabilization of its boundaries (Nicholls & Uitemark, 2019).

In this paper, I analyze the specific case of Italy. I argue that immigration has no negative effects on host economies and societies (when immigrants are successfully integrated), and that is not a

cause of rising inequalities; I posit that the reasons for rising inequality, insecurity, and the enduring effects of the recent financial crisis are not caused by immigrants, but other factors, like, for example, pre-existing inequality and unemployment.

The analysis is performed using a Seemingly Unrelated Regression approach; the choice lies behind the potential issues of endogeneity between the two main independent variables of the model (lagged inequality and immigrants per capita) and the dependent variable (inequality). Furthermore, a Seemingly Unrelated Regressions allows to estimate allows to simultaneously estimate the different independent effects of the variables of interest on each of the inequality measures used in this paper, through inequality-specific explanatory equations. In this case, a seemingly unrelated approach allows to avoid the issue of potential correlation between *between-* and *within-region inequality* which may be interpreted as components of an overall index of inequality. This model represents a generalization of a linear regression model that consists of several regression equations; each regression has its own dependent variable and sets of exogenous explanatory variables. Each equation is a valid linear regression that can be estimated separately. The dependent variables that will be analyzed through this approach are *within-region inequality* and *between-regions inequality*. Each of them will be regressed on demographic explanatory variables both within and between regions. At the same time, the paper will assess the effect that the two kinds of inequality have on each other in the long term. This model is useful because it allows error terms in the equations to correlate, unlike the GLM that assumes this unrealistic hypothesis that the equation errors would be uncorrelated.

The paper proceeds as follows. Section 2 illustrates the contribution provided by existing literature on the integration of immigrants in Italy and income inequality. Section 3 provides detailed

information on the data and methodologies used to perform the analysis. Section 4 highlights the main results obtained in the paper. Section 5 provides conclusion and policy suggestions.

Theoretical Support

There are important differences across countries in the way labor markets are regulated, such as minimum wages and/or employment protection legislations (DiPrete, 2005). In liberal, market-oriented regimes, such as the UK, there is less regulation and less cushion than in other developed democracies (Stiglitz, 2012). Different scholars argue that the more economic insecurity and inequality rise, the more negative sentiments against immigration will develop among locals, addressing immigration as the source of that insecurity and that inequality (Wuthnow, 2002; Uslaner & Brown, 2005; Arneil, 2006; Vietti & Scribner, 2013).

In the recent years, because of the origin of the majority of migration flows towards Europe, authors have focused on the situation of Muslim minorities in Europe and the challenges they face in countries where, according to part of the population, being Muslim often means being somehow related to organized terrorism. Fetzer & Soper (2005) examine why some European states are more prone than others to recognize the rights of Muslims to be integrated into the local society. According to Modood (2005), who has examined the situation of Muslims in Britain and the rest of Europe, Muslims' integration is the most complicated to achieve and they are the ones to suffer the most from isolation and inequality. Muslims are generally perceived the same way in Italy.

Prior research has analyzed the effects through which income inequality leads to a deterioration of a country's social capital. One is social-psychological: greater inequality negatively affects the sense of solidarity and understanding of others' needs (Delhey & Newton, 2005), and may also diminish optimism towards the future and a sense of control over one's life. The second effect

involves the concept of economic scarcity: a diffused lack of wealth leads people to attack ethnic groups that are perceived as a potential threat by locals who consider them responsible of the worsening of their living conditions (Citrin et al., 1997). A role is also played by the lack of experience with racial minorities in homogenous communities (Rabrenovic, 2007) and politicians who misrepresent hunger and war in poor countries, suggesting that immigrants use those phenomena as excuses to come to Europe, without any specific needs. Because of this perception, locals try to avoid coexistence with immigrants and move to "protected" areas, with low or no presence of immigrants (Mpanya, 1995; Rabrenovic, 2007). In host societies, immigration is considered a major issue, when locals associate foreigners as disruptive for their wellbeing; such perception may bring to the exclusion of immigrants from local societies (Margarit Segura & Abde, 2014).

The hostility of locals towards immigrants may increase tension in certain situations, for example when economies are already fragile, or when countries are facing periods of crisis; in this case, locals feel *threatened* by the presence of immigrants and try to reduce contact as much as possible (Brown et al., 2018).

Ha (2010) explains that "threat theory suggests that racial heterogeneity heightens racial tension: the larger the proportion of the racial minority group, the greater is the perceived competition among racial groups for jobs and other economic resources."

The diffidence of locals towards immigrants and their role into local economies may result in ethnic segregation, deriving from the desire of locals to abandon areas with immigrants and move, when possible, to areas with more locals. Epstein and Semyonov (1992) show, with respect to Jews and Palestinians in Israel, that the ethnic and spatial segregation across cities and regions, due to issues of coexistence between the two populations, exacerbates and reinforces inequality in

the country. More specifically, the spatial segregation generates *within-location* Socio Economic Status inequality (due to the similar social and economic characteristics of Palestinians living together in certain areas and of Jews living together in others) and *between-location* Socio Economic Status inequality (given by the differences between the areas where Jews and Palestinians live) (Epstein & Semyonov, 1992). For example, levels of inequality are relatively low in Jerusalem and the West Bank, but they are very high when we compare Jerusalem to the West Bank. The same doubts towards immigration, and the same patterns of inequality, can be observed among locals in several Western-European countries that, in the last decades, have experienced rising numbers of immigrants and changes in the structure of their labor markets (Musterd, 2016).

Countries like Italy and Spain have moved from being origin of migration to become destination, particularly from Africa, Asia, and Eastern Europe (Calavita, 2006). In the last decades, Italy has been one of the main destinations for immigrants coming mainly from Eastern Europe and the MENA (Middle East and North Africa) region, for geographical and economic reasons. Immigrant flows have been possible mainly thanks to the so-called *Mediterranean route* (Mussida & Parisi, 2018). Italy hosted and currently hosts immigrants from a variety of countries, from Northern Africa and Greece, but also from China, Iran, Philippines and Ethiopia. In the early 1990s, after the disgregation of the Sovietic Union, many people started to leave Eastern Europe and the Balkans to move west, mainly to Italy and Spain. The continuous growth of international migration flows since the 2000s allowed migrants to become an important component of the Italian population. In 2011, foreign residents in Italy represented more than 7% of the Italian population (ISTAT Census Data, 2011). These numbers show how immigrants could potentially constitute an important source of population growth and an added value for the overall productivity of the

society. Despite that, they are often addressed by part of the population and politics as they main cause of high inequality and poverty in the country (D'Agostino et al. 2016).

Table 1 shows which immigrant groups (defined according to their country of origin) prevail in Italy, as of 2020 (data collected from the Italian Institute of Statistics) and their distribution in the four Italian Macro-Regions (percentage values). I acknowledge that these data might only partially describe the real number of immigrants present in the country, due to the lack of information on illegal immigration, which is not collected by the official statistical sources.

Table 1 here

Calavita analyzes immigrant integration and the impact of laws and labor market segmentation in Italy and Spain. She finds that the labor vacancies filled by immigrants, along with laws that often do not incentivize legal integration, contribute to their exclusion despite a few attempts at the local level to integrate them. Calavita (2006) claims that despite the efforts of part of the political spectrum and nongovernmental organizations to integrate immigrants, their status is also influenced by their position in the work force. Low-skilled and illegal immigrants tend to work in jobs that natives are unwilling to do and generates dissatisfaction among locals who accuse immigrants to steal their jobs; however, these jobs generally often low wages and are potentially dangerous (McAreavey & Argent, 2018). A good example is the meat industry in the United States that today employs mostly immigrants from Latin America and that has reshaped the labor and social structure of regions like the Midwest, once populated mostly by Anglo-Saxon and Scandinavian-origin communities. This change in structure was favored by the opportunity for employers to recruit low-skilled, non-union workers and generate higher profits (Benson, 1999; Fennelly & Leitner, 2002).

This kind of employment keeps immigrants in a precarious situation, discourages integration and keeps immigrants (even the ones with higher educations) from becoming socially and economically relevant in the host country, thus representing a challenge more and more complicated to overcome. (Calavita, 2006; Fullin and Reyneri 2011; Mussida & Parisi, 2016).

The purpose of the paper is to assess effect of presence of immigrants on inequality within and between Italian regions. Faini (2009) posits that low-skilled immigrants who are less skilled ans qualified (and normally come from developing countries) suffer from the lack of socio-economic inclusion. Thus, their presence in host countries favors income inequality and isolation. On the other hand, immigrants who are integrated in the host country and are given the chance to improve their socio-economic condition, can climb the social ladder and reduce the gap with locals (Baycan-Levent and Nijkamp, 2009; Codura Mart`ınez et al., 2013). When that happens, there is less isolation, more integration and, therefore, less inequality. Indeed, the uneven economic development of Italian regions influences the distribution and the "quality" of immigration (Einaudi, 2007).

However, the lack of integration is not exclusively due to the attitude of locals. It may also depend on the choices of immigrants; in fact, it is not uncommon for foreigners to choose to move to areas where there is already a high presence of immigrants (preferably from the same regions) and lower presence of locals, in order to reduce the trauma of moving to a different country (*Ethnic Enclave Hypothesis)* (Portes and Jensen,1987; Edin et al., 2000; Light and Gold, 2000). This hypothesis may be successfully applied at the regional level in Italy, where there seem to be stark differences between the North and the South of the country, in terms of integration and career possibilities for immigrants (Bettio et al., 2006; Reyneri, 2004; Venturini, 2017).

Income disparities are also due to the lack of opportunities for immigrants. Mussida and Parisi (2018) show that immigrants suffer from inequality of opportunity in the labor market when their educational attainment is compared to that of nationals. This mismatch implies a difference between the potential skills of immigrants and the jobs they are able to obtain in Italy, compared to locals. One of the most important tools that host countries can use to favor integration is an effective education system that helps and supports the integration of the children of immigrants.

Thanks to its geographical and administrative structure, the case of Italy can help explain the effect of the presence of legal immigrants on income inequality at the regional level. The stark differences between the North and the South of the country constitute a clear example of economic, social, and demographic inequality and on how different regions deal with the integration of immigrants. The analysis of the effect of immigration on income inequality is relevant for current theoretical frameworks that have not considered such phenomenon at the regional level in Italy.

In conclusion, the goal of the study is to analyze how the presence of legal immigrants across the twenty regions of Italy, together with other economic and demographic factors, can impact income inequality in the country. The final purpose is to suggest policies that could favor the integration of as many immigrants as possible, together with policies to eventually increase the level of social Welfare and therefore stimulate wealth redistribution across the whole country.

Data and Estimation Methodology

Data and Methodology

In order to understand the drivers behind internal mobility in Italy this paper employs a detailed set of migration data within an empirical framework that considers economic and social factors,

such as unemployment, education, and population. Data for this paper were gathered from the Italian Institute of Statistics (ISTAT), and from the European Institute of Statistics (Eurostat) which contain important information on the variables of interest in Italy at the regional level (NUTS 2).

The main purpose is to use the data to analyze the effect of the presence of foreign residents on inequality, at the regional level in Italy. Foreign residents are intended as people who were born abroad and came to Italy to work and live.

One important reason behind the choice to analyze legal immigrants lies behind data availability; at the regional level, foreign born residents are much easier to detect, compared to yearly entrances, especially when immigrants who enter the country are undocumented. Currently, there are no official regional data available, regarding yearly entrances of illegal immigrants in Italy. On the contrary, censuses and local population registers often provide detailed information about foreign residents in every region. Thanks to this approach, it is possible to try to assess questions more suited to highly detailed and large national datasets, thus facilitating the analysis of the population structure, in terms of, among others, education, unemployment, and income level, and the temporal and spatial distribution of foreign-born residents.

Figure 1 below represents the quantity of foreign-born residents in the twenty Italian regions, in the years considered by this analysis (2007-2016). As the graph shows, in several there is a negative peak in the quantity of migration flows in year 2011, in those regions that are typically characterized by high quantities of foreign residents; this decrease in foreign residents is considered as a result of the delayed manifestation and long-lasting effects of the financial crisis (Di Quirico, 2010; de Belvis et al., 2012).

Figure 1 here

The figure also highlights how the regions of the North host, on average, a much higher number of foreign residents, compared to the Center and South of Italy. Such regions are more attractive, in terms of quality of life, better job offer, higher wages and more efficient health and social systems (Rapporto SVIMEZ, 2019).

Figure 2 here

Figures 2 represents the evolution of inequality in the country through the decade 2007-2016, according to the index of within-region inequality used in this paper: the Gini Index. What emerges is the confirmation of a global trend that saw the rise of inequality in the years following the financial crisis of 2007-2008, even in developed countries and regions (Assouad, Chancel, and Morgan, 2018).

The Model

The purpose of the paper is to analyze the effect of immigration from abroad and the others demographic controls on both *within-* and *between-region* inequality, in order to understand what happens in the nation but also within each region. Three proxies of inequality have been chosen for the analysis. Two measures of within-region inequality and one measure for between-regions inequality. The two proxies for within-region inequality used here are the *Gini Index* and the *S60/S20 ratio*. The proxy to measure between-region inequality is an index of *Standardized GDP per Capita* (calculated through the mean and standard deviation of the GDP per capita of every

region) to measure between-region inequality. The table below provides a brief description of both variables.

Table 2 here

In this paper I used weighted seemingly unrelated regressions (SUR) to test the following hypotheses:

H_1: the presence of foreign immigrants does not have a significant effect on within-region inequality;
H_2: the presence of foreign immigrants does not have a significant effect on between-regions inequality;
H_3: the ethnic segregation caused by the transfer of locals to regions with no immigrants generates within-location SES equality and between-location SES inequality.

As mentioned in Section 1 of the paper, the choice of using a Seemingly Unrelated approach lies behind the potential issues of endogeneity between the two main independent variables of the model (lagged inequality and immigrants per capita) and the dependent variable (inequality). Furthermore, given that between- and within-inequality tend to be correlated, and that they could be considered the components of an overall index of inequality, SUR allows to simultaneously estimate—using inequality-specific explanatory equations—the different independent effects of the variables of interest on each of the inequality measures used in this paper. SUR allows to estimate coefficients for unemployment, education, immigrants, and population, and their

interactions while exploiting the correlation between the inequality cross-equation disturbances (Zellner, 1962; Anwaar et al., 2012).

The classical SUR is expressed by a system of linear regressions:

$$\textit{Within-Inequality (Gini Index)} = \beta_0 + \beta_1' x_{it-1} + e_{it} \quad (1)$$

$$\textit{Within-Inequality (S60/S20)} = \gamma_0 + \gamma_1' w_{it-1} + e_{it} \quad (2)$$

$$\textit{Between-Inequality} = \alpha_0 + \alpha_1' z_{it-1} + e_{it} \quad (3)$$

X_{it-1} = [$Gini_{it-1}$, $Immigrants_{it-1}$, $Unemployment_{it-1}$, $Population_{it-1}$, $Education_{it-1}$]

W_{it-1} = [$S60/S20_{it-1}$, $Immigrants_{it-1}$, $Unemployment_{it-1}$, $Population_{it-1}$, $Education_{it-1}$]

Z_{it-1} = [*Standardized GDP* $_{it-1}$, *Standardized Immigrants* $_{it-1}$, *Standardized Unemployment*$_{it-1}$, *Standardized Population*$_{it-1}$, *Standardized Education*$_{it-1}$]

The explanatory variables included in the first two models are within- variables, describing parameters for each of the twenty Italian regions. The explanatory variables included in the third model are standardized in order to describe what happens among the twenty Italian regions.

All the equations are dynamic, due to the medium-to-long term effect on income inequality expected in variables like pre-existing inequality, immigration and unemployment. To provide more robustness to the models and to verify long-term effects all the original models have been run using two- and three-years lags. In both cases of within- and between-regions inequality, an important trigger for income inequality is represented by unemployment rate. I expect very high levels of unemployment to reduce income inequality and to provide a good proxy for the quality of social Welfare at the regional level. The unemployment rate, in this case, also represents a good

measure of different employment opportunities in different regions (Biagi et al., 2011). Following the same logic, another one of the explanatory variables used in this model (Education) has a double purpose. First of all, it is important as it represent a proxy of human capital in the population, but also as a variable that describe the perception that people have of immigrants, assuming that the higher the level of education, the more people should be aware of the positive effects that the successful integration of immigrants could have on the whole system in the host country. This variable is important, as it is arguable that the higher widespread levels of education could help shrinking inequality (Biagi et al., 2011).

An important demographic variable included in this model is represented by the total population in each region, given that higher differentials in population stimulate higher levels of inequality and that the two indexes of within-region inequality are sensitive to structural changes at the middle of the income distribution (Etzo, 2011).

The analysis takes into consideration the years 2007-2016. While acknowledging the importance of analyzing longer periods, the choice was driven by the lack of data available before 2007, at the regional level, provided by the Italian Institute of Statistics.

Results

The empirical analysis in the paper was carried through a seemingly unrelated approach (SUR). The outcome of the analysis seems to confirm the initial hypothesis and shows that the presence of immigrants in Italian Regions does not constitute a significant factor for the increase of income inequality; this is true for both within-region inequality and between-region inequality. The next paragraphs will provide detailed summaries of the results for all the models analyzed in the paper. To provide more robustness to the analysis, I have also run the same model with two-years and

three-years lags; these robustness checks have been performed in order to assess the effect of the predictors on income inequality in the longer term and confirm the results obtained in the original model. The next paragraphs describe in detail the results of the different models of within- and between-regions inequality, in the short and long term. All the tables reporting the results of the analysis and can be found in the Appendix.

Within-Region Inequality (Tables 3-8)

In the case of the Gini index (Tables 3-5), high levels of inequality at the origin are associated with pre-existing levels of inequality. The model establishes higher levels of education at the origin as a significant trigger for within-region inequality; this result suggests that regions with higher levels of education suffer from higher inequality, due the polarization of the society and the wider income gap between those who have a university degree and those who do not. These results corroborate Bourdieu's theory (1993) of higher education as a powerful contributor to the maintenance and reproduction of social inequality. As expected, and in accordance with literature (Etzo, 2008, 2011), another significant factor is constituted by pre-existing high levels of unemployment at the regional level that appear to stimulate the rise of inequality. As hypothesized at the beginning of the paper, there seems to be no connection between the presence of foreign residents and within-region inequality, suggesting that forbidding the entrance of immigrants in the country would not solve the problem of regional income inequality in the long term. The same results can be observed when the measure used for within-region inequality is the S60/S20 ratio (Tables 6-8). This ratio was used to provide an alternative for the Gini Index; the Gini Index was initially chosen given its sensitivity to changes in the middle of the income distribution (those people who usually oppose the presence of immigrants in their homeland); however, the index has been labeled as a measure

that does not account for structural changes in a population. The S60/S20 ratio provides a valid alternative to the Gini Index that still accounts for the population in the middle of the income distribution, while directly comparing it to the bottom quintile of the income distribution. The results obtained using the S60/S20 confirm the results obtained when using the Gini Index. The presence of immigrants in Italian does not affect the levels of income inequality. On the contrary, triggers of income inequality are represented by pre-existing levels of inequality and the polarization of levels of education.

Table 3 here

Table 4 here

Table 5 here

Table 6 here

Table 7 here

Table 8 here

Between-Region Inequality (Tables 9-14)

The between-regions inequality model suggests, in accordance with the within-region model that pre-existing inequality stimulates higher inequality today and that pre-existing higher levels of education stimulate inequality as well. Furthermore, in this model, like in the previous one, the presence of foreign immigrants seems to have no effect whatsoever in the rise of inequality between regions, suggesting that the existing gap between the North and of the South of the country is not triggered by the difference presence of foreigners. What is different from the previous model is that population and unemployment are negatively correlated to between-regions income

inequality; this implies that a uniform distribution of the population across the country and similar levels of unemployment have a shrinking effect on long-term inequality. The between-regions model also employs the use of internal mobility of locals throughout the twenty Italian regions. This measure was obtained calculating the regional *Net Migration Rate* for each Italian region. This index, describing internal mobility of locals, has proven to be positively correlated with between-regions inequality, corroborating the third hypothesis of this paper, proving that the ethnic segregation caused by the transfer of locals to regions with no immigrants generates within-high between-regions SES inequality.

Table 9 here

Table 10 here

Table 11 here

Table 12 here

Table 13 here

Table 14 here

Mixed Models (Tables 15-20)

The two mixed models of income inequality analyzed in this paper, where the reciprocal effect of within- and between-region inequality is taken into consideration provide the expected results. The two different inequalities negatively affect each other, suggesting, as hypothesized, that the ethnic segregation due to the transfer of locals who do not want to live alongside foreigners generates within-location SES equality and between-location SES inequality in the long term. It also suggests that, before locals decide to transfer to regions with smaller or no presence of foreigners,

within-region inequality is higher, while between-region inequality is smaller. As in the previous models, also the mixed models that verify the effects of within- and between-regions inequality on each other are consistent through years, highlighting that the hypotheses stated at the beginning are corroborated in the short term, as well as in the long term.

Table 15 here

Table 16 here

Table 17 here

Table 18 here

Table 19 here

Table 20 here

In general, the different models analyzed in this paper suggest that income inequality within and between regions is affected in the short term and in the long term by different levels of unemployment, population, education, and pre-existing inequality. What emerges from the obtained results is that the presence of foreigners does not have any significant impact on income inequality in Italy and at the regional level in the short and long term, suggesting that restrictive policies that limit the number of immigrants in the country do not have any positive effects.

Conclusions

The purpose of the study was to analyze the effect of the presence of immigrants, together with economic, social, and demographic factors on inequality at the regional level in Italy. The three hypotheses stated that immigrants do not have a significant effect on inequality within and between

regions; furthermore, it was hypothesized that in the long term, the transfer of residence of locals, from regions with more immigrants to regions with little or no immigrants, would have reduced within-region inequality and increased between-regions inequality. This analysis constitutes a first and explorative attempt to consider the role of immigrants as an important driver for assessing interregional inequality in Italy on multiple levels at the same time (within and between). The results provide some interesting insights for future research. The lack of effect that the presence of immigrants has on regional inequality suggest that the perception of the damages on the Italian economy and society brought by foreigners are not realistic and that such effects are to be found in other factors, such as pre-existing inequality, unemployment, and education, among others. This means that wealth redistribution policies can shape the social and economic setup of the different regions of a country and exacerbate, or shrink existing levels of inequality (Zhang et al., 2019).

To this respect, for future analysis, it would be interesting to analyze inequality from a different point of view, taking into consideration different levels of income and the effect that the presence of immigrants has on them. Unemployment provides interesting information about regional inequality. When unemployment levels are high within regions, the effect on inequality is positive; on the contrary, between regions, the effect is significantly negative, suggesting that similar levels of unemployment across regions tend to shrink differences among them. This support what posited by Oishi et al. (2018) according to whom areas with higher levels of unemployment are characterized by lower average incomes, alongside lower inequality. Education has shown to be also an important factor, which a positive effect on both inequalities (within- and between-region) in the long term. This result suggests that levels of inequality could be lowered through important investments in education in Italy, to give everyone the opportunity to study, irrespectively from their income level and geographical origin.

Together with investments in education, it would probably be beneficial if the government realized investments to favor jobs offering in the south of the country; this is suggested by the negative effect that population has on between-regions inequality, meaning that when the population is equitably redistributed across regions, in the long-term interregional inequality shrinks.

The results of the paper also confirm the third hypothesis posited at the beginning of the paper: the residence transfer of locals following the coexistence with immigrants generates ethnic segregation, as it leads to within-region SES equality and between-region SES inequality. The result suggests that as foreigners arrive to a region, they might initially increase within-region inequality, because they generally have lower SES, but with no effect on the long term; however, they may push locals to move to another location, thus *decreasing* within-region inequality (as only foreigners of similar SES stay and locals of higher SES leave) but *increasing* between-region inequality (as locals of higher SES arrive to places with fewer foreigners). In other words, the resulting within- and between-region ethnic homogeneity (because between-region ethnic-homogeneity increases with locals changing residence and decreases with foreigners changing residence) generates within-region *equality* and between-region *inequality.*

This paper analyzed a complicated and challenging moment for the global and the Italian economies: the years after the financial crisis of 2007-2008. All the results obtained in this paper could be influenced by the uniqueness of the situation. For future research, it would be convenient to gather data at the regional level for the years before the crisis, when available. The analysis of interregional inequality trends through decades would help better isolate the effect of the financial crisis and provide more information on the drivers of interregional inequality in expansionary and recessionary periods. The paper highlights the important social and political consequences of inequality within and between regions and its perception. The results obtained suggest the need of

important investments (in education, health and legalization of immigrants) in areas where inequality and unemployment are high, in order to increase wealth and population redistribution, reduce the gap between the rich and the poor, and create better living conditions in those regions that are still suffering the consequences of the Great Recession. The reduction of vertical and horizontal inequality would allow more uniform levels of development across the country.

To my knowledge, this paper represents the first attempt to analyze, through a seemingly unrelated approach, models of within- and between-regions inequality in Italy; it would be instructive to analyze whether similar patterns can be identified in different contexts such as, for instance, other European countries.

Chapter 3

Black Swans and Inequality: How Unpredictable Events Shape Internal Migration and Income Inequality in Italy

Key words

Abruzzo, building damage, earthquake, income, Italy, migrations

Abstract

Italy is a country that has historically been prone to suffer from natural disasters, like earthquakes. The main goal of the paper is to verify a causal relation between exogenous shocks and mobility at the regional level in Italy. Using data on internal migrations from the region of Abruzzo (historically prone to earthquakes), the paper analyzes the effects of natural disasters on migrations, at the subnational level, in

both origin and destination regions, after the shock. The paper studies the major earthquake that hit several towns in Abruzzo in April 2009. While research extensively addresses the effects on natural disasters on the environment and on the economy of countries suffering from them, there is very little research on the effects of internal migration due to exogenous causes in Italy. What this paper adds to the existing literature is the causal relation between shocks and internal mobility. The use of an exogenous variable, like a natural shock, helps avoiding the problem of endogeneity between dependent and independent variables, often found in literature. Further novelty is brought by the fact that the analysis has been realized at the municipal level. The results obtained in the paper show that in the short-term intermediate levels of earthquake intensity disincentive mobility, while high levels of intensity nudge it. However, the situation changes in the medium-to-long term. Once the causal relation between the earthquake and migrations is established, I offer different policy implications.

Introduction

There is widespread debate over the effects of natural disasters on migrations. Residents living in the most vulnerable areas are the ones affected the most by sudden shocks, due to their reliance upon agriculture and manufacture sectors and a broader inability for many poorer households to cope with the consequences of events like earthquakes, or floods (Zhang et al., 2015). Migration therefore represents a feasible solution and a realistic strategy through which households may react to sudden and disruptive changes in their lives. The study of natural shocks is important for their direct effect on the environment, on public buildings, and on private houses. Natural disasters also have medium-to-long term economic and social effects, especially if governments are not able to deal efficiently with the aftermath of a shock and help the affected communities to recover. The negative externalities and consequences of such events could potentially generate more turmoil and human losses if not faced properly (Rodriguez-Oreggia et al., 2013).

Disasters vary greatly, both in frequency of occurrence as in damage intensity; the most frequent disasters are floods and storms, while the most damaging events are represented by earthquakes (Yamamura, 2014). Disasters like these have a direct impact on human mobility and as well as direct and indirect effects on inequality.

This paper analyzes the devastating effects that the April 2009 earthquake had on the Italian region of Abruzzo and how it affected the migration of residents from Abruzzo to the rest of Italy. More than three hundred people lost their lives in the event and about 1500 were injured (Volpini, 2009). Sixty thousand buildings were seriously damaged, including the main hospital and trauma center of the region. In total, 67500 people were left homeless and/or unemployed (Casarotti et al., 2009). These numbers are impressive but not completely unexpected, given that the region of Abruzzo is located in a historically seismic area. Abruzzo and its capital, L'Aquila, have a millennial history and a very substantial concentration of historic buildings in its center, most of which were completely destroyed. Besides the 14 outlying villages of L'Aquila municipality, another 15 towns registered severe effects and 31 were moderately damaged. Among the worst affected villages, Onna, Paganica, San Gregorio, Tempéra, and Villa Sant'Angelo had their historical centers closed to the public and presided over by the police or fire services. The first of these, Onna, a historic village of 300 residents substantially disappeared in its entirety and registered a total of 40 victims (Levy & Chennat, 2010).

The L'Aquila earthquake of 6 April 2009 was a classic example of a medium-power seismic event. However, given the high vulnerability of building stock in the mountains of Abruzzo, it had a disproportionately large human impact. This earthquake represents a good example of how moderate events are more common than the larger events, and, in countries or regions that are not prepared, can cause disproportionate suffering (Alexander, 2010). To this respect, the months and

years immediately after the earthquake were characterized by strong debates all over the country about whether the event could have been foreseen and its effects somehow limited.

Previous literature has thoroughly discussed the earthquake and its effects (e.g. Calvi, 2009; Papanikolaou et al., 2009; Rossetto et al., 2009); however, there has been no analysis so far on the effects the earthquake had on people's lives and migrations in the short and long term.

The aim of this paper is to study and analyze the effects of the earthquake, together with other relevant demographic factors (i.e. average income per capita, presence of immigrants, and number of residents), to verify how the earthquake of Abruzzo affected internal mobility at the subnational level in Italy in 2009 and in the following years, until 2016. The results from the proposed models emphasize that very high levels of building damages are the ones that force people to migrate to other regions in the short term. On the contrary, medium and medium-to-high building damages do not stimulate migrations from the home region. However, the results change in the long term.

The paper proceeds as follows: Section 2 illustrates the contribution provided by existing literature on the effects of natural disasters on people's mobility. Section 3 provides detailed information on the research objective of this paper and the data and methodologies used to perform the analysis. Section 4 highlights the main results obtained in the paper. Section 5 provides conclusions and policy suggestions.

Theoretical Support

Literature has previously discussed how the effects of natural disasters vary according to geographical areas and socioeconomic status; wealthy people usually reside in areas that are more protected and less prone to natural shocks, while poor people rarely have the chance to choose where to live. Due to budget constraints, poor people are believed to be more exposed to disasters

and less engaged in disasters-prevention investments. (Rodriguez-Oreggia, De La Fuente, De La Torre, & Moreno, 2013).

With respect to migrations as a reaction to natural disasters, Petersen (1958, 1978) argued that several macro-level factors should be taken into account in the elaboration of theories of migration to recognize the importance of social and economic factors that encourage people to migrate. Hugo (2008) adds to Petersen the relationship between people migrations and the environment, in the short and long term, differentiating between voluntary and forced migration; in the case of disasters, such as earthquake and hurricanes, for instance, migration is more likely to be forced at the beginning. However, migration may become voluntary in the longer term, due to economic opportunities or constraints. The same way, preferences towards migration may change over time and people could decide to migrate months, or years after the disaster or even decide to come back to the affected areas, for economic or personal reasons. Morrow-Jones and Morrow-Jones (1991) highlights how lower and medium classes are more likely to change preferences towards migration over time, due to their higher dependency on the economic and social situation of the areas and sectors affected by the disaster.

Social vulnerability is considered one of the most important factors behind people's migrations after disasters, both in the short and long term. Economically weak communities are in fact more vulnerable to the effects of natural disaster and literature has widely recognized them as the ones more susceptible to migration in the wake of events like the ones described here (Hunter, 2005). As the poor suffer the most, the correlation between low socio-economic development and the impacts of natural disasters is widely recognized (Schumacher & Strobl, 2011; Kim, 2012). The effect of natural disaster is in multiple cases shaped and enhanced by the level of economic and human development of the communities that suffer from it. The level of development is a critical

factor and disasters have a different effect, according to the ability of region and communities to deal with it (Battistella, G., 2002).

Another important factor nudging migrations after natural disasters is the damage suffered by private and public buildings. For instance, research regarding the United States, and particularly Florida, shows that lower socioeconomic status households are more likely to live in housing units that are inadequately equipped to resist to natural disasters like storms, earthquakes, and floods, compared to housing units where people with high socioeconomic status reside (Peacock & Girard, 1997). Research also highlighted how people belonging to lower social classes are more likely to be renters, mobile home occupants and reside in lower-quality buildings, therefore being significantly threatened by environmental hazards (Fothergill & Peek, 2004; Tierney et al., 2006). People's and buildings' density also play an important role in the voluntary or forced post-disasters migrations. In areas where density is higher, such as the region of Abruzzo analyzed in the paper, there are more chances of mass displacement as a consequence of an environmental shock. Thus, it would not be surprising to observe high numbers of individuals migrating from affected areas in the short and long term.

Serious disasters, like the Italian earthquake that hit Abruzzo in 2009, destroying entire towns, have such disruptive effects that they hinder the future development of the affected communities. If massive and/or recurrent, such events may even undermine the overall economic and social development and have significant effects on voluntary and forced displacements, in absence of adequate recovery policies implemented by local and national governments (Kim, 2012).

When a disaster occurs in a developing country, or, in this case, a less developed region, which lacks the economic resources to meet the needs of its vulnerable citizens, the people affected by it might find necessary to migrate somewhere else, to look for better opportunities (Afsar, 2004).

The lack of opportunities may foster migration but only for those people who have the means and the chance to move (i.e. presence of social networks, like family or friends and liquidity). Those who lack those means may be forced to keep living in the areas hit by the shock (or close by), limiting their chances of recovery (Boldrin, & Canova, 2000).

Chances of out-migration may increase if affected areas become economically and socially moribund in the aftermath of the event. However, such areas can also draw in immigrants (normally from developing countries), via different sources, such as 1) relatives and organizations coming in to provide support and 2) new migrants arriving in search of work in the reconstruction effort. These factors affect the chances of recovery and levels of inequality in the regions hit by the shock. This last aspect has often generated debate in Italy (and in the rest of Europe) between those who perceive immigrants as useful resource, especially in dramatic situations, and those who perceive them as an unnecessary burden (Margarit Segura & Abde, 2014).

Internal migration experienced important trends in Italy, during the past century. This migration was mainly directed from the South to the North and was usually moved by economic factors, like unemployment and wage levels. Migration was triggered in the 1950s and 1960s by the so-called *Economic Boom*, which provoked an increase in labor demand from the most important Italian industries, mostly located in the North of the country. The trend lasted for at least 20 years, nudged also by family and friends' networks, which dragged numerous people from the Southern regions to the Northern ones. Specifically, the so-called *Industrial Triangle* (Genoa-Turin-Milan) was the area that attracted the highest number of immigrants from the south of Italy.

However, this migration was due to economic reasons. Environmental migration is different and is triggered by shocks like earthquakes, floods, or tsunamis, among others. This kind of migration involves the whole world and Italy represents no exception. The two violent earthquakes that hit

the country in 2009 (Abruzzo) and 2012 (Emilia-Romagna) are considered the most expensive natural disaster of all times in Europe. Entire houses, business, public buildings, and even towns have been destroyed, causing damages for $16 billion and forcing many people to run away. In 2013, 32.4 million people were forced to abandon their homes in the whole world, as a consequence of natural disasters (Internal Displacement Monitoring Centre, 2015). Natural shocks, just like economic shocks, hit more often, and with more destructive effects, those areas where the quality of life and infrastructure is worse and where citizens have no way to protect themselves. In 2012 in Europe around 75.000 people were forced to leave their houses, as a consequence of natural disasters (and the Italian earthquakes represent a big chunk of it) (Internal Displacement Monitoring Centre, 2015). The specific statistic about Europe is relevant for this paper because it helps understand how environmental shocks can affect entire socio-economic systems and their effect is not limited to the destruction of private and public buildings. Long term economic effects are important with respect of migrations from the affected areas: as mentioned at the beginning people have more chances to migrate if they have enough liquidity to afford it (Bayraktar, Y. 2017).

What makes these climatic or environmental migrations interesting is that vulnerable people often do not have the means to protect themselves and anticipate the consequences of natural disasters, or cope with effects. They tend to live in peripheral, densely populated neighborhoods, without acceptable human and financial capital and suffer disproportionately from disasters like earthquakes, tsunamis and floods. The increase of internal migrations for those who can afford it may represent a challenge for social cohesion and enhance inequality, through socioeconomic segregation (Faini et al., 1997). In fact, migrations from areas hits by disasters to different regions, or provinces, especially if fast and sudden, may alter the socio-economic structure of a region and

enhance the delta between rich and poor (Musterd, 2005). However, literature has shown that the effect of disasters varies over time. As posited by Yabe et al. (2019), with respect to Japan, another country historically prone to sudden disasters like earthquakes, migration patterns vary over time and income levels, according to how authorities are successful in dealing with the effects of such disasters.

According to previous literature, internal migration has a more effective role in decreasing inequality in migrants-receiving regions, due to the fact that internal immigrants imply lower costs and lower social risks, compared to international immigrants (De Haas, 2009). However, the effects of internal migrations might differ, comparing short versus long term. Financial possibilities also constitute a factor that influences internal migrations: despite the willingness of individuals to migrate, only who has the necessary liquidity will be able to do so, while who lacks liquidity might be forced to stay in the areas affected by a natural shock. However, recovery may be favored by government policies which aim to redistribute wealth to the poor and due to the presence of migration networks (family, friends, remittances), which can help poor families to relocate and integrate in a different region than the one hit by environmental disasters (Bayraktar, 2017). In absence of those networks, individuals tend to migrate, assuming that the costs of migration are relatively low.

Previous literature tends to define internal migration as a factor that reduces inequality because it focuses on analyzing those cases when migrations are triggered by increasing supply of labor, opposed to increasing demand of labor, together with lower wages in less wealthy regions. This paper, on the contrary, analyzes sudden migrations triggered by unexpected natural disasters. These migrations are not necessarily accompanied by availability of jobs and services for those people who migrate; therefore, these people might increase the unemployment rate of the regions

of destination and get isolated in suburbs, if they cannot afford leaving in more expensive, central areas. As a result, inequality could increase. Furthermore, inequality could also increase in the areas hit by disasters. Labor supply is likely to decrease if businesses and activities are penalized by the occurrence of natural shocks. Jobs are lost, especially the labor-intensive ones, causing the gap between rich and poor to widen. On the contrary, according to Vakulenko (2015), when businesses survive the disaster, migrations might increase employment for non-migrating people, therefore reducing inequality in the region of origin.

Research Objective and Methods

The purpose of this paper is to attest the effect of exogenous, natural shocks on internal mobility, with focus on the earthquake that hit the center of Italy in 2009.

The central hypotheses of this paper are:

- H1: Natural disasters increase rates of internal mobility from the region hit by the shock, to the other regions of the country;

- H2: The effects of building damages on mobility change with time, showing differences in migration patterns between short and long term.

Data sources and Methodology

The main sources of this analysis are the Italian Institute of Statistics and the European Institute of Statistics, which provide useful data on regional inequality for this analysis.

The main purpose is to analyze the effect of the earthquake that hit central Italy in 2009 on internal mobility to the rest of Italy. As a proxy for internal mobility, I am using the Net Migration Rate at the municipal level. The net migration rate represents the difference between the number of immigrants (people coming into an area) and the number of emigrants (people leaving an area) throughout a given year. When the number of immigrants is larger than the number of emigrants, a positive net migration rate occurs. A positive rate indicates that there are more people entering than leaving an area. When the people who migrate from a region outnumber those who arrive to the same region, the result is a negative net migration rate. When there is an equal number of immigrants and emigrants, the net migration rate is balanced.

The net migration rate is calculated over a one-year period using the mid-year population and a ratio (over 1000 inhabitants):

$$\textit{Net Migration Rate: } N = (I - E) / M * 1000$$

N = Net Migration Rate

I = Number of Immigrants Entering the Area

E = Number of Emigrants Leaving the Area

M = Mid-Year Population

In order to isolate the effect of the earthquake from the one of the economic crisis that hit the whole world in 2007-2008 and that could have affected mobility rates, I use a proxy variable to measure the damages of the earthquake. The proxy is the number of private and public buildings damaged by the earthquake in each town in Abruzzo, according to four different levels of damage (A, B, C, E). A represents the lowest level of damage, E the highest. To be sure that the effect of the earthquake will be isolated, I use a panel data analysis, to check the evolution of level of damage of buildings in the towns hit by the earthquake from 2009 to 2016.

Together with the proxy to measure the intensity of the disaster, I use demographic variables such as average income per capita, presence of immigrants, average age of the population, and number of residents. The data for the paper were obtained by the USRC (Special Office for the Reconstruction of the Towns Destroyed by the Earthquake), the USRA (Special Office for the Reconstruction of L'Aquila), the Italian Institute of Statistics and the different municipal databases, and the local newspaper "Il Centro".

The Model

The model aims to describe the effects of the 2009 earthquake and a series of demographic variables on the Net Migration Rate at the municipal level in the towns hit by the disaster.

The following variables are included in the model:

M_i = *Net Municipal Migration Rate*: transfers to and from the analyzed town

E_i = *Intensity of Earthquake*: measured in terms of damaged buildings in every town (very low to very high)

R_i = *Number of residents in each town*

PG_i = *Net Population Growth for each town*

AA_i = *Average Age of citizens for each town*

AI_i = *Average Income of citizens for each town*

F_i = *Number of Foreign citizens for each town*

The following is a simple OLS model that aims to establish a relationship between migration flows in each of the analyzed towns and the intensity of the earthquakes, plus some socio-economic-demographic control variables (concerning years 2009-2016). The model follows below:

$$M_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 X_{it} + \varepsilon_i$$

$$M_{it} = \beta_0 + \beta_1 E_{it-1} + \beta_2 X_{it-1} + \varepsilon_i$$

$$M_{it} = \beta_0 + \beta_1 E_{it-2} + \beta_2 X_{it-2} + \varepsilon_i$$

In the OLS model above, the dependent variable describes the net migration flows from and to each town. *E* describes the intensity of the earthquake, in terms of damaged buildings and *X* puts together the socio-economic and demographic variables listed above. The subscript *i* represents each town hit by the earthquake. In order to analyze the effects of the earthquake on internal mobility in the medium-to-long term, the same model is replicated using one- and two-years lags.

Results

The graphs below represent the direction of the effect that different levels of building damage have on out-migration from Abruzzo towards the rest of Italy, right after the earthquake and two years later.

Figure 1 here

Figure 2 here

The results show a positive correlation between internal mobility and low and high building damage. On the contrary, the effect of intermediate levels of damage on mobility is negative. A plausible interpretation is that the people who left Abruzzo are only those who wanted to (and could afford it), or the ones who could not avoid it, due to the intensity of the damage they had suffered. Things, however, change over time and results show a positive effects of intermediate levels of damage on mobility and a negative effect of low and high levels of building damage on mobility.

The following tables show in detail the results of the analysis performed in the short and medium-to-long term.

Table 1 here

Table 2 here

Table 3 here

The tables show how the two medium levels of damage (B and C) significantly disincentive internal mobility at the municipal level in Abruzzo in the short term, while low and high levels of building damage have the opposite effect. However, in the longer term the situation changes. When a two-years lag is applied the effects of building damages go in the opposite direction, with respect to the short term. In the long term, in fact, low and high levels of damage disincentive migrations from the towns affected by the disaster, while intermediate levels of damage seem to nudge them. This change, in line with what hypothesized earlier in the paper and posited by Yabe et al. (2019), might mean that economics, social, and personal conditions change with time; in other words, if governments are not able to prompt a speedy recovery from the aftermath of the earthquake, people will not be able to move or might be forced to move, at some point, according to economic and personal factors.

The results also highlight the significant effect that the number of residents in the town affected by the earthquake have on mobility: the higher the number of residents, the more people migrate from Abruzzo to the rest of the country in the short term. The result is consistent with Etzo (2008, 2011) and the claim that unfavorable socioeconomic conditions (like the ones resulting from the earthquake) can stimulate mobility for those who can afford it. In the long term, however, things change and higher numbers of residents in the towns affected by earthquake significantly reduce migrations. The explanation could be twofold: on one side, it might be due to the fact that an effective and speedy recovery in the region allows people to keep living in their town of origin. On the other side, it might imply that the lack of efficient policies of recovery and redistribution

of wealth might force people to stay in their town of origin, because they cannot afford moving to other regions.

It is also worthy to mention the effect that the presence of foreign residents has on mobility: their presence and involvement in the socioeconomic life of the towns affected by the disasters reduces out-migrations from Abruzzo in the short and long term. This trend is useful policy-wise to identify foreigners as an important resource for recovery in those areas of the country that are vulnerable and in need of labor force.

Conclusions

The purpose of the study was to analyze the effect of the earthquake that hit the Italian region of Abruzzo in 2009, together with economic, social, and demographic factors, on migrations from the municipalities of Abruzzo to the rest Italy, in the years between 2009 and 2016. The two hypotheses formulated at the beginning of the paper stated that 1) natural disasters increase rates of internal mobility from the region hit by the shock, to the other regions of the country and that 2) the effects of building damages change with time, showing differences in migration patterns between short and long term. The results obtained in the study provide interesting insights. The analysis of the effects of the earthquake on internal mobility at the municipal level shows that medium levels of damage significantly disincentivize migrations in the short and medium term from the towns of Abruzzo hit by the earthquake of 2009. On the contrary, low and high levels of damage have the opposite effect. However, confirming the second hypothesis of the paper, the situation seems to change in the long term; after two years from the earthquakes, medium levels of damage significantly nudge migrations from the town of Abruzzo, while low and high levels of damage significantly disincentivize local mobility. This change in the scenario might be due to the

fact that the needs and will of people, across towns and different levels of income varies over time and follows the policies and measures put into practice by local and national governments to deal with the aftermath of natural disasters (Yabe et al., 2019).

Together with the effects of the earthquake, the paper also discussed the relevance of several demographic variables, such as the numbers of residents in the towns affected by the disasters, the average income per capita, the presence of immigrants, and the average age of the residents. The most interesting results are the ones concerning the number of residents in the towns affected by the disaster and the presence of immigrants. With respect to the first variable, I have observed that in the short term, a higher number of residents is positively and significantly correlated with higher mobility, while in the longer term the effect is the opposite. The change in the result, similarly to what happened with the different levels of damage, might be due to different of preferences over time. At the beginning, right after the event, the higher the number of residents, the higher the number of people affected by the disaster. As a consequence, there will be a smaller amount of resources available to the community. However, over time, a higher presence of residents in the region could describe two different scenarios: 1) on one side it might send a positive message to the citizens, showing that the area is recovering and there is less necessity to move somewhere else, therefore nudging people to stay; 2) people from the region, as a consequence of the disaster and its long-term effects might lack the minimum resources to move somewhere else, being forced to stay in the region and live in temporary housing units provided by the authorities. As shown by Özerdem and Ruffini (2013) and as widely reported by Italian media over the years, given the challenges that the Italian government faced to complete the reconstruction initiative taken right after the disaster, the second option seems to be the more likely one, in the specific case of Abruzzo.

For what concern the negative effect of the presence of immigrants on mobility, the results show that not only foreigners do not nudge people to migrate to other regions, but that their presence significantly nudges people to stay. This means, in line with previous literature, that the presence of immigrants is important in vulnerable areas facing periods of crisis and in need of recovery; this is because immigrants often accept low-skilled labor that locals do not want to engage with and that are essential to the economic life of the community and the recovery of vulnerable areas (Benson, 1999; Fennelly & Leitner, 2002).

As mentioned at the beginning of this chapter, the results obtain in the paper provide interesting insights on the effects of the 2009 earthquake of Abruzzo and internal mobility from Abruzzo to the rest of Italy. However, I acknowledge that the paper suffers from lack of important data and needs further development. In this case, for instance, it would be interesting to check how the effect of earthquakes on internal mobility change according to changes in average income, levels of education, and unemployment. As of today, however, such data at the municipal level in Abruzzo are not available.

Furthermore, when looking at the data analysis and methods, one might argue that years before 2009 should have been analyzed as well, in order to better isolate the effect of this exogeneous shock on internal mobility and compare results before and after the earthquake. Unfortunately, this was not possible as the local institutions that generously provided the data on building damages made very clear that no data before 2009 are available; according to them, there was no reason to check building damages and, in general, it was assumed that all the buildings had no damage whatsoever. To make up for this issue, the model uses town fixes effects to capture the situation before 2009.

Another limit of the paper lies in the variable used to address the intensity of the earthquake: building damage. The variable is divided into four categories: 1) A for low damage, 2) B for low-to-medium damage, 3) C for medium-to-high damage and 4) E for high damage. While providing a general idea of the damage suffered by buildings in Abruzzo, as a consequence of the earthquake, this categorical variable does not provide any measure of within-category variation, thus implying that all the buildings included in each category suffered from the same amount of damage.

This generalization is unlikely to reflect the effective damage suffered from the buildings analyzed in this paper and it would have been beneficial to have at disposal a continuous variable that could detect within-category variations. However, to my knowledge, none of the institutions that elaborated data on building damage in Abruzzo has reported any within-category variation.

The last purpose of the paper was to suggest policies that can help dealing with such phenomena, both before and after they occur. When shocks happen, if poor people are the ones who suffer the most the effects of the disaster, then the gap between rich and poor might widen (*vertical inequality)*. Furthermore, if the region hit by the earthquake, like in the case of Abruzzo in 2009, is one of the less wealthy, compared for instance to developed regions like Lombardy and Piedmont, then also the gap between rich and poor regions will widen, in the long term (*horizontal inequality*) (Faini et al, 1997). If those who migrate are only the ones who can afford it and governments are not able to put into practice efficient redistribution and recovery policies, then the social composition of the region hit by the shock might be altered, due to socioeconomic segregation, with consequent long lasting inequalities (Beegle et al., 2011; Munshi and Rosenzweig, 2016).

Therefore, governments need to put into practice policies that favor prevention, where possible, and, most of all, recovery after the shock. In Italy, after the events described in the paper, the

government passed a bill that declares that all the buildings built in the country need to be anti-seismic and imply tax breaks for those who restructure buildings that are not anti-seismic. However, works are slow and, as of 2020, many people in Abruzzo are still housed in temporary units, with no heating, nor air conditioning.

To implement other policies, in order to speed up works to rebuild those areas that have been devastated and to help those who lost their house, or their job and cannot, or do not want to leave, governments could institute centralized control organisms and finance them, in order to follow, step by step, the implementation of such works.

In the case that horizontal and vertical inequalities emerge after such happenings, a strong progressive taxation on financial wealth (beyond certain levels of income) could be beneficial, in order to collect money to contribute to the reconstruction of the devastated areas and reduce vertical and horizontal inequality (Piketty, 2011; Zucman, 2019). Last, the institution of a basic income by the government to all the citizens, without means test or work requirement would be helpful to reduce poverty and favor recovery at the individual level (Van Parjis, 2007).

Appendix

First Chapter

Tables

Figure 1 Migration Flows – Italian Regions

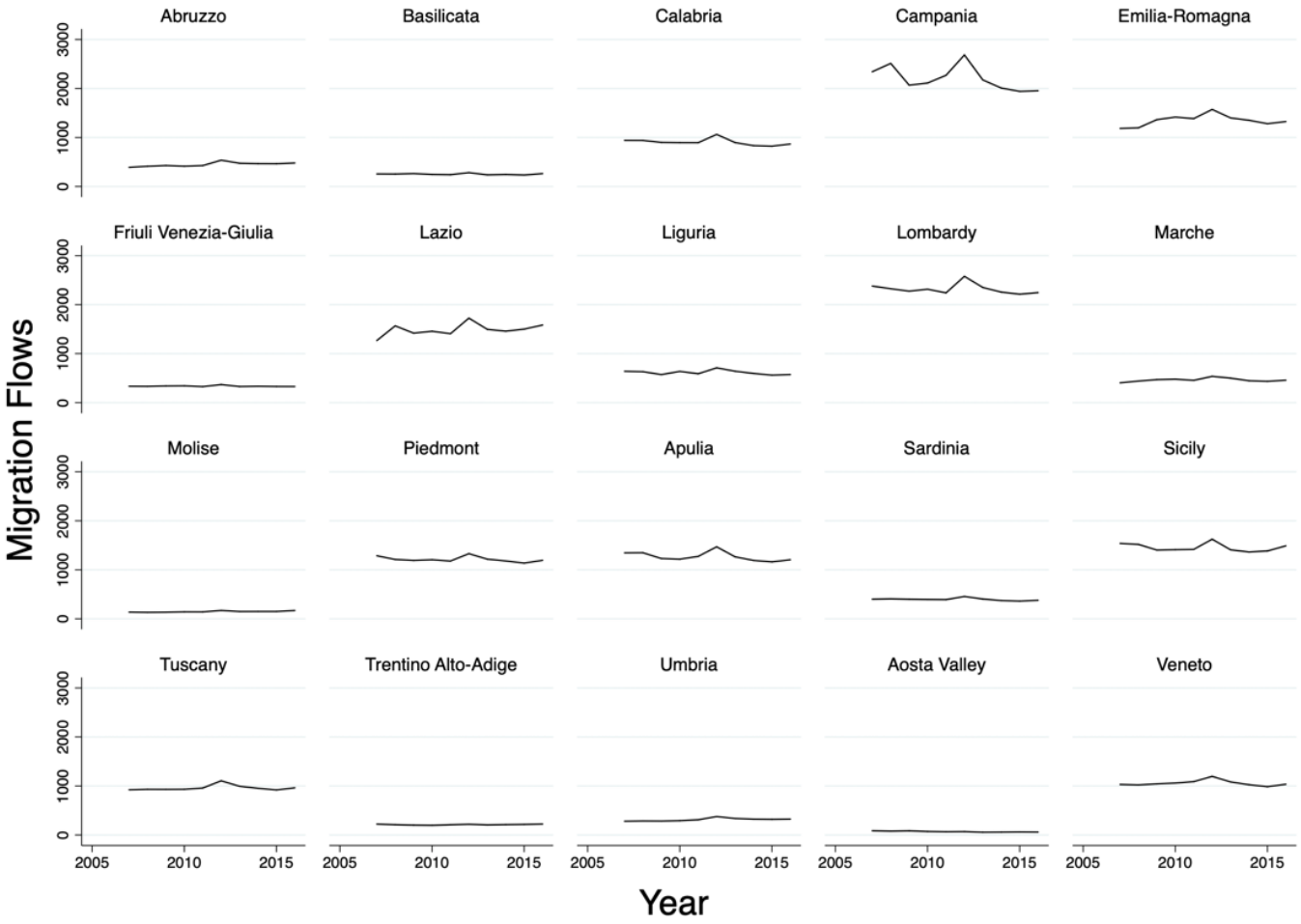


Figure 2 Inequality (Gini Index) – Italian Regions

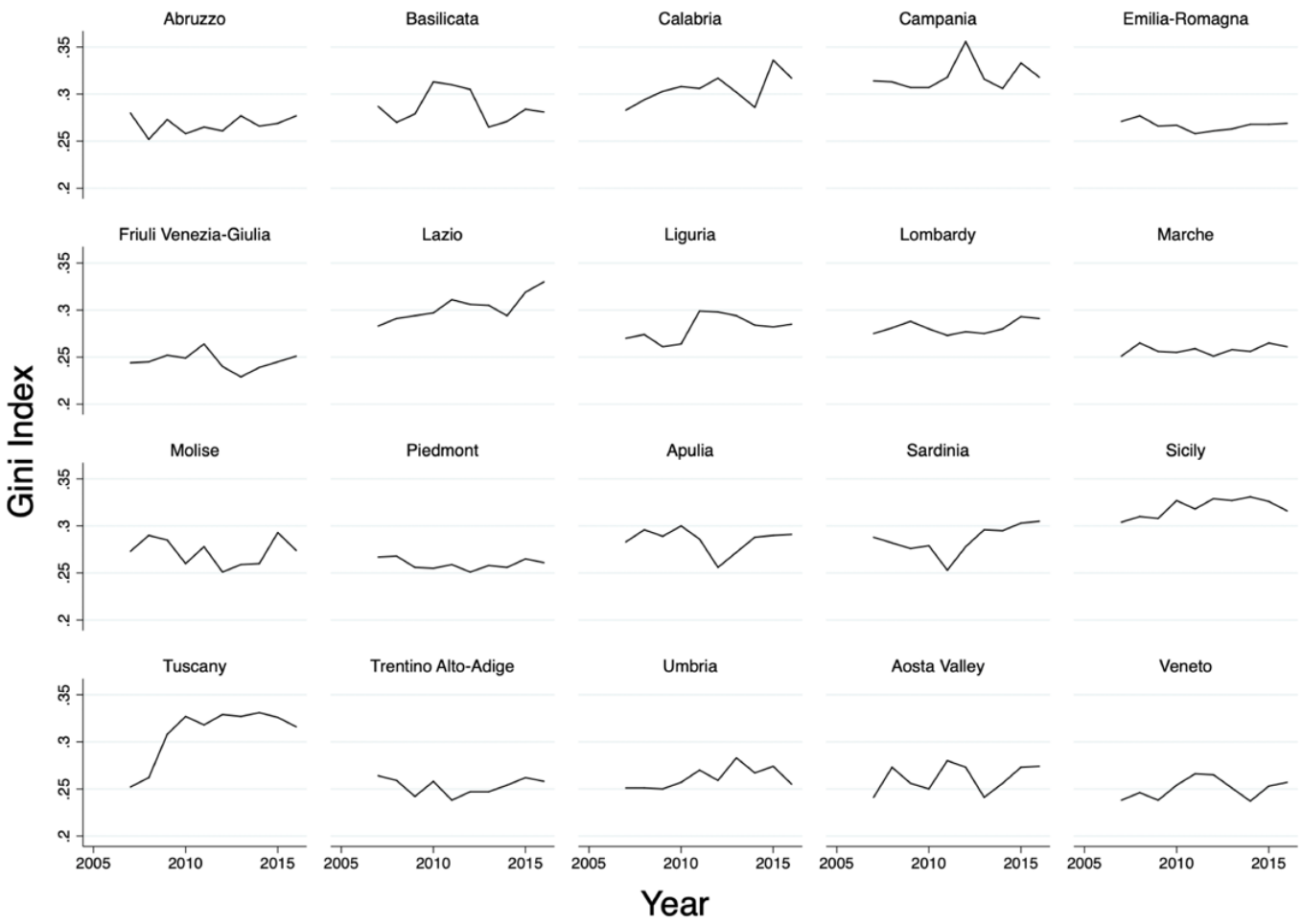


Figure 3 Inequality (Relative Poverty) – Italian Regions

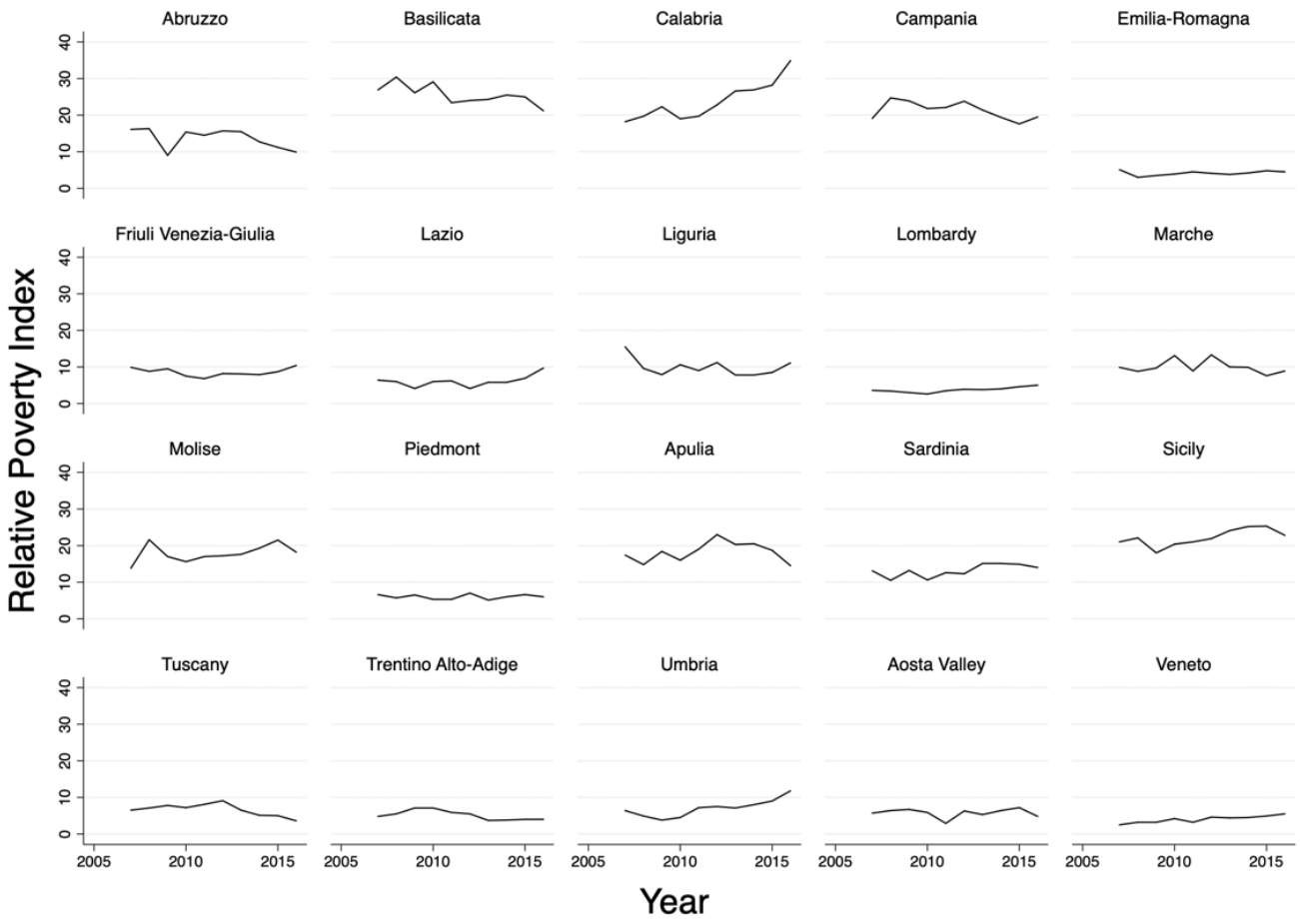


Figure 4 Inequality (Income Ratio) – Italian Regions

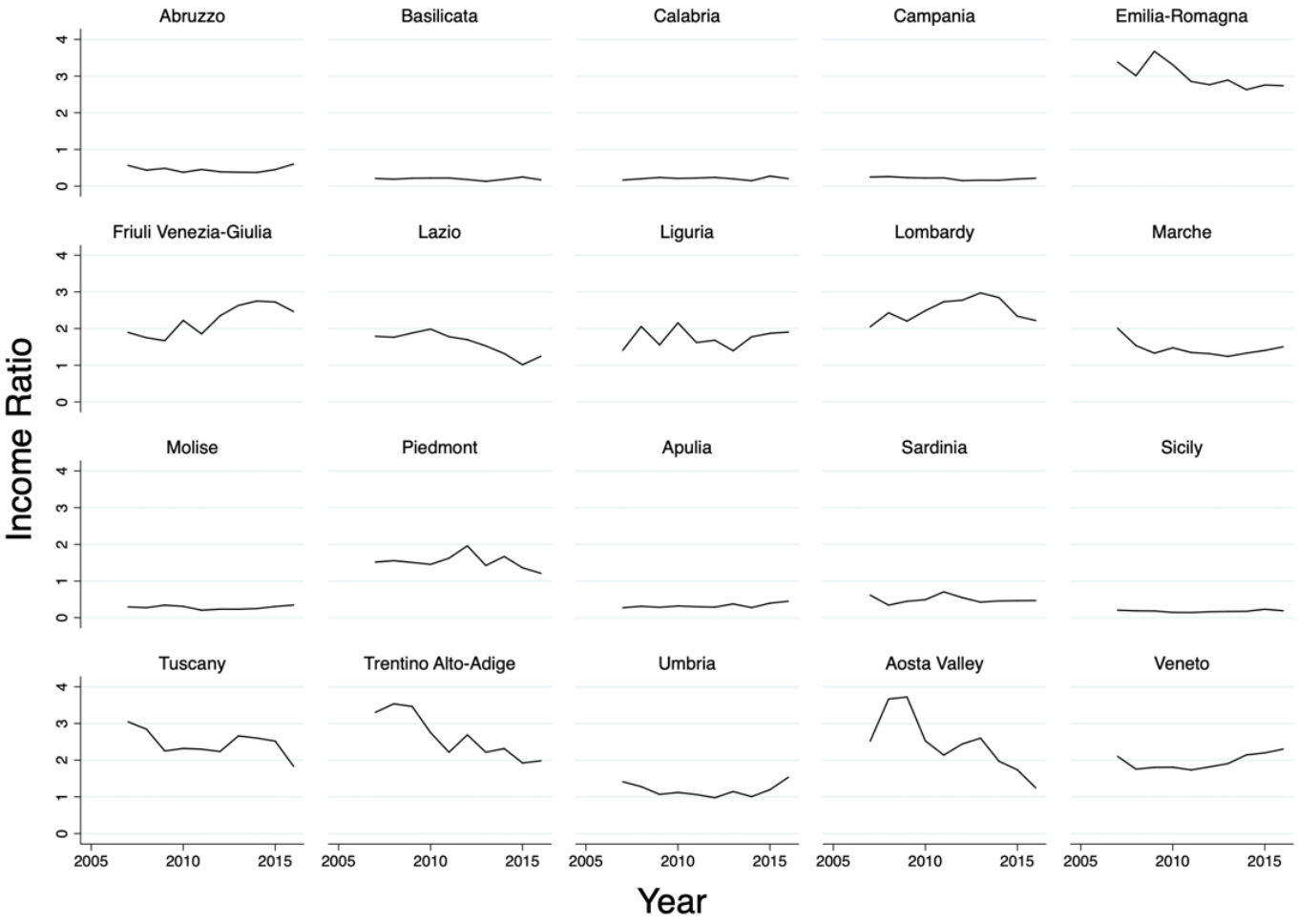

Abruzzo
Basilicata
Calabria
Campania
Emilia-Romagna
Friuli Venezia-Giulia
Lazio
Liguria
Lombardy
Marche
Molise
Piedmont
Apulia
Sardinia
Sicily
Tuscany
Trentino Alto-Adige
Umbria
Aosta Valley
Veneto
Income Ratio
0
1
2
3
4
2005
2010
2015
Year

Figure 5 Unemployment – Italian Regions

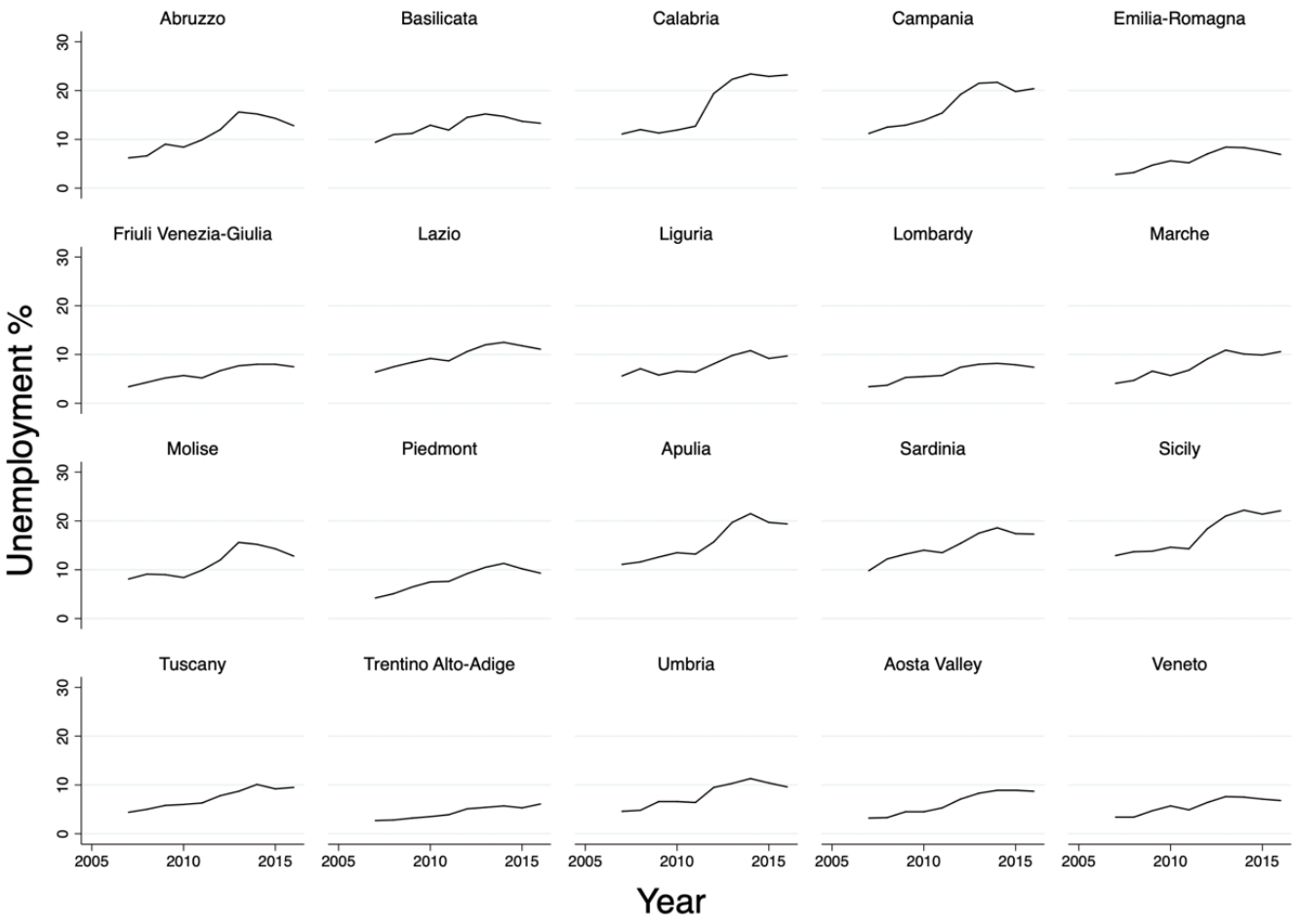


Table 1 List of Inequality Measures.

Variable	Description
Gini Index	Statistical measure of income distribution. The coefficient ranges from 0 (or 0%) to 1 (or 100%), with 0 representing perfect equality and 1 representing perfect inequality.
Relative Poverty Index	Statistical measure describing economic struggle to use goods and services in specific geographic areas, in relation to the average economic level of the same geographic areas.
Top 20% Income / Bottom 20% Income	Index describing the amount of people in the top

	20% of the income level scale in a specific geographic area, compared to the amount of people in the bottom 20% of the income level scale, in the same geographic area.

Table 2 Instruments for Income Inequality.

Instrument	Description	Correlation with Gini	Correlation with Rel. Pov.	Correlation with Income Ratio	Mean	Std. Deviation	Min.	Max.
Theatre/Cinema	people who can afford theatre/people who can afford cinema.	0.322	0.568	0.605	0.766	0.056	0.603	0.946
Internet Purchase/Internet Access	people who make online purchases/people with just internet access.	0.444	0.666	0.646	0.744	0.064	0.546	0.882

Table 3 IV Estimators

Estimator	Description
LIML	Linear combination of the OLS and 2SLS estimate (with the weights depending on the data). Absence of the 2SLS bias. Very precise under homoskedasticity. Inconsistent under heteroskedasticity and many instruments.
FULL	IV Estimator with lower bias than LIML, due to the smaller number of outliers. Very precise under homoskedasticity. Inconsistent with heteroskedasticity and many instruments.
HLIM	Updated version of LIML, developed by Hausman, Newey, Woutersen, et al.(2008), consistent under heteroskedasticity and many instrument robust versions.
HFUL	Updated version of FULL, developed by Hausman, Newey, Woutersen, et al.(2008), consistent under heteroskedasticity and many instrument robust versions.

Table 4 Effect of Inequality on Internal Mobility (OLS Model)

Independent Variables	Migration Flows	Migration Flows	Migration Flows
Lagged Migration Flows	0.967***	0.967***	0.968***
	(254.69)	(257.09)	(257.80)
Lagged Gini Origin	380.27**		
	(2.08)		
Lagged Gini Destination	705.3***		
	(2.09)		
Lagged Relative Poverty Origin		0.752	
		(0.56)	
Lagged Relative Poverty Destination		-0.81	
		(0.53)	
Lagged Income Ratio Origin			-37.62***
			(3.76)
Lagged Income Ratio Destination			-3.921
			(0.41)
Distance	-9.934*	-10.33*	-11.97**
	(-1.48)	(-1.59)	(-2.21)
Distance^2	0.02*	0.02*	0.021**
	(1.64)	(1.71)	(1.85)
Lagged Unemployed Origin	-8.04***	-8.732***	-8.176***
	(-3.08)	(-3.51)	(-3.15)

Lagged Unemployed Destination	2.531	2.902	1.145
	(116)	(1.20)	(0.52)
Lagged Population Origin	-0.000***	-0.001***	-0.001***
	(-3.69)	(-5.07)	(-5.30)
Lagged Population Destination	-0.000***	-0.001***	-0.001***
	(-2.76)	(-2.92)	(-2.95)
Lagged Education Level Origin	-14398.25**	-17141.7**	-20908.52***
	(-1.99)	(-2.29)	(-1.32)
Lagged Education Level Destination	34315.0***	32680.12***	33299.1***
	(3.55)	(3.26)	(3.33)
Lagged Crime Origin	0.159	-0.038	0.256
	(0.15)	(-0.04)	(0.25)
Lagged Crime Destination	1.044	1.434	0.323
	(0.88)	(1.26)	(0.29)
Constant	-1336.939	-905.01	-276.63
	(-0.73)	(-0.49)	(-0.16)
Region Fixed Effects	Yes	Yes	Yes
Period Fixed Effects	Yes	Yes	Yes
R-squared	0.023	0.021	0.021
Observations	3038	3038	3038
Number of regions	20	20	20

t statistics in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 5 Effect of Inequality on Internal Mobility (2SLS Model)

Independent Variables	**Migration Flows**	**Migration Flows**	**Migration Flows**
Lagged Migration Flows	0.967***	0.967***	0.968***
	(254.69)	(257.09)	(257.80)
Lagged Gini Origin	10805.9***		
	(2.94)		
Lagged Gini Destination	166.5		
	(0.17)		
Lagged Relative Poverty Origin		19.93***	
		(3.48)	
Lagged Relative Poverty Destination		-5.501	
		(1.45)	
Lagged Income Ratio Origin			-190.9***
			(4.50)
Lagged Income Ratio Destination			107.6***
			(4.08)
Distance	-1.995***	-2.099***	-2.132***
	(-12.41)	(-13.60)	(-13.59)
Distance^2	0.001***	0.001***	0.001***
	(12.29)	(13.74)	(13.77)
Lagged Unemployed Origin	-8.538	0.105	-12.76

	(-0.74)	(0.01)	(-1.68)
Lagged Unemployed Destination	-26.98***	-21.46***	-8.056
	(-5.15)	(-3.52)	(-1.33)
Lagged Population Origin	0.000***	0.000***	0.000***
	(15.08)	(29.76)	(29.08)
Lagged Population Destination	0.000***	0.000***	0.000***
	(34.31)	(35.40)	(33.53)
Lagged Education Level Origin	21016.1	28922.1**	-1478.939
	(1.84)	(2.48)	(-0.14)
Lagged Education Level Destination	61253.3***	56741.5***	70417.2***
	(5.44)	(5.05)	(6.29)
Lagged Crime Origin	14.47***	19.92***	20.30***
	(4.25)	(5.99)	(6.48)
Lagged Crime Destination	-4.000	-5.005	-5.656*
	(-1.24)	(-1.62)	(-1.82)
Constant	-3181.9***	-571.0***	-277.4*
	(-3.73)	(-5.13)	(-1.92)
Region Fixed Effects	Yes	Yes	Yes
Period Fixed Effects	Yes	Yes	Yes
R-squared	0.709	0.726	0.722
Observations	3038	3038	3038
Underidentification test	140.258	1284.983	1097.769
Chi-sq(2) P-val	0.000	0.000	0.000
Weak identification test	72.850	1108.580	808.171
Sargan statistics	0.517	0.817	0.162
Chi-sq(1) P-val	0.419	0.366	0.687
Number of regions	20	20	20

t statistics in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 6 Effect of Inequality on Internal Mobility (2SLS Model, with two time-lags)

Independent Variables	Migration Flows	Migration Flows	Migration Flows
Two Lags Migration Flows	0.967***	0.967***	0.968***
	(254.7)	(257.1)	(257.8)
Two Lags Gini Origin	6108.8**		
	(2.16)		
Two Lags Gini Destination	819.1		
	(0.86)		
Two Lags Relative Poverty Origin		16.29***	
		(3.12)	
Two Lags Relative Poverty Destination		-8.123**	
		(-2.18)	
Two Lags Income Ratio Origin			-160.2***
			(-4.09)
Two Lags Income Ratio Destination			116.0***
			(4.54)
Distance	-2.048***	-2.112***	-2.114***
	(-13.16)	(-13.73)	(-13.53)
$Distance^2$	0.001***	0.001***	0.001***
	(12.97)	(13.73)	(13.63)
Two Lags Unemployed Origin	7.941	2.809	-8.021
	(0.87)	(0.37)	(-0.99)
Two Lags Unemployed Destination	-31.28***	-18.63***	-6.100
	(-6.01)	(-3.01)	(-0.97)
Two Lags Population Origin	0.000***	0.000***	0.000***
	(19.85)	(28.71)	(28.30)
Two Lags Population Destination	0.000***	0.000***	0.000***
	(35.26)	(35.15)	(33.81)
Two Lags Education Level Origin	12982.7	19825.5*	-121.9
	(1.24)	(2.48)	(-0.02)
Two Lags Education Level Destination	52869.4***	46846.7***	62232.9***
	(5.05)	(4.43)	(5.86)
Two Lags Crime Origin	16.71***	19.41***	19.71***
	(5.05)	(6.40)	(6.46)
Two Lags Crime Destination	-5.948*	-6.703**	-6.952**
	(-1.87)	(-1.62)	(-1.82)
Constant	-2137.4***	-471.0***	-308.7**
	(-3.26)	(-4.43)	(-2.14)
Region Fixed Effects	Yes	Yes	Yes
Period Fixed Effects	Yes	Yes	Yes
R-squared	0.721	0.727	0.724
Observations	3038	3038	3038
Underidentification test	230.552	1450.932	1201.297
Chi-sq(2) P-val	0.000	0.000	0.000
Weak identification test	124.183	1385.212	990.623
Sargan statistics	0.014	0.821	0.063
Chi-sq(1) P-val	0.907	0.365	0.805

Number of regions	20	20	20

t statistics in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 7 Effect of Inequality on Internal Mobility (2SLS Model, with five time-lags)

Independent Variables	**Migration Flows**	**Migration Flows**	**Migration Flows**
Five Lags Migration Flows	0.967***	0.967***	0.968***
	(254.7)	(257.1)	(257.8)
Five Lags Gini Origin	20469.2**		
	(2.13)		
Five Lags Gini Destination	2103.4		
	(1.37)		
Five Lags Relative Poverty Origin		18.85**	
		(2.30)	
Five Lags Relative Poverty Destination		-1.850	
		(-0.39)	
Five Lags Income Ratio Origin			-234.2***
			(-2.64)
Five Lags Income Ratio Destination			87.80**
			(2.56)
Distance	-1.872***	-2.134***	-2.168***
	(-7.72)	(-10.73)	(-10.76)
Distance^2	0.001***	0.001***	0.001***
	(7.71)	(10.81)	(10.87)
Five Lags Unemployed Origin	-61.35	-6.199	-38.01
	(-1.52)	(-0.44)	(-1.61)
Five Lags Unemployed Destination	-52.57***	-39.13***	-17.71*
	(-6.08)	(-4.16)	(-1.66)
Five Lags Population Origin	0.000***	0.000***	0.000***
	(7.99)	(19.33)	(18.97)
Five Lags Population Destination	0.000***	0.000***	0.000***
	(25.12)	(26.03)	(26.31)
Five Lags Education Level Origin	18517.8	24914.3*	-3868.6
	(1.39)	(1.92)	(-0.25)
Five Lags Education Level Destination	47312.3***	44995.7***	56598.1***
	(3.57)	(3.56)	(4.36)
Five Lags Crime Origin	16.13***	22.38***	26.77***
	(2.83)	(5.69)	(6.76)
Five Lags Crime Destination	1.437	1.336	-0.471
	(0.34)	(0.34)	(-0.12)
Constant	5790.1**	-481.7***	65.72
	(-2.43)	(-3.71)	(0.19)
Region Fixed Effects	Yes	Yes	Yes
Period Fixed Effects	Yes	Yes	Yes
R-squared	0.692	0.729	0.723
Observations	3038	3038	3038
Underidentification test	35.332	649.978	292.874

Chi-sq(2) P-val	0.000	0.000	0.000
Weak identification test	17.868	491.133	171.958
Sargan statistics	0.001	0.450	0.383
Chi-sq(1) P-val	0.976	0.502	0.536
Number of regions	20	20	20

t statistics in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Second Chapter

Figure 1. Foreign Residents in Italy, 2007-2016. (*author's elaboration on ISTAT data*).

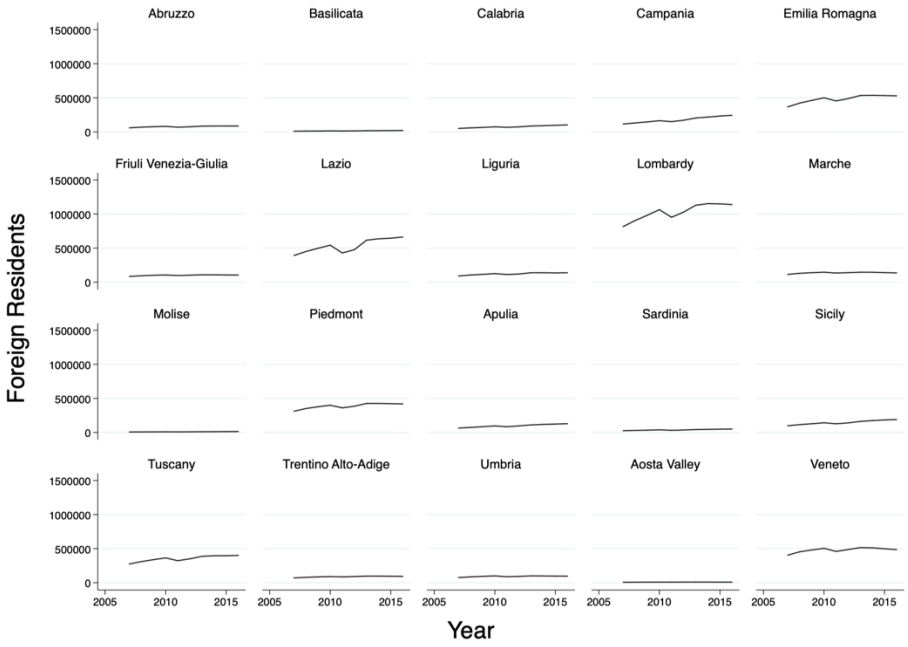


Figure 2. Inequality in Italy – Gini Index, 2007-2016. (*author's elaboration on ISTAT data*).

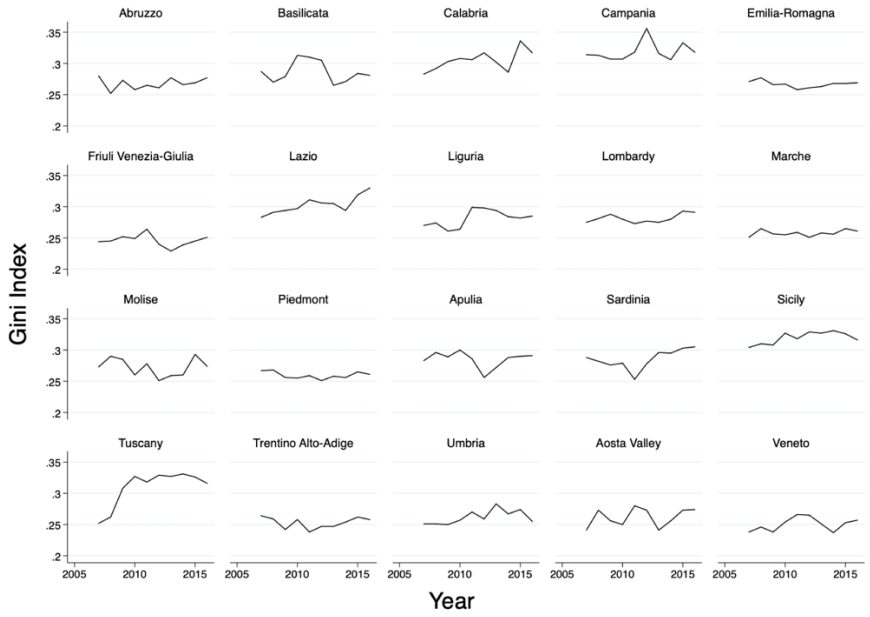


Table 1. Immigrants Groups by Macro-Region of Destinations

Immigrant Group	Total	North-West (%)	North East (%)	Center (%)	South (%)
Romania	1206938	28.9	21.5	30.8	18.8
Albania	441027	35.3	25.5	26.2	12.9
Morocco	403074	40.7	29.4	15.4	14.5
China	299823	31.7	24.1	31.2	13.1
Ukraine	239424	29.3	24.9	19.5	26.3
Philippines	168292	39.3	13.3	37.5	9.7
India	158055	34.7	24	27	14.2
Nigeria	117358	27.2	28.9	21.2	22.6
Moldova	128979	25.1	51.8	20.2	2.9
Tunisia	95071	26	27.4	16.2	30.3
Poland	94200	13.6	20.1	38.1	28.1

Table 2. List of Inequality Measures.

Variable	Description
Gini Index	Statistical measure of income distribution. The coefficient ranges from 0 (or 0%) to 1 (or 100%), with 0 representing perfect equality and 1 representing perfect inequality (within-inequality).
S60/S20	Ratio of the average income of the 40% richest to the 20% poorest.
Standardized GDP per Capita	Statistical measure describing income inequality across the twenty Italian regions (between-inequality). *Std. GDP per capita = (GDP per capita – Mean(GDP per capita) / Std. dev.(GDP per Capita)*

Table 3. SUR Within-Region Inequality Results

	Gini Index	Gini Index	Gini Index	Gini Index
Lagged Gini	0.652***	0.546***		0.549***
	(0.008)	(0.007)		(0.007)
Lagged Unemployment		0.000***	0.002***	0.000***
		(0.000)	(0.000)	(0.001)
Lagged Population		-0.000	-0.000	-0.000*
		(0.000)	(0.000)	(0.000)
Lagged Education		0.000***	0.000***	0.006***
		(0.000)	(0.000)	(0.000)
Lagged Foreign Residents				-0.001
				(0.000)
Constant	0.098***	0.122***	0.250***	0.122***
	(0.002)	(0.002)	(0.001)	(0.002)
Observations	3420	3420	3420	3420

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 4. SUR Within-Region Inequality Results (Two-Years Lag)

	Gini Index	Gini Index	Gini Index	Gini Index
Lagged Gini	0.530***	0.368***		0.371***
	(0.011)	(0.008)		(0.008)
Lagged Unemployment		0.001***	0.002***	0.001***
		(0.000)	(0.000)	(0.000)
Lagged Population		-0.000**	-0.000*	-0.000**
		(0.000)	(0.000)	(0.000)
Lagged Education		0.000***	0.000***	0.000***
		(0.000)	(0.000)	(0.000)
Lagged Foreign Residents				-0.001
				(0.001)
Constant	0.133***	0.169***	0.254***	0.168***
	(0.003)	(0.002)	(0.001)	(0.002)
Observations	3040	3040	3040	3040

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 5. SUR Within-Region Inequality Results (Three-Years Lag)

	Gini Index	Gini Index	Gini Index	Gini Index
Lagged Gini	0.477***	0.316***		0.319***
	(0.012)	(0.008)		(0.008)
Lagged Unemployment		0.001***	0.002***	0.001***
		(0.000)	(0.000)	(0.000)
Lagged Population		-0.000**	-0.000*	-0.000**
		(0.000)	(0.000)	(0.000)
Lagged Education		0.000***	0.000***	0.000***
		(0.000)	(0.000)	(0.000)
Lagged Foreign Residents				-0.002
				(0.002)
Constant	0.149***	0.184***	0.256***	0.183***
	(0.003)	(0.002)	(0.001)	(0.002)
Observations	2660	2660	2660	2660

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 6. SUR Within-Region Inequality Results (S60/S20)

	S60/S20 Index	S60/S20 Index	S60/S20 Index	S60/S20 Index
Lagged S60/S20	0.381***	0.362***		0.364***
	(0.008)	(0.008)		(0.008)
Lagged Unemployment		-0.000	-0.010	-0.000
		(0.000)	(0.000)	(0.001)
Lagged Population		-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)
Lagged Education		0.000***	0.000***	0.000***
		(0.000)	(0.000)	(0.000)
Lagged Foreign Residents				-0.011
				(0.031)
Constant	0.853***	0.878***	1.445***	0.876***
	(0.015)	(0.015)	(0.025)	(0.015)
Observations	3420	3420	3420	3420

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 7. SUR Within-Region Inequality Results (S60/S20, Two-Years Lag)

	S60/S20 Index	S60/S20 Index	S60/S20 Index	S60/S20 Index
Lagged S60/S20	0.246***	0.229***		0.230***
	(0.006)	(0.008)		(0.008)
Lagged Unemployment		-0.000	-0.007	-0.000
		(0.000)	(0.000)	(0.001)
Lagged Population		-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)
Lagged Education		0.000***	0.000***	0.000***
		(0.000)	(0.000)	(0.000)
Lagged Foreign Residents				-0.003
				(0.021)
Constant	1.028***	1.049***	1.408***	1.048***
	(0.016)	(0.016)	(0.024)	(0.016)
Observations	3040	3040	3040	3040

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 8. SUR Within-Region Inequality Results (S60/S20, Three-Years Lag)

	S60/S20 Index	S60/S20 Index	S60/S20 Index	S60/S20 Index
Lagged S60/S20	0.201***	0.187***		0.187***
	(0.009)	(0.008)		(0.008)
Lagged Unemployment		-0.000	-0.007	-0.000
		(0.000)	(0.000)	(0.001)
Lagged Population		-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)
Lagged Education		0.000***	0.000***	0.000***
		(0.000)	(0.000)	(0.000)
Lagged Foreign Residents				-0.003
				(0.021)
Constant	1.074***	1.088***	1.389***	1.087***
	(0.017)	(0.017)	(0.025)	(0.017)
Observations	2660	2660	2660	2660

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 9. SUR Between-Region Inequality Results

	Standardized GDP	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Std. GDP	0.977***	0.963***		0.963***
	(0.002)	(0.002)		(0.002)
Lagged Std. Unemp.		-0.011***	-0.779***	-0.011***
		(0.000)	(0.009)	(0.000)
Lagged Std. Population		-0.004***	-0.274***	-0.003***
		(0.001)	(0.030)	(0.001)
Lagged Std. Education		0.006***	0.438***	0.006***
		(0.001)	(0.030)	(0.001)
Lagged Standardized Foreign Residents				-0.000
				(0.000)
Constant	0.000	0.000	0.000	0.000
	(0.002)	(0.002)	(0.009)	(0.002)
Observations	3420	3420	3420	3420

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 10. SUR Between-Region Inequality Results (Two-Years Lag)

	Standardized GDP	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Std. GDP	0.955***	0.947***		0.947***
	(0.001)	(0.003)		(0.002)
Lagged Std. Unemp.		-0.007***	-0.763***	-0.008***
		(0.000)	(0.009)	(0.001)
Lagged Std. Population		-0.001	-0.274***	-0.000
		(0.002)	(0.031)	(0.002)
Lagged Std. Education		0.002	0.439***	0.001
		(0.002)	(0.031)	(0.002)
Lagged Standardized Foreign Residents				-0.001
				(0.001)
Constant	0.000	0.000	0.001	0.000
	(0.003)	(0.003)	(0.010)	(0.003)
Observations	3040	3040	3040	3040

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 11. SUR Between-Region Inequality Results (Three-Years Lag)

	Standardized GDP	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Std. GDP	0.953***	0.940***		0.940***
	(0.001)	(0.004)		(0.004)
Lagged Std. Unemp.		-0.01***	-0.764***	-0.016***
		(0.002)	(0.011)	(0.002)
Lagged Std. Population		0.001***	-0.272***	0.001***
		(0.004)	(0.032)	(0.004)
Lagged Std. Education		-0.001***	0.437***	-0.001***
		(0.004)	(0.032)	(0.004)
Lagged Std. Foreign Residents				-0.001
				(0.001)
Constant	0.001	0.001	0.001	0.001
	(0.004)	(0.003)	(0.011)	(0.003)
Observations	2660	2660	2660	2660

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 12. SUR Between-Inequality Model with Net Migration Rate (One-Year Lag)

	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Standardadized GDP	0.971***	0.951***	0.951***
	(0.003)	(0.003)	(0.003)
Lagged Std Unemployment		-0.020***	-0.020***
		(0.001)	(0.001)
Lagged Standardized Population		-0.007***	-0.007***
		(0.001)	(0.001)
Lagged Standardized Education		0.011***	0.011***
		(0.001)	(0.001)
Lagged Standardized Foreign Residents			-0.000
			(0.000)
Lagged Net Migration Rate	0.006***	0.003*	0.003*
	(0.002)	(0.002)	(0.002)
Constant	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)
Observations	3420	3420	3420

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 13. SUR Between-Inequality Model with Net Migration Rate (Two-Years Lag)

	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Standardadized GDP	0.947***	0.928***	0.929***
	(0.004)	(0.004)	(0.004)
Lagged Std Unemployment		-0.020***	-0.021***
		(0.001)	(0.001)
Lagged Standardized Population		-0.006***	-0.006***
		(0.002)	(0.002)
Lagged Standardized Education		0.010***	0.011***
		(0.002)	(0.001)
Lagged Standardized Foreign Residents			-0.001
			(0.001)
Lagged Net Migration Rate	0.010***	0.007**	0.007**
	(0.002)	(0.002)	(0.002)
Constant	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)
Observations	3040	3040	3040

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 14. SUR Between-Inequality Model with Net Migration Rate (Three-Years Lag)

	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Standardadized GDP	0.949***	0.920***	0.921***
	(0.004)	(0.005)	(0.005)
Lagged Std Unemployment		-0.038***	-0.038***
		(0.003)	(0.003)
Lagged Standardized Population		0.002	0.004
		(0.004)	(0.004)
Lagged Standardized Education		0.003	0.002
		(0.004)	(0.004)
Lagged Standardized Foreign Residents			-0.001
			(0.001)
Lagged Net Migration Rate	0.006**	-0.000	0.000
	(0.002)	(0.002)	(0.002)
Constant	0.000	0.001	0.001
	(0.004)	(0.003)	(0.003)
Observations	2660	2660	2660

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 15. SUR Within-Inequality Mixed Model

	Gini Index	Gini Index	Gini Index
Lagged Standardized GDP	-0.010***	-0.008***	-0.008***
	(0.000)	(0.000)	(0.000)
Lagged Unemployment		0.001***	0.001***
		(0.000)	(0.000)
Lagged Population		-0.000***	-0.000**
		(0.000)	(0.000)
Lagged Education		0.000***	0.000***
		(0.000)	(0.000)
Lagged Foreign Residents			-0.000***
			(0.000)
Constant	0.279***	0.267***	0.266***
	(0.000)	(0.001)	(0.001)
Observations	3420	3420	3420

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 16. SUR Within-Inequality Mixed Model (Two-Years Lag)

	Gini Index	Gini Index	Gini Index
Lagged Standardized GDP	-0.011***	-0.008***	-0.008***
	(0.000)	(0.000)	(0.000)
Lagged Unemployment		0.001***	0.001***
		(0.000)	(0.000)
Lagged Population		-0.000***	-0.000***
		(0.000)	(0.000)
Lagged Education		0.000***	0.000***
		(0.000)	(0.000)
Lagged Foreign Residents			-0.000***
			(0.000)
Constant	0.280***	0.267***	0.266***
	(0.000)	(0.001)	(0.001)
Observations	3040	3040	3040

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 17. SUR Within-Inequality Mixed Model (Three-Years Lag)

	Gini Index	Gini Index	Gini Index
Lagged Standardized GDP	-0.010***	-0.008***	-0.007***
	(0.000)	(0.000)	(0.000)
Lagged Unemployment		0.001***	0.001***
		(0.000)	(0.000)
Lagged Population		-0.000***	-0.000***
		(0.000)	(0.000)
Lagged Education		0.000***	0.000***
		(0.000)	(0.000)
Lagged Foreign Residents			-0.000***
			(0.000)
Constant	0.281***	0.267***	0.266***
	(0.000)	(0.001)	(0.001)
Observations	2660	2660	2660

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 18. SUR Between-Inequality Mixed Model

	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Gini	-16.271***	-3.890***	-3.838***
	(0.605)	(0.456)	(0.454)
Lagged Standardized Unemployment		-0.550***	-0.552***
		(0.01)	(0.01)
Lagged Standardized Population		-0.155***	-0.155***
		(0.024)	(0.024)
Lagged Standardized Education		0.251***	0.252***
		(0.025)	(0.025)
Lagged Standardized Foreign Residents			0.001
			(0.002)
Constant	4.523***	1.082***	1.067***
	(0.169)	(0.127)	(0.127)
Observations	3420	3420	3420

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 19. SUR Between-Inequality Mixed Model (Two-Years Lag)

	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Gini	-16.128***	-3.638***	-3.404***
	(0.657)	(0.497)	(0.490)
Lagged Standardized Unemployment		-0.550***	-0.568***
		(0.011)	(0.011)
Lagged Standardized Population		-0.127***	-0.130***
		(0.026)	(0.026)
Lagged Standardized Education		0.219***	0.228***
		(0.026)	(0.026)
Lagged Standardized Foreign Residents			-0.009
			(0.005)
Constant	4.463***	1.007***	0.943***
	(0.182)	(0.138)	(0.136)
Observations	3040	3040	3040

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

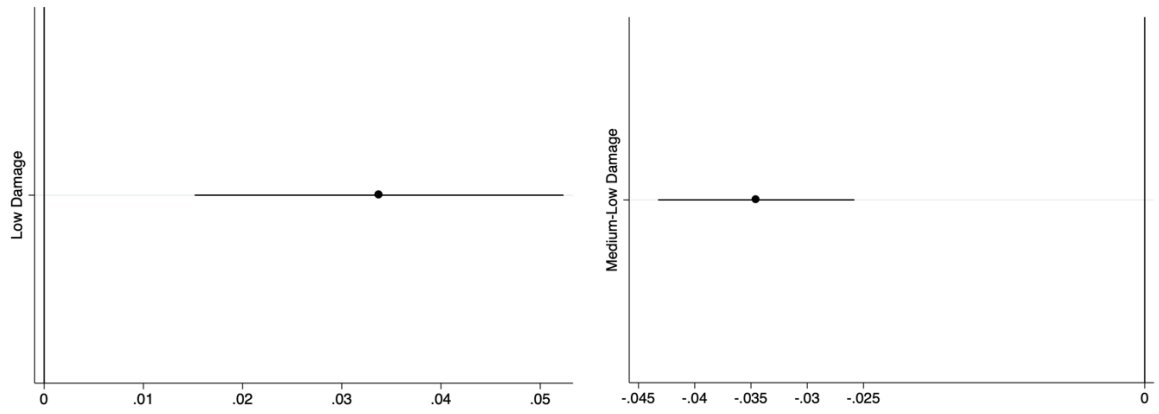
Table 20. SUR Between-Inequality Mixed Model (Three-Years Lag)

	Standardized GDP	Standardized GDP	Standardized GDP
Lagged Gini	-16.350***	-3.293***	-3.024***
	(0.702)	(0.534)	(0.526)
Lagged Standardized Unemployment		-0.565***	-0.586***
		(0.012)	(0.012)
Lagged Standardized Population		-0.071***	-0.074***
		(0.027)	(0.026)
Lagged Standardized Education		0.156***	0.165***
		(0.028)	(0.028)
Lagged Standardized Foreign Residents			-0.011**
			(0.005)
Constant	4.526***	0.912***	0.838***
	(0.195)	(0.148)	(0.146)
Observations	2660	2660	2660

Std. Errors in parentheses
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Third Chapter

Figure 1. Effects of building damages on internal mobility (No Lags)



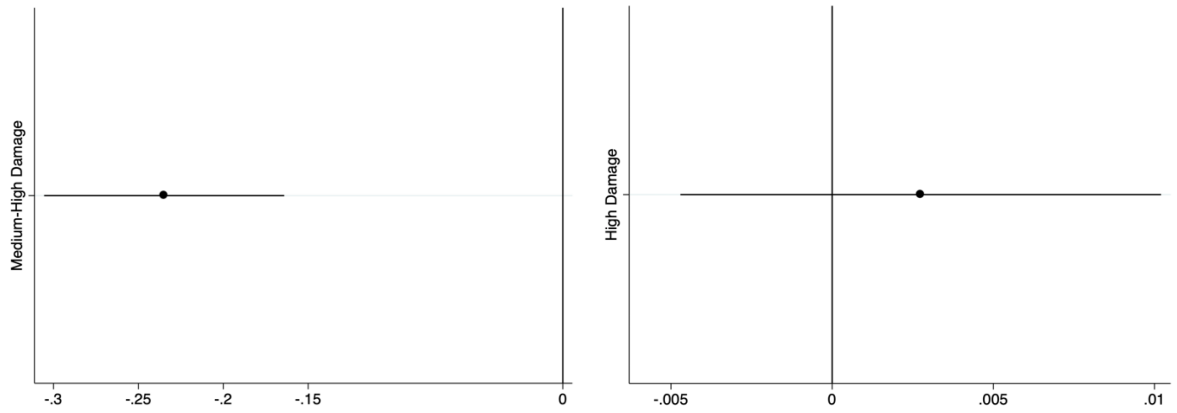


Figure 2. Effects of building damages on internal mobility (Two-Year Lags)

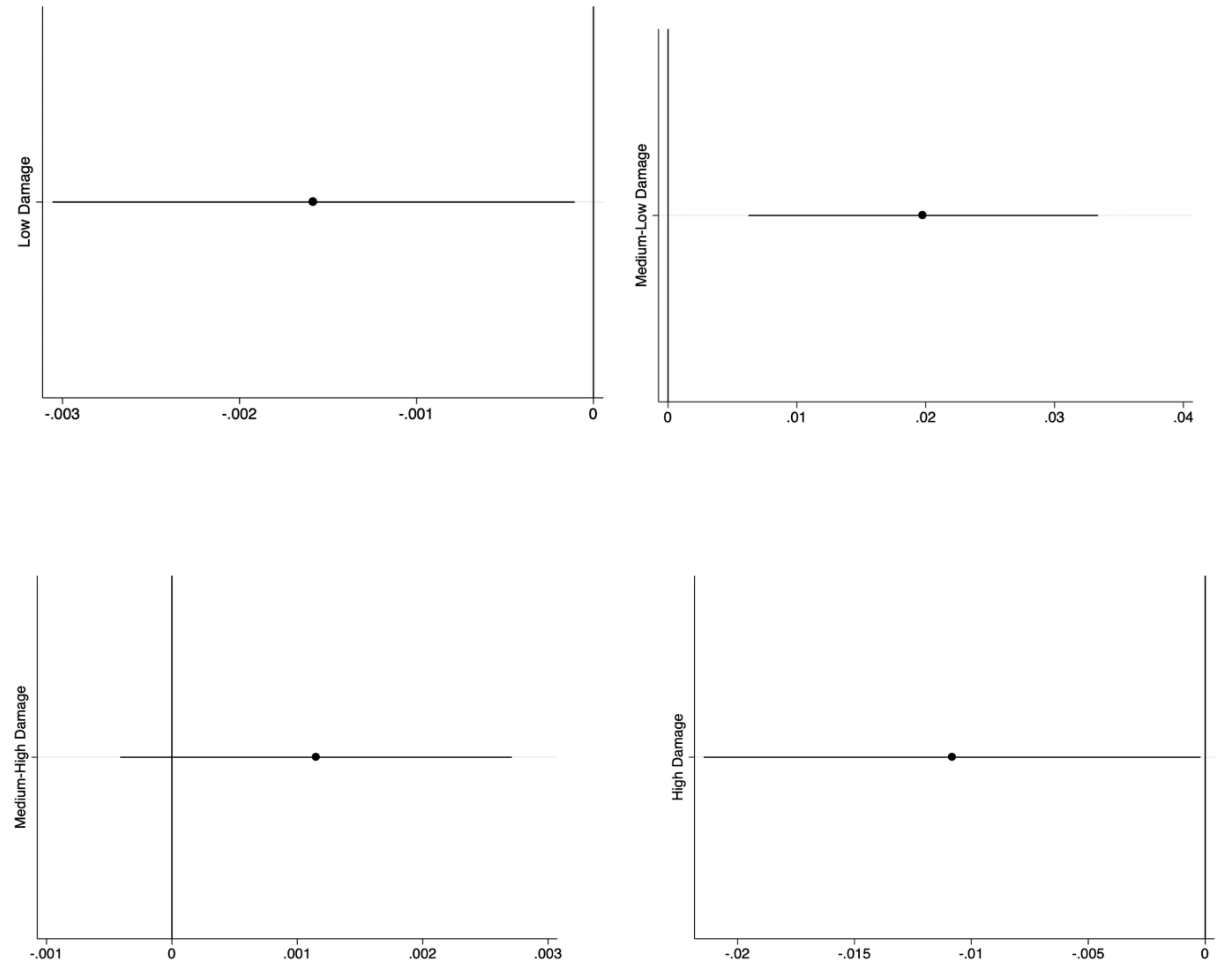


Table 1. Effect of the 2009 Earthquake and Internal Mobility at the Municipal level

	Migrations	Migrations	Migrations	Migrations
Low Building Damage	0.033			
	(3.64)			
Low-Medium Building Damage		-0.345***		
		(-7.93)		
Medium-High Building Damage			-0.234***	
			(-6.65)	
High Building Damage				0.003
				(0.74)
Residents	0.193***	0.033***	0.033***	0.020***
	(4.83)	(5.38)	(5.09)	(4.58)
Population Growth	0.359***	0.357***	0.334***	0.364***
	(5.97)	(6.29)	(8.78)	(6.02)
Age Average	18.059	9.375	10.100	16.351
	(1.05)	(0.79)	0.84)	(0.98)
Age Average^2	-0.162	-0.784	-0.0850	-0.146
	(-0.99)	(-0.68)	(-0.73)	(-0.91)
Income per Capita	0.001	0.001	0.001	0.001
	(0.48)	(0.59)	(0.64)	(0.62)
Foreign Residents	-1.379**	-1.743**	-1.755**	-1.513**
	(-2.21)	(-2.16)	(-2.15)	(-2.11)
Constant	-537.949	-348.372	-368.950	-496.681
	(-1.19)	(-1.13)	(-1.18)	(-1.13)
Observations	456	456	456	456

t-test in parenthesis
**p<0.05, **p<0.01, ***p<0.001*

Table 2. Effect of the 2009 Earthquake and Internal Mobility at the Municipal level (One-Year Lag)

	Migrations	Migrations	Migrations	Migrations
Low Building Damage	0.018			
	(1.53)			
Low-Medium Building Damage		-0.020***		
		(-6.42)		
Medium-High Building Damage			-0.134***	
			(-5.84)	
High Building Damage				0.016***
				(6.65)
Residents	-0.026***	-0.018***	-0.018***	-0.027***
	(-7.87)	(-3.69)	(-3.59)	(-7.25)
Population Growth	0.083	0.082	0.083	0.085
	(1.25)	(1.33)	(1.33)	(1.29)

Age Average	25.107	20.062	20.551	28.052
	(1.15)	(1.12)	(1.13)	(1.13)
Age Average^2	-0.226	-0.177	-0.182	-0.254
	(1.06)	(-1.02)	(-1.03)	(-1.06)
Income per Capita	0.000	0.000	0.000	0.001
	(0.25)	(0.29)	(0.32)	(0.35)
Foreign Residents	-1.724**	-1.942*	-1.955**	-1.777**
	(-2.09)	(-2.18)	(-2.19)	(-2.16)
Constant	-611.228	-499.960	-513.332	-685.092
	(-1.09)	(-1.09)	(-1.10)	(-1.08)
Observations	399	399	399	399

t-test in parenthesis
**p<0.05, **p<0.01, ***p<0.001*

Table 3. Effect of the 2009 Earthquake and Internal Mobility at the Municipal level (Two-Year Lag)

	Migrations	Migrations	Migrations	Migrations
Low Building Damage	-0.025**			
	(-1.74)			
Low-Medium Building Damage		0.028***		
		(24.27)		
Medium-High Building Damage			0.201***	
			(23.98)	
High Building Damage				-0.006***
				(-3.45)
Residents	-0.044***	-0.054***	-0.054***	-0.044***
	(-20.95)	(-34.55)	(-35.54)	(-26.25)
Population Growth	-0.063	-0.057	0.058	0.067
	(-1.24)	(-1.29)	(-1.30)	(-1.29)
Age Average	3.809	11.900	11.458	4.503
	(0.23)	(0.90)	(0.86)	0.27)
Age Average^2	-0.026	-0.102	-0.098	-0.031
	(-0.17)	(-0.79)	(-0.76)	(-0.20)
Income per Capita	0.001	0.001	0.001	0.001
	(0.86)	(0.68)	(0.61)	(0.57)
Foreign Residents	-1.266	-0.925	-0.88	-1.120
	(-1.63)	(-1.21)	(-1.15)	(-1.47)
Constant	-15.448	-200.380	-186.628	-32.859
	(-0.04)	(-0.60)	(-0.55)	(-0.08)
Observations	342	342	342	342

t-test in parenthesis
**p<0.05, **p<0.01, ***p<0.001*

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