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THE IMPACT OF ORGANIZED CRIME ON DECENT JOBS FOR YOUTH

Evidence from Italy

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Abstract

Young people face enormous difficulties in finding decent jobs both in developed and developing countries. The estimates indicate that 68 million young people globally are looking for a job; 123 million are working but living in poverty; and 270 million are not in employment, education, or training (NEET). Many young people are also underemployed, inadequately paid, and working in the shadow economy. Earlier research finds that structural problems of the labor market and the education system, individual characteristics, and crimes (such as theft or robbery) influence job opportunities for young people. However, previous studies disregard the potential consequences of *organized* crime (OC) on the quality of jobs for youth. This gap is surprising as OC is a transnational problem. It manages illicit activities producing between 2 % and 5% of the world's GDP, and 79.2% of the global population lives in high-level criminal countries. Thus, this thesis aims at quantifying the impact of the presence of OC on decent jobs for youth. I conduct a quantitative cross-sectional case study of 106 Italian provinces, using the Synthetic Index of Mafia Presence developed by the Bank of Italy and several indicators to measure the quality of jobs for people aged 15-34, 15-24, and 25-34. The results of the OLS analysis are robust to alternative measurements and control variables. The evidence demonstrates that where the mafia is more present, regular employment, average hourly wages, and labor participation are lower, while irregular employment is higher, especially among 25-34 years old.

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1. Introduction

The United Nations (UN, 2019) estimates that young people between 15- and 24-years old account for 15.5% of the global population (corresponding to 1.21 billion) and will reach 1.29 billion by 2030. Young people are an enormous resource for countries, contributing to community resilience, proposing innovative solutions, driving social progress, political change, and sustainable development (UN, 2018). However, they also face serious challenges, life-threatening risks, climate change, marginalization, unequal access to rights, education, healthcare, and decent work (UN, 2018).

The concept of *decent work* refers to opportunities for people to obtain *decent and productive work, in conditions of freedom, equity, security and human dignity* (ILO, 1999, p. 3). However, 68 million young people globally are looking for a job; 123 million are working but living in poverty; and 270 million are not in employment, education, or training (NEET). The statistics are more diverse, albeit still concerning, when analyzing context-specific trends. In Europe and Central Asia, 6 million young people are unemployed; 9 million in Latin America and the Caribbean; more than 14 million in Africa; and 35 million in Asia and the Pacific (ILO, n.d.). Nevertheless, unemployment is only one obstacle that young people face. Compared to adults, young people are more likely to be unemployed, underemployed, inactive, inadequately paid, and engaged in the informal and illegal economy[1] (UN, 2020; ILO, 2018).

For this reason, the international community developed several initiatives aimed at improving the quality of jobs for youth. For instance, the UN established the Youth Strategy to work with and for young people in the areas of peace and security, human rights, and sustainable development (UN, 2018). The Strategy should facilitate the interaction of global, regional, and country-level actors, to ensure the participation of young people in policymaking within the UN (UN, 2018). Similarly, the International Labor Organization (ILO) established the Global Initiative on Decent Jobs for Youth in 2015. The Initiative is a multi-stakeholder approach aiming at promoting employment growth and job creation with two objectives: 1) ensuring accurate measurement of youth employment outcomes; and 2) promoting youth employment through policy dialogue among its constituents (ILO, 2018). Both the UN's and the ILO's objectives are in line with the Sustainable Development Goals (SDGs) Agenda,

[1] In this thesis, I refer to *black labor (lavoro nero), illegal or criminal activities, irregular economy, and illegal economy*. To avoid confusion, I provide a definition of each term here. *Black labor* refers to "any business activity that people do not record in order to avoid paying tax on it" (Cambridge dictionary, n.d.). Firms using black labor hire workers without stipulating a contract (Lavezzi, 2014). Black labor constitutes a part of the *irregular economy*. The term *irregular economy* (also called *shadow* or *unobserved* economy) refers to the economic activities which are unreported and that monitoring techniques cannot record (Feige, 1979). Conventionally, the irregular economy does not account for *criminal or illegal activities*, such as drugs, arms, counterfeit goods trade; sexual exploitation; extortion; or similar (Feige, 1979). I refer to *illegal economy* as the activities of producing, selling, distributing, possessing, and managing goods and services that are prohibited by the law. These activities include narcotics production and trade; prostitution; smuggling of goods, drugs, tobacco, etc. (ISTAT, 2020). The illegal economy accounts for criminal activities.

specifically with Goal #1 (*No Poverty*), Goal #4 (Q*uality Education*), and Goal #8 (*Decent Work and Economic Growth*).

Achieving decent jobs for youth in accordance with the SDGs is fundamental, albeit not sufficient. On the one hand, SDGs represent a joint and harmonized effort of the international community toward common targets. The participation of all levels of society, from local, regional, and national to international is essential to achieve a sustainable future (D'Adamo et al., 2021). On the other hand, the SDGs indicators do not provide sufficient in-depth insight into the labor market, despite being a useful starting point for policymaking.

While the SDGs aim at providing youth with employment, adequate earnings, and reducing the number of NEETs, *decent work* also concerns the *status* of young people in employment, working hours regulations, and the skills mismatch (ILO, 2018). Providing decent working conditions for young people entails: 1) improving the quality and quantity of jobs for youth, reducing poverty and vulnerable employment, and supporting the transition to the formal economy; b) promoting the respect of human rights, gender equality, and international labor standards; c) ensuring the participation and engagement of young people to address their needs according to their characteristics; and d) improving the relevance and access of training and education to reduce skills mismatches (ILO, n.d.).

Research should consider contextual, cultural, and demographic features and regulatory frameworks to understand the economic and social environments which affect the working conditions of young people (ILO, 2018). Previous studies on the topic identify economic development, the education system, skills mismatch, and individual characteristics as determinants of the availability of decent jobs for young people. However, a wider range of factors than the economy influences young people's transition to the labor market. Family, peers, communities, local and national institutions, and social norms potentially determine employment opportunities for youth.

Crime can also impact the quality of jobs available to young people. While many studies focus on the consequences of general crimes (such as theft, robberies, or homicides) on unemployment and prove that scarce job opportunities increase crime rates (see among others Buonanno, 2006; van der Geest et al., 2020; Khanna et al., 2019), the role of organized crime (OC) in particular as an explanatory variable remains largely neglected (Daniele, 2009; Detotto et al., 2013). In contrast to crime in general, organized criminal groups are hierarchical and profit-driven organizations infiltrated into politics and engaging in the (ir)regular economy and illicit activities (UNODC, 2004; Abinsky, 2012). This gap is surprising, since organized crime is a serious and widespread problem in many countries, impacting society and the economy. In fact, 79.2% of the global population lives in countries with high levels of OC and mafia-type groups manage illicit activities producing between 2% and 5% of the world's GDP (UNODC; 2011; Global Initiative, 2022).

Therefore, this thesis aims to answer the question of *to what extent does the presence of organized crime impact the availability of decent jobs for youth?*. To do so, I conduct a quantitative cross-sectional

case study on Italian provinces[2]. Given the extremely high rates of NEET and youth unemployment and the pervasive presence of the mafia on the territory, Italy is the perfect scenario to assess the existence and magnitude of the phenomenon.

I contribute to the literature on youth status in the labor market in several ways. First, I consider organized crime as an explanatory factor of the availability of decent jobs. This study is one of the first to employ the Synthetic Index of Mafia Presence developed by the Bank of Italy (Mocetti and Rizzica, 2021), which is one of the most recent and valid attempts to measure the presence of the mafia. Second, in contrast to earlier research, I do not investigate the determinants of adult unemployment, but I only focus on youth. I consider three age classes (15-34; 15-24; and 25-34), to account for the different behavior toward the labor market. Thus, I add to the research by quantifying the impact of organized crime on the quality of jobs for young people. Third, previous studies analyze country or regional trends, ignoring the potential significant variation at the local level. Instead, I investigate the relationship between provinces, considering the differences within regions both in terms of quality of work and OC presence.

This thesis proceeds as follows. In Chapter 2 I propose a non-exhaustive review of the literature on decent jobs, youth unemployment, and NEET status. Earlier studies on global, EU, and Italian statistics agree that structural problems of the economy, the education system, and individual characteristics impact youth employment opportunities. Other authors find a link between youth unemployment and general crimes (such as theft or robberies), while disregard organized crime, despite its impact on the economy and productivity. In Chapter 3 I define organized crime, outline its characteristics, and present the argument of my thesis.

First, I assume that where OC is more present, youth regular employment is lower. I explain that entrepreneurs and banks do not trust investing in crime-affected areas. Thus, competition and productivity are lower, and employers are more likely to assign the fewer jobs available to adults, who have more expertise and skills. As a second consequence, in OC-affected areas the magnitude of youth labor supply will exceed the demand, and wages will be lower. Third, I expect that a higher presence of OC corresponds to lower youth participation in the regular economy. I refer to the *opportunity cost theory* to explain that illicit activities represent a more profitable and accessible alternative to legal income opportunities where OC is present. Hence, young people would have lower opportunity costs of affiliating with mafia-type groups and higher potential gains than having regular employment. Finally, I assume that where OC is more present, youth irregular employment is higher. In fact, OC often provides black labor to employers or directly manages irregular activities. Young people would rely on these *informal social networks* to quickly and easily find a job in the irregular economy.

[2] In this thesis, I refer to Italian regions and provinces. Regions correspond to NUTS 2 while provinces to NUTS 3 regions based on the EU classification.

In Chapter 4 I describe the indicators and the research design used to test these hypotheses. First, I introduce the case study and demonstrate that Italy presents unusual levels of mafia presence and lower quality of jobs, compared to the other EU countries. Second, I illustrate the Synthetic Index of Mafia Presence developed by the Bank of Italy that I use to measure the presence of the mafia at the provincial level. Third, I describe the indicators of decent jobs. Due to time and data constraints, I only focus on employment opportunities, vulnerable and irregular work, and adequate earnings. I gather the data at the provincial level from the National Institute of Statistics (ISTAT). Finally, I present the characteristics of a cross-sectional study. I also reflect on the risk of endogeneity, and potential solutions to reduce it.

In Chapter 5 I present the results of the OLS statistical analysis. Ceteris paribus, the presence of crime is significantly associated with lower regular employment, participation in the labor market and wages, and higher involvement in the irregular economy, with differences among age groups. The findings are robust to several control terms, alternative measurements of mafia presence, and the use of separate waste collection as an instrumental variable, reducing the risk of endogeneity. Although the models cannot completely exclude measurement errors, omitted variables, and reverse causality, as the lack of decent jobs and poor economic performance might induce some individuals to join OC groups, the impact of the mafia on the quality of jobs of people aged 15-34 remains significant also when controlling for the lagged dependent variables. Instead, educational attendance, the economic development of the province, and corruption levels are not statistically significant for determining decent jobs, in contrast to the evidence proposed in earlier research. Albeit these factors do not correlate with the quality of employment in the models I propose, I recognize the possibility that they could have indirect effects through other variables, not included in the analysis.

Then, in Chapter 6 I critically evaluate the results and discuss the shortcomings of the thesis. Albeit the analysis successfully quantifies the consequences of the presence of OC on the quality of jobs for people aged 15-24, 25-34 and 15-34, I recognize that the thesis suffers from several limitations, concerning the indicators used and endogeneity. Finally, I conclude by summarizing the main findings and contribution of this research and by advancing several suggestions for future studies and policymaking. In light of the evidence, I propose to future research to focus on investigating the collateral effects of the mafia specifically on younger generations, and to policymakers to consider age- and context-specific characteristics to design appropriate policy measures and to maximize the impact of programs targeting the labor market.

2. Literature Review

In 2012 the International Labor Conference of the ILO noted the unprecedented youth employment crisis and urged to re-evaluate the mainstream understanding of what youth unemployment is, its costs, and consequences on the world (ILO, 2018). The ILO developed a comprehensive definition of *decent jobs for youth*, which must include acceptable employment opportunities; adequate earnings and productive work; decent working time; combining work, family and personal life; work that should be abolished; stability and security of work; equal opportunities and treatment in employment; safe work environment; social security; and social dialogue (ILO, 2018)[3].

Having a d*ecent job* is not only difficult for young people in developed countries, who mainly experience unemployment, but especially in low- and middle-income countries, where the youth is often subject to underemployment, vulnerable employment, and working poverty (ILO, 2018)[4]. However, previous research mainly focuses on youth employment, with few exceptions covering under- and vulnerable employment and wages (ILO, 2015; Sparreboom et al, 2014; Narayan et al., 2004; Buonanno, 2006; Bianchi et al., 2022). Consistent evidence demonstrates that economic factors, the education system, structural and individual determinants impact the participation of young people in the job market. Earlier studies also address crimes (such as theft or robberies) as a determinant and a consequence of decent jobs for youth, both in Italy and in the world. Instead, the literature does not investigate the impact of *organized* crime (OC) on youth working conditions, although mafia-type organizations significantly affect economic growth and productivity.

In this Chapter, I provide a non-exhaustive overview of the research on the topic, with a particular focus on Italy. Then, in Chapter 4 I define organized crime and advance four hypotheses to explain the impact of OC on the quality of jobs for young people.

[3] Providing an in-depth description of all the criteria is beyond the scope of the thesis. For more details, see ILO, 2018.

[4] The ILO stipulates eight indicators to describe young people's conditions in the labor market: employment; unemployment; labor force; underemployment; vulnerable employment; working poverty; informal employment; and NEET. Employed people are those working for pay or their own profit. People in working poverty have wages or unpaid jobs, but their income is insufficient for them to live above the poverty threshold. Vulnerable employment entails informal work arrangements, a lack of decent working conditions, adequate social security provisions, and representation in trade unions. Underemployment involves working involuntarily with part-time or informal employment contracts, under precarious conditions, with no social protection and insurance, and low pay (ILO, 2018; ILO, 2019; Pugliese, 2009). Unemployed people are actively looking for a job but have found it yet. NEETs are young people not in education, employment or training (ILO, 2018). People outside the labor force are either a) declaring themselves willing to work, but not actively looking or immediately available, or b) not actively looking for employment nor available to work (Amendola, 2022). Students or people in education, unpaid household workers, and people discourage from seeking employment are also outside the labor force (ILO, 2018).

The Economy, the Education System and Structural Determinants

The literature demonstrates that the state of the (macro)economy challenges youth decent employment. O'Higgins (2017) analyses the conditions of youth in the labor market globally and finds that aggregate demand following the 2008 financial crisis contributes to youth unemployment. Butkus et al. (2019) study unemployment rates in 28 EU countries between 2000 and 2018 show that economic fluctuations and recessions affect young people more than adults, given the youth's limited work experience, temporary contracts, and the lack of specific skills. Alike, Görlich et al. (2013) prove that poor economic growth affects young people severely in Europe. Instead, Ayllòn et al. (2019) study youth earnings in Europe and discover that higher unemployment benefits and more stringent employment protection relate to lower wages for young people, with large variation between countries.

Analysis of economic determinants on the country level leads to analogous findings. Puertas and Marti (2022) analyze regional disparities in the achievement of the SDGs in Italy and Spain. In Italy, the municipality's socioeconomic characteristics influence the achievement of Goal #8.6. Cinquegrana et al. (2021) also find that the economic conditions of the municipalities where young people live determine NEET rates. Instead, Garcia (2011) finds that in Spain, youth unemployment is due to the incapacity of the labor market to absorb the job supply of high-skilled young people. Studying the spatial determinants of NEET rates in Spain, Italy, and the UK, Bradley et al. (2020) demonstrate that other economic reasons, such as the size of firms and type of industry, low wages, type of contracts (temporary, part-time), explain variations of NEETs between regions.

The category of NEETs (*not in education, employment, or training)* accounts for potential youth labor market entrants who are outside the labor force, considering youth not in the educational and training system, nor on the labor market, (ILO, 2018). Long-term NEET status is detrimental to society, as it negatively impacts the economy, productivity, public finances, health, and welfare spending. On the individual level, instead, being NEET may lead to isolation, uncertain and low-wage employment, criminality, higher marital instability, and difficulty in building a family (Quintano et., 2018).

Focusing exclusively on Italy, Liotti (2020) analyses data from twenty Italian regions between 2001 and 2016 and shows that the economic crisis negatively impacted youth more than adults, in line with the evidence proposed by Butkus et al. (2019). Odoardi et al. (2021) examine regional data on youth unemployment, too. In line with previous findings, the authors demonstrate that high NEET rates are due to the recession, structural problems of the labor market, scarce job opportunities, and poor contractual conditions. Analogously, Cefalo et al. (2015) prove that regions with a weak economy, ineffective local government, and lack of social capital report high NEET rates in Italy. The authors (2015) argue that the weakness of economic and productive systems as well as policy choices predict youth unemployment more than poor employability of youth and individual characteristics.

Moreover, the structural problems in the labor market, education system, and society can determine poor work conditions for young people. The ILO (2018) finds that fragmented labor markets, the absence of social welfare, and low wages in the formal economy, encourage young people to engage

in irregular labor market. In developing countries, irregular and informal jobs generate working-poverty and vulnerable employment among young people (ILO, 2015). The issue is also evident in Mediterranean countries, where regular employment, unemployment benefits, and safety nets are scarcely available. Contini (2010) demonstrates that small firms, self-employment, tax evasion, and the irregular economy are common structural impediments for young people to enter the labor market in Europe. Pastore (2018) investigates other structural problems of the Mediterranean regions and shows that the traditional disorganization of education and training systems, together with slow economic growth, impacts the passage to the labor market for young people.

A large section of research identifies education as one of the main determinants of youth decent jobs (Coenjaerts, 2009). The education system often does not provide appropriate skills for entering the labor market or having regular decent employment (Coenjaerts, 2009). The skills mismatch between education and the labor market is a problem both in developed and developing countries. On the one hand, in low-income countries, youths are often undereducated and remain in vulnerable employment and working poverty. Sparreboom et al. (2014) analyze 27 low- to upper-middle-income countries and find that tertiary education serves as a guarantee of non-vulnerable employment, while secondary education alone cannot provide prospects for decent jobs. On the other hand, in advanced economies, *skills mismatch* often means overqualification, as the job market cannot absorb the supply of high-skilled youths (Sparreboom et al., 2014). Contrastingly, Bianchi et al. (2022) find that skill-bias technological change or returns to experience cannot explain wage inequality. The authors analyze administrative data on wages for 21 high-income countries to determine the causes of lower wages for young people. They demonstrate that the wage gap between youth and adults is due to the difficulty of reaching the top of the wage distribution, especially within firms and during periods of low employment growth.

Nonetheless, as Pastore (2018) shows, the education system is a structural problem particularly evident in Mediterranean countries. The dual education and training system is deficient, impeding the school-to-work transition (Cinquegrana et al., 2021). Garcia (2011) proves that the quantity and quality of skills gained in education do not correspond to the requirements of companies, and thus prevent young people from obtaining a stable and adequately paid job in Spain. In Italy, vocational studies have a marginal role in the education system, which prevents optimal integration in the labor market Eichhorst et al., 2014). Training (unpaid) contracts have replaced youth employment, increasing employment turnover, less qualified jobs, and high school drop-out rates. Not only low-skilled but also university graduates struggle to find a job, due to the rigid education system, particularly in the tertiary stage, which is theory-focused and does not provide problem-solving skills (Eichhorst et al., 2014). In addition, Leonardi et al. (2015) prove that higher education attendance rates and slow school-to-work transition determine low employment among young people in Italy. Cinquegrana et al. (2021) also confirm that the quality of the school system is negatively correlated to the share of youth not in education or employment.

A further line of research explains decent jobs for youth with individual characteristics, historically based institutions, tradition, culture, and social capital. Bell et al. (2010) find that the economic well-being of the families, ethnicity, and education, are determinants of unemployment in the US and UK. Similarly, Amendola (2022) demonstrates that individual features (e.g. gender, educational background), family characteristics (e.g. parental education, job condition, immigrant parents), and socioeconomic factors explain the NEET status in 40 countries, together with social inequality, poverty, and education spending. In line with this strand of research, Quintano et al. (2018) argue that individual characteristics concerning gender, immigrant status, educational background, and residency in southern regions and isles influence the impact of the crisis on NEET status in Italy.

Finally, the findings by Amendola (2022) also suggest that several risk factors predict NEET status, particularly, taking a career role, seclusion at home, addiction or health problems, and involvement in criminal activities. Substantial evidence shows that crime is often a determinant of youth conditions in the labor market. Juàrez et al. (2020) analyze 32 states in Mexico and identify a correlation between high youth unemployment rates with violent crime and homicide around drug trafficking. Similarly, Narayan et al. (2004) find that in the short run, fraud, homicide, and theft impact make youth unemployment and real average weekly wage in Australia. Coronado et al. (2018) present analogous findings for employment in general, examining the effects of drug-related crimes in Mexico between 2005 and 2014. The authors (2018) show that an increase in drug-related crimes corresponds to an increase in unemployment and wages, especially for high-skilled workers. Khanna et al. (2019), instead, investigate the inverse causality and demonstrate that a decrease in formal employment corresponds to an increase in participation in organized criminal activities.

Research on Italy presents comparable conclusions. For instance, Buonanno (2006) studies the impact of unemployment and wages on different types of crime, accounting for regional disparities between provinces in the North-Center and South. The results indicate the large and positive effect of unemployment and education attainment of young people on crime rates in South Italy. Similarly, Brilli et al. (2014) find a positive link between access to education and job availability, and low crime rates. However, the authors identify a low crime-reducing effect of education in regions where the mafia is pervasively present. Mennella (2009) also investigates the relationship between the job market and the presence of OC. The study shows that where employment possibilities are scarce and young people have difficulties finding a job, organized criminal groups offer a shortcut and a safe entrance to the market.

The finding by Mennella (2009) represents an exceptional explanation of alternative facilitators of youth unemployment. Previous studies mainly focus on general crimes, disregarding the presence and potential impact of organized crime (OC) on decent jobs for youth. Although the presence of the mafia is a structural problem in many countries and regions (Calderoni, 2011; Mocetti and Rizzica, 2021; Bernardi et al., 2021), OC is not considered among the structural determinants of job availability for young people. This gap is quite surprising, as the literature widely agrees on the negative relationship

between OC and economic performance. For instance, Van Dijck (2007) analyses the effects of OC on economic development in 150 countries and finds that crime depresses economic growth. Also, Agyapong et al. (2016) investigate the relationship between OC, foreign direct investment, and economic growth in Ghana, and demonstrate that OC is a significant determinant of growth in the short-run.

The evidence is analogous for Italy. Among the numerous studies on the topic (see also Detotto et al., 2010; Detotto et al., 2013; Carboni et al., 2016; Mirenda et al., 2022; Lavezzi, 2014), the pioneering work by Peri (2004) empirically quantifies the effect of OC on regional economic success. The research shows that the presence of mafia-type groups negatively impacts economic growth and can explain the territorial variation in employment levels better than economic determinants in their models. Mocetti and Rizzica (2021) demonstrate that the mafia deteriorates the socio-economic development of Italian provinces, particularly in the South. Similarly, Daniele (2009) notes the adverse effects of the mafia on the economic and social development of Italy. Pinotti (2013; 2015) proves that the presence of the mafia lowers GDP per capita by 16%, by discouraging private investment, distorting and corrupting public procurement, and manipulating elections through electoral violence. Finally, Coniglio et al. (2010) reveal that in the South of Italy, where criminal groups largely control society and its functioning, individuals invest less in their education and migrate from those territories.

Although substantive evidence indicates that OC challenges regional development, and negatively affects economic performance, the impact of OC on decent jobs for youth remains largely ignored, except for Mennella (2009) and Juàrez et al. (2021) to some extent. Moreover, earlier studies on the conditions of youth in the labor market only focus on unemployment, while a decent job also implies adequate earnings and working hours, a safe working environment, and equality of opportunities (ILO, 2018). Alternatively, several authors (see among others Contini, 2010; Cavalli et al., 2020, 2022; Odoardi et al., 2021; Amendola, 2022) employ official statistics on NEET that do not differentiate between active and inactive youth, regular and irregular employment, nor between workers and students (Quintano et al., 2018; Lavezzi, 2014). Then, available research either compares country-level data, regional statistics, or macro-areas. Following the recommendations by Lombardo et al. (2011) and the ILO (2018), I assume that employment and youth conditions present great variance within regions, and further disaggregating the territorial units is fundamental to obtaining a realistic picture of the problem.

Thus, I aim at investigating the effect of the presence of OC on the conditions of young people in the labor market. I ask *to what extent does the presence of organized crime groups impact the availability of decent jobs for youth?* In the next chapters, I provide a theoretical explanation of the magnitude of the phenomenon, and I test the hypotheses by focusing on Italian provinces.

3. Theoretical Framework

In this Chapter, I introduce the concept and implications of organized crime (OC). OC groups (OCGs) are profit-driven, hierarchical, structured networks of people who engage in politics, legal and illegal economy, and manage the trafficking and smuggling of goods, people, drugs, weapons, as well as money laundering, extortion, and corruption. I present four hypotheses to explain the impact of OC on decent jobs for youth. As the category of *decent jobs* is vast, and the limited breadth of this thesis would not allow an adequate review of all the criteria explained in Chapter 2, I only focus here on regular and irregular employment, participation in the labor market, and adequate earnings. I assume that where OC is more present, regular employment, wages, and labor participation are lower, while irregular employment is higher.

3.1. Organized Crime

As a generally accepted definition of organized crime (OC) is not available, I present here three valid alternatives, stressing common aspects of the phenomenon. The United Nations Convention Against Transnational OC (UNODC, 2004) defines an OCG as a structure of three or more people, who work together for a period, and commit one or more serious crimes or offenses, to obtain financial and material gains. The Convention further categorizes transnational OC as groups that plan, manage or commit criminal activities in more than one state or cooperate with foreign OCGs (UNODC, 2004). However, the UNODC's definition is so broad to include different criminal groups, from mafias to gangs and drug trafficking (Calderoni et al., 2020).

Instead, the Global Initiative (2022) describes OC as groups or networks engaging in illegal activities nationally and transnationally, employing violence, corruption, or other strategies to obtain material and financial benefits (Global Initiative, 2022). OC can be of four types: mafia-style groups; criminal networks; state-embedded actors; and foreign criminal actors[5]. Abadinsky (2012), instead, categorizes eight specific attributes of OC: the absence of political goals; a hierarchical structure; exclusive membership; unique subculture; persistence over time; use of illegal violence; monopoly of illicit activities; and explicit rule and regulations. Despite the differences, these definitions stress that OCGs are profit-driven, and engage in illegal activities, as well as in the (ir)regular economy.

Organized crime manages illicit markets estimated to produce between 2% and 5% of the global GDP (UNODC, 2011). Criminal activities include trafficking and smuggling in people, drugs, illicit goods and weapons; armed robbery; counterfeiting; and money laundering; fauna and environmental

[5] Mafia-style groups have a known name, a defined leadership, territorial control, and identifiable membership. Their main source of profit is from illicit activities. Criminal networks, instead, are loose networks of people engaging in criminal activities, especially illicit trafficking of commodities, who do not retain territorial control, nor have a name or defined leadership. State-embedded groups include criminal actors are part of the state's apparatus. Finally, foreign criminals are of all the other three types, both state and non-state actors, operating outside their home country (Global Initiative, 2022).

crimes; non-renewable resource crimes (INTERPOL, 2023; Global Initiative, 2022). The most pervasive market is human trafficking, followed by illicit cannabis trade and arms trafficking (Global Initiative, 2022).

OC is also very well entrenched in the legal economy. Especially during the COVID-19 crisis, OCGs acquired control of legal companies, and medical supply chains using extortion and usury to control the production process (Marelli, 2020). For instance, falsified medical masks were seized in Spain and Italy, and the smuggling of vital equipment was stopped in Ukraine, Iran and Azerbaijan. While these activities generate profits for criminal organizations, they impose costs on the economy and society that in turn impacts people's lives. Adverse effects are security risk, kidnapping, disruption in the supply chain, decrease in local demand, diversion of public spending, and reduced (foreign direct) investment (Ashby et al., 2013). These externalities impact the largest part of the global population (79.2%), who lives in countries with high levels of OC (Global Initiative, 2022).

In terms of presence, Asia is the most OC-affected continent, followed by Africa, the Americas, Europe, and Oceania. The impact and spread of criminal markets and groups largely vary also within these areas. In the European continent, Center, Eastern, and Southern countries display high levels of OC presence (Global Initiative, 2021). In these regions, human trafficking is the most pervasive criminal market, together with the drug trade, followed by human smuggling, illegal wildlife trade, and environmental crimes. Nordic and Baltic states, instead, have peripheral illicit economies and a lower presence of OC.

In light of the characteristics and involvement in (il)legal activities, hereafter I postulate four hypotheses based on economic and social science theories.

3.2. Investments, Opportunity Costs, and Social Network Theory.

H1: The higher the presence of organized crime, the lower youth's regular employment.

The literature empirically demonstrates that the presence of OC disincentives governments to public expenditures, national and foreign investments, by creating an unfavorable business climate (see among others Daniele, 2009; Mennella, 2009; Daniele, 2010; Detotto et al., 2010; Daniele and Marani, 2011; Detotto et al., 2013; Ashby et al., 2013; Rueda et al., 2015; Mocetti et al., 2021). On the one hand, entrepreneurs perceive the areas affected by OC as lacking the necessary conditions for investing in business, and involve a higher risk of economic loss (Daniele, 2010; Casolaro et al., 2022). On the other hand, banks are less prone to give credit to legitimate firms located in OC-affected areas, and interest rates are higher for borrowers (Daniele, 2010). The regions where OC is more present, receive lower (foreign direct) investments, which in turn impacts total productivity, technological spillovers, GDP growth, operating costs, and job creation (Daniele, 2010; Detotto et al., 2013).

The limited investments in areas affected by OC impact job opportunities, which are scarcer than in areas where productivity is higher (Cefalo et al., 2015; Quintano et al., 2018). Due to the limited jobs available, employers prefer adults over young people and recent graduates, who lack extensive expertise

(Pastore, 2018; Cinquegrana et al., 2021). Thus, I expect youth employment to be lower in the territories where the mafia is more present.

H2: The higher the presence of organized crime, the lower the youth wages.

I derive H2 from H1, referring to the logic of the market wage rate in labor competition. In economic theory, the interaction between labor demand and supply determines wages. As Figure 1 shows, when the supply of labor (S) shifts on the left of the distribution (i.e. decreases), but the demand (D) stays constant, wages (W) increase. When the supply of labor increases, wages decrease (Lynham, 2018).

As explained in the literature review and in H1, the presence of OC reduces investments, competition, productivity, and job availability (Pi et al., 2019; Daniele, 2021). Where jobs are scarce, young people have fewer employment opportunities compared to adults, and there will be a large number of individuals looking for a job. In these OC-affected contexts, the supply of youth labor (S) is larger than the demand from employers (D), and the youth's wages (W) should be lower.

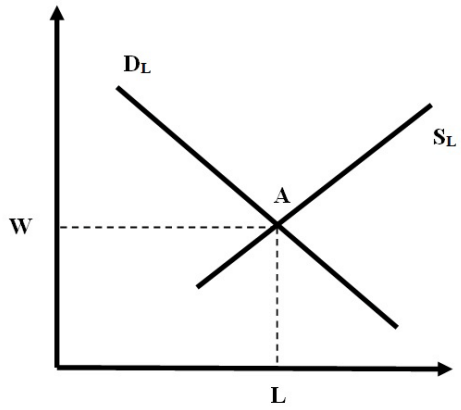

Figure 1. Labor market wage equilibrium (Kulić et al., 2018)

H3: The higher the presence of organized crime, the lower the youth labor participation.

The *opportunity costs theory* assumes that people are rational actors, who compare the expected costs and benefits of legal and illegal activities, considering the chances of being arrested against the expected short-run gains from crime (Becker, 1968; Buonanno, 2006). The presence of OC makes illicit activities outspread and accessible, and in these contexts, it offers a more profitable alternative to legal income opportunities. Thus, youths have lower opportunity costs of affiliating with mafia groups, and higher potential gains than having regular employment (Becker, 1968; Buonanno, 2006; Khanna et al., 2019).

In high crime-density contexts, illegal activities, particularly drug dealing, usury, and extortion, challenge the legal economy and market competition (Saviano, 2012). Moreover, illicit activities might be more profitable than legal income opportunities. For instance, young men between 15-34 years old earn on average 1.152€ a month with a regular contract. Instead, a mafia affiliate earns between $2,500

and $4,000 a month in the lower positions, with the possibility to increase the monthly wage between $13,000 and $38,000 a month (Saviano, 2014). More practically, a person dealing drugs for the mafia earns about 3,000€ a month (Natile, 2019). Studies on the income of drug dealers in other parts of the point to similar results, estimating a profit between $1,000 and $5,000 depending on where and how long they work (Hagedorn, 1998).

Compared to wages from the legal economy, a drug dealer for OC earns about three times more than a young person working in the regular economy, whose income is also subject to taxation. These short-run earning prospects look appealing to youth, as OC invests in youth and praises merit in contrast to unfavorable job markets (Peggio, 2017). Also, OC often grants protection against law enforcement (Brilli et al., 2014), and provides economic assistance to the families of those convicted or killed (Levitt et al., 2000; Saviano, 2014). Under these circumstances, seeking a career in the illegal economy looks attractive (White, 1989; Paoli, 2007), and young people might be more inclined to seek alternative income sources, such as the ones deriving from criminal activities (Juarez et al., 2020). Thus, I expect that where OC is more present, participation in the labor market is lower among young people, who might engage in more lucrative and easily accessible illicit activities.

H4: The higher the presence of organized crime, the higher youth irregular employment.

The ILO (2018) warns that women and young people are particularly vulnerable to and involved in informal employment. Many young people struggling to find a job in the legal economy can be attracted to the irregular market instead (INAIL, 2010). The *social network theory* assumes that informal interpersonal relations could be either positive or negative. In contrast to informal positive networks, negative ones are profit-driven, based on compromise, and could potentially consist of criminal or corrupt interactions (Mennella, 2009). The job seeker could be internal or external to the negative informal social network. In the former instance, the unemployed young person belongs to a criminal family and will find a 'cover' job or work to help the clan. Instead, the job seeker external to the network turns to OC to seek help in finding employment (Mennella, 2009).

In crime-affected contexts, OC often supplies black labor to firms and businesses or directly owns activities hiring workers irregularly (Lavezzi, 2014; OECD, 2017). OCGs are often the only entities that can provide jobs to the population, especially in companies or activities they manage (UNICRI, 2016). Thus, OCGs build informal social networks to profit from workers who turn to them to work in the irregular economy. I expect that the presence of OC increases irregular employment among youth by easing the process of finding a job and by hiring low-skilled workers (i.e. young people) (Mennella, 2009). In the next Chapter, I present the methodology and data I use to test the four hypotheses here advanced.

4. Research Design

In this Chapter, I describe the research design I employ for studying the impact of organized crime (OC) on the availability of decent jobs for young people. First, I present the case study under analysis, and demonstrate why Italy is an adequate example to study the phenomenon. Second, I present the operationalization of the explanatory and dependent variables. I review previous efforts to measure OC and evaluate the proposed indicators. Then, I introduce the Synthetic Index of Mafia Presence developed by the Bank of Italy (Mocetti and Rizzica, 2021), which is the most suitable measurement for the independent variable for the case study. Following, I review mono- and multi-dimensional indicators to measure decent jobs for youth. I argue that using employment, unemployment, participation, inactivity, and adequate earnings data is the most suitable strategy given the Italian context. Third, I describe the methodology I employ to test the hypothesis. I gather data for the dependent and independent variables at the provincial level, as both crime and labor market variables present high variability at the local level (Levitt, 2001). I conduct a cross-sectional analysis of 106 Italian provinces using the most recent data available for each indicator. Finally, I discuss the risk of endogeneity and the additional tests I perform to account for and mitigate the risk of bias in the analysis.

4.1. The Case Study: Italy[6]

I focus on Italy in this thesis as it represents an extreme case. A case is *extreme* when it displays unusual values of the explanatory or dependent variable of interest (Seawright and Gerring, 2008). In this sense, Italy presents exceptional conditions for young people in the labor market and the presence of OC.

Although the European Union (EU) is experiencing alarming rates of youth unemployment, Italy shows worrying conditions of decent jobs for youth in comparison to the EU average and other countries. In 2021, in the EU 5 million people aged 15-29 were unemployed (7.1% of the corresponding population), while 32.4 million were outside the labor force (Eurostat, 2022). Member States present great variation in unemployment and NEET rates, as well as the indicators of decent jobs. The Netherlands, Sweden, Slovenia, Denmark, and Luxemburg report the lowest NEET rates (between 6 and 8%) in 2021, while Italy, Romania, Bulgaria, Greece, and Cyprus registered the highest (between 15 (Eurostat, 2022). Previous research has identified structural problems of Mediterranean countries, in particular Italy, Spain, and Greece, as the explanation for these results (Eichhorst et al., 2014).

Although being a high-income country and contributing to 11.3% of the EU GDP in 2016 (Eurostat, 2017), Italy presents concerning rates of young people not employed or in education. In 2020 young people aged 15-34 were 12.237.879, corresponding to about 20% of the whole population (ISTAT, 2021). In the same year, 25% of all young people were NEET, against the EU average of

[6] I provide the list of provinces (NUTS3) with relative regions (NUTS 2) and geographical macro-area in Appendix 1.

15.5%. The data are more concerning as 11,1% of people aged 18-34 is considered "absolutely" poor[7] (ISTAT, 2022b). Moreover, between 2019 and 2022, Italy's performance on SDG Goal #8 worsened, particularly regarding women's work opportunities and general employment rates. Due to the Covid-19 pandemic, and the pre-existing conditions, gender, generational and territorial inequalities increased (Cavalli et al., 2022). Cavalli et al. (2020; 2022) assess the performance of one-hundred-two Italian cities on all SDGs, showing that forty-six cities have reached less than 50% of the goals, and no city has reached all the targets on decent work and economic growth.

In addition, as argued in Chapter 3.1, organized crime has become a transnational problem, a threat to security, fueling corruption, infiltrating politics, and the economy, and hindering the development of countries (UNODC, 2010). Within the EU, Italy stands out for the worrying levels of the presence of mafia-type groups. Italy is the 53rd country (out of 193) in the world, the 6th in the European continent, and the 1st in the EU for criminal presence based on the Global OC Index (Global Initiative, 2022). The EU countries that are less affected by OC are Luxemburg (placed 185th worldwide), and Finland (191st).

Organized crime in Italy is mainly in the form of mafia-type groups, as defined by the Global Initiative (2022). The legal body defines such organizations in Article 416-bis of the Criminal Code, on Mafia-type unlawful association (*Associazione a delinquere di stampo mafioso)*. Article 416-bis states that *Mafia-type unlawful association is said to exist when the* 3 or more people join together to *take advantage of the intimidating power of the association and of the resulting conditions of submission and silence to commit criminal offenses, to manage or at all events control, either directly or indirectly, economic activities, concessions, authorizations, public contracts, and services, or to obtain unlawful profits or advantages for themselves or for others, or with a view to prevent or limit the freedom to vote or to get votes for themselves or for others on the occasion of an election* (UNODC, 2015).

Furthermore, Article 416-bis explicitly applies Article 416 to *the Camorra, 'Ndrangheta and to any other associations, whatever their local titles, even foreigners, seeking to achieve objectives that correspond to those of Mafia-type unlawful association by taking advantage of the intimidating power of the association* (UNODC, 2015). Based on this definition, the following are the most powerful mafia-type groups in Italy: 'Ndrangheta (originally from Calabria), Camorra (from Campania), and Cosa Nostra (from Sicily). Other prominent organizations are Sacra Corona Unita and Società Foggiana (from Apulia), and the Spada and Casamonica (from Rome) (Global Initiative, 2022). Albanian and Nigerian mafia, and OCGs from South and Eastern Europe, China, Russia, and South America are also present in Italy, although more limitedly than the Italian mafia. However, foreign criminals sporadically collaborate and coexist with mafias (Global Initiative, 2022).

[7] The ISTAT (2022b) considers the absolute poverty threshold for an adult (18-59-year old) living alone in the periphery of a metropolitan area: in Northern Italy, 812€/ month; in Center Italy, 770€/month; in Southern Italy, 613/month€.

The presence of organized crime is a widespread issue, which benefits from globalization, faster communication, movement of finances, and international interconnectedness (UNODC, 2021). Consequently, traditional territorial OCGs have moved the supply, demand, and transit of their activities to other states as well (UNODC, 2021). Despite retaining strong control in their territory of origin, mafias have expanded their criminal activities outside southern regions (Transcrime, 2013). Mafia groups are now highly present in North-Western Italy as well, while they are located to a less extent in North-Eastern and Central regions (Transcrime, 2013). 'Ndrangheta is the most present of the Italian criminal organizations in the whole world, especially in Germany, North America, Switzerland, Belgium, Australia, Spain, and the Netherlands. Instead, Camorra works in Western Europe, while Cosa Nostra in the Americas (Savona, 2017). For this reason, the traditional mafias count many affiliates. The Ministry of Interior and Transcrime estimated that 6.700 people belong to the Camorra group; 6,000 to the 'Ndrangheta; 5,500 are Cosa Nostra affiliates; and 2,000 are with the Sacra Corona Unita (Monella et al., 2021). Intuitively, numbers can be higher, as mafias often retain widespread support from the local population and national and transnational criminal networks.

Alike other OCGs, Italian mafias are widely involved in the regular and illegal economy, nationally and transnationally. The activities they mostly manage are the supply and trafficking of illicit goods and services; practicing extortion; protection rackets to individuals and firms; sexual exploitation; (transnational) trade of drugs; counterfeit goods; arms trafficking; management of illegal waste disposal and irregular enterprises; and money laundering (Pinotti, 2015; Global Initiative, 2022).

In the regular market, the mafia infiltrates the construction and agriculture industries; public procurement; food distribution; healthcare; and renewable-energy sectors (Global Initiative, 2022). In the irregular economy, instead, it often acts as an intermediary for businesses and firms to supply black labor (Lavezzi, 2014). Black labor is widespread particularly in the agricultural industry; construction, textile, and mechanical sectors (INAIL, 2010).

Concerning illegal activities, instead, the cocaine trade is the most profitable illicit market and made the 'Ndrangheta one (or perhaps the) most powerful criminal organization in the World (Global Initiative, 2022). However, heroin and cannabis are also heavily trafficked. The clans trade narcotics with organizations in Latin America and Europe (cocaine); Afghanistan and Asia (heroin); and Europe (cannabis). Instead, arms trafficking involves Italian and Balkans' OC. Finally, the Italian mafia cooperates with Nigerian criminal networks for human trafficking (especially migrants and women) (Global Initiative, 2022). Every year, illegal activities and illicit flows generate a turnover equal to about 13 billion euros (Transcrime, 2013). For reference, 'Ndrangheta's revenues alone account for 3.5 billion euros (Transcrime, 2013), which is about the same amount that the fashion company Hugo Boss made in 2022 (Shoaib, 2023). The mafia's high profits correspond to a loss of about 16% in the GDP of the affected regions (Pinotti, 2015), which could instead contribute to the development of the territory.

Mafia groups resort to several strategies to maintain high profits, power and authority over people and (il)legal activities. They employ (the threat of) violence to maintain the monopoly of power on legal

and illegal markets in the areas they govern (Pinotti, 2015). However, in recent years the use of violence has declined, as the groups aim to maintain a low profile with law enforcement and state authorities (Global Initiative, 2022). Instead, the mafia uses intimidation, awe, and silence (the so-called *omertà*) to retain the respect and control of the communities (Neandis et al., 2017). Corruption and infiltration of OC in the public and private sectors are also major problems in the EU, distorting legitimate competition, and eroding public trust (EUROPOL, 2017). In Italy, the mafia adopts bribery, corruption, vote-buying, and collusion to infiltrate and control public procurement and politics (Global Initiative, 2021). Local politicians often make deals with *mafiosi*, who then manage to infiltrate political structures (Global Initiative, 2022).

As Chapter 3.1 and this presentation of the case study make clear, organized crime is a widespread problem that affects all countries and has serious repercussions on the economy and society. Nevertheless, due to its hidden nature, measuring the presence of OC is a challenge. In the next sections, I review earlier attempts to record both the extent of mafia-type groups and the quality of jobs for young people with a particular focus on Italy.

4.2. Measuring the Presence of organized crime: Previous Research

Measuring the presence of organized crime (OC) represents a challenge in political science research (Mocetti and Rizzica, 2021). Previous efforts either employ mono-dimensional indicators, or indexes aggregating several criminal activities. However, statistics often underestimated the extent of the phenomenon, as crimes tend to be underreported, eluding statistical inquiries (Daniele et al., 2011; Mocetti and Rizzica, 2021), making mono- and multi-dimensional measurements imprecise. Second, existing indicators often cover a limited period, not considering that the mafia is a long-lasting structural phenomenon (Calderoni, 2011; Mocetti and Rizzica, 2021; Bernardi et al., 2021). Third, data on the presence of OC are often at the regional level, neglecting relevant differences between provinces (Lombardo et al., 2011) Finally, some valid indexes are not publicly available, representing a major obstacle for scientific research. In this section, I overview several measurements of the presence of OC and analyze the validity of the indicators. Then, I present the Synthetic Index of Mafia Presence by the Bank of Italy, which I use to measure the independent variable, *presence of OC*, in the analysis.

Many studies on the presence of OC in Italy measure one type of criminal activity only. For instance, some authors study the infiltration of the mafia within local governments (Coniglio et al., 2010; Di Cataldo and Mastrorocco, 2022; Censis, 2009). They employ data on the dissolution of municipal councils upon evidence of collusion between elected officials and OCGs. Other scholars, instead, use the number of (mafia) homicides in Italian regions (Pinotti, 2015; Centorrino and Ofria 2008). However, such measurements present several shortcomings.

First, measurements focusing on a single indicator may overlook the multidimensionality and complexity of mafia groups, which can be present in a variety of ways simultaneously (Dugato et al., 2020). Second, the dissolution of municipal governments only occurs when the legal inquiry against

the indicted is concluded. The application of the law might be imperfect, and other municipalities may be infiltrated but not detected (Di Cataldo and Mastrorocco, 2022). Third, infiltration in local councils represents an extreme case of mafia presence and disregards the instances where OC engages in criminal activities in the territory, but it is not manipulating decision-making. Fourth, although the number of homicides is highly related to the intensity of the presence of OC (Pinotti, 2015), the mafia does not always commit homicides, as it often avoids raising the attention of justice (Global Initiative, 2022), but rather use the threat of violence (Neandis et al., 2017). Therefore, mono-dimensional measurements can only partially account for the presence of OC.

To compensate for the shortcomings of single measurements, other researchers construct indexes of mafia presence, aggregating different criminal activities. Most indexes cover the following crimes simultaneously: number of municipalities dissolved due to mafia infiltration (Censis, 2009; Calderoni, 2011; Dugato et al., 2020); bomb or fire attacks (Censis, 2009; ISTAT, 2010; Daniele and Marani, 2011; Neanidis et al., 2017; Dugato et al., 2020); mafia murders (Censis, 2009; Mennella, 2009; ISTAT, 2010; Calderoni, 2011; Neanidis et al., 2017; Dugato et al., 2020); extortion (Censis, 2009; Mennella, 2009; Daniele and Marani, 2011; Neanidis et al., 2017; Dugato et al., 2020); mafia-type association (Censis, 2009; Mennella, 2009; Calderoni, 2011; Neanidis et al., 2017; Dugato et al., 2020); money laundering (Censis, 2009; Dugato et al., 2020); arson (Censis, 2009; Mennella, 2009; ISTAT, 2010; Daniele and Marani, 2011; Dugato et al., 2020); smuggling of goods (Censis, 2009; Dugato et al., 2020); drug production, trafficking and dealing (Censis, 2009; Dugato et al, 2020); usury (Censis, 2009; Dugato et al., 2020); criminal association (Mennella, 2009; Daniele and Marani, 2011; Neanidis et al., 2017; Dugato et al., 2020); assets confiscated to the mafia (Calderoni, 2011; Dugato et al., 2020); Serious robberies (ISTAT, 2010); mafia groups; kidnapping for ransom; and prostitution (Dugato et a., 2020).

Despite covering a variety of criminal activities in which the mafia is (in)directly involved, multi-dimension indexes also present several issues. First, the indicators often cover a limited period (see Table 1 for more details), and do not consider that the presence of OC is a persistent and continuous phenomenon, which may evolve over time (Calderoni, 2011; Mocetti and Rizzica, 2021; Bernardi et al., 2021). Second, previous attempts consider regional data only. Italian regions are vast areas and often comprise different socio-economic and criminal contexts, which become evident only when disaggregating the data by provinces (Lombaro et al., 2011; Calderoni, 2011; Dugato et al., 2020). Third, such crimes are often underreported (Daniele et al., 2011), and not always imputable to the mafia (Calderoni, 2011). Finally, some data are not disclosed and accessible (Calderoni, 2011; Dugato et al., 2020), representing an obstacle to research, although the indexes demonstrate internal and content validity.

Table 1. Measurement of the presence of organized crime in previous research

Research	Sample	Time frame	Indicator used for measurement of the presence of mafia
Centorrino and Ofria (2008)	Italian regions	1983-2005	Homicides
Censis (2009)	Italian regions	2004-2007	(i) number of municipalities directly or contiguous to other local councils infiltrated by mafia groups (ii) bomb or fire attacks, (iii) mafia murders, (iv) extortion, (v) usury, (vi) mafia-type association, (vii) money laundering, (viii) arson, (ix) smuggling of goods, (x) drug production, trafficking, and dealing
Mennella (2009)	Italian provinces	2004	(i) Criminal association, (ii) mafia-type association, (iii) massacre, (iv) criminal attacks, (v) mafia murders, (vi) extortions, (vii) arson, (viii) stolen goods, (ix) usury, (x) prostitution
Coniglio et al. (2010)	Italian regions	1971-2001	Number of municipalities dissolved due to mafia infiltration
ISTAT (2010)	Italian regions	1995-2006	(i) mafia murders, (ii) bomb or fire attacks, (iii) arsons, (iv) serious robberies
Daniele and Marani (2011)	Italian provinces	2002-2006	(i) Extortion, (ii) bomb attacks, (iii) arson and (iv) crimes of criminal association.
Calderoni (2011)	Italian provinces	1983-2009	(i) Number of mafia murders, (ii) Number of mafia-type association, (iii) Number of councils dissolved due to mafia infiltration, (iv) total assets confiscated from OC
Pinotti (2015)	Italian regions	1983-2007	Homicides
Neanidis et al. (2017)	Italian regions	1983-2009	(i) Criminal association, (ii) Mafia criminal association, (iii) homicides by the Mafia, (iv) extortion, and (v) bomb attacks.
Dugato et al. (2020)	Italian municipalities	2004-2015	(i) Mafia murders, (ii) Mafia association, (iii) Mafia groups, (iv) Confiscated assets, (v) Dissolution of city councils or PA; Alternative indicators: (i) Usury; (ii) Kidnapping for ransom, (iii) Extortion, (iv) Arson, (v) Damage followed by arson, (vi) Bomb or fire attacks, (vii) Criminal associations, (viii) Money laundering, (ix) Smuggling of goods, (x) Associations for drug trafficking, (xi) Associations for drug dealing, (xii) prostitution.
Di Cataldo and Mastrorocco (2022)	Italian municipalities	1998-2006	Number of municipalities dissolved due to mafia infiltration

4.3. The Synthetic Index of Mafia Presence

Considering the limits of alternative available indicators, I employ the Synthetic Index of Mafia Presence compiled by the Bank of Italy (Mocetti and Rizzica, 2021) to measure the presence of OC. The Index covers a series of crimes registered at the provincial level for the years 1991-2019, categorized into four domains: 1) objective indicators; 2) power syndicate crimes; 3) enterprise syndicate crimes; and 4) business subjective indicators.

The first category, *objective indicators*, includes the following crimes: mafia-type association; mafia murders; dissolution of city councils infiltrated by the mafia; and assets confiscated from OC (Mocetti and Rizzica, 2021). Despite accounting for crimes unequivocally credited to mafia groups, the authors recognize that the objective indicators present three main issues. First, these crimes have low frequency and thus could bias the measurement. Second, objective crimes could underestimate the phenomenon due to the difficulty of correctly attributing to the mafia the responsibility for all similar offenses. Third, these crimes are often subject to underreporting as local communities might be cautious to report to authorities (Mocetti and Rizzica, 2021).

To compensate for these shortcomings, the Synthetic Index also measures the offenses often attributed to OCGs. The category *power syndicate crimes* accounts for homicides; damages followed by arson; bombs; and extorsion. *Enterprise syndicate crime*, instead, includes the illegal activities which are often (but not always) managed by the mafia, i.e. prostitution; narcotics production and trafficking; smuggling; and money laundering. Finally, the Bank of Italy surveyed a sample of 3.500 firms and businesses to gather data for the category *business subjective indicators.* The indicator measures whether a firm had been subject to extortion or threat; financed through unofficial funds; or had dealt with *unusual* offers. Although based on the subjective perception of interviewed businesses, the indicators are relevant to analyze public and private investment trends and the economic behavior of firms (Mocetti and Rizzica, 2021).

Compared to alternative indicators, I consider the Synthetic Index of Mafia Presence the most comprehensive, valid, available, and detailed option to measure the presence of the mafia for several reasons. First, the indicators are available at the provincial level, allowing a disaggregate analysis of the phenomenon, to investigate potential variations within regions. Second, it covers a long period, considering that the mafia presence is a structural problem that changes slowly over time (Calderoni, 2011; Mocetti and Rizzica, 2021; Bernardi et al., 2021). Third, Mocetti and Rizzica (2021) gather data from multiple sources, with direct and indirect measurements, including first-hand research in local businesses. Fourth, it possesses content validity, i.e. it reflects all the features of the conceptualization of mafia groups proposed in Chapter 3.1. Finally, in contrast to previous measurements, the Synthetic Index of Mafia Presence covers a wider range of crimes, directly or indirectly attributable to the mafia, categorized into four groups. The data is available for the overall Synthetic Index as well as for each of the four components, allowing to personalize the analysis according to the individual needs of the research.

Despite being a more complete and detailed measurement, the Synthetic Index of Mafia Presence contains one major shortcoming, common among the indicators of OC. Due to the complexity of the phenomenon, and to the tendency of underreporting, the data provided are not absolutely objective or reliable. Although I acknowledge this pitfall which may concern especially the power and enterprise syndicate crimes and the business subjective indicators, I still retain that the Synthetic Index is the most precise and comprehensive measure of the presence of the mafia in the Italian context vis-à-vis the other proposed in Section 4.2. Given the focus of this thesis, I use the Synthetic Index of Mafia Presence as the main indicator for measuring the independent variable, and I repeat the analysis with the single components in Appendixes 10, 11 and 12.

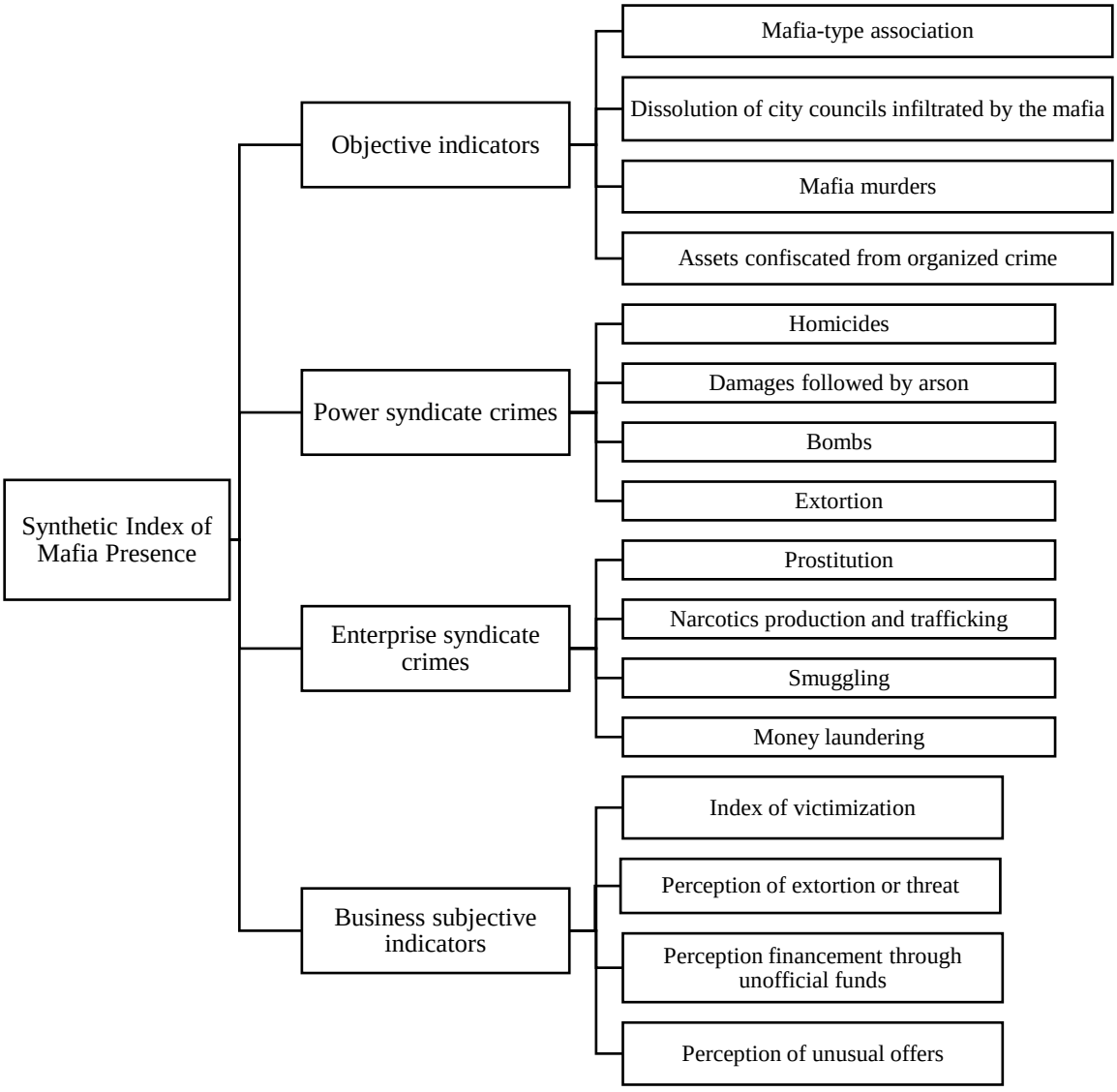

Figure 2. Composition of the Synthetic Index of Mafia Presence

4.4. Measuring the Quality of Jobs for Youth: Previous Research

As mentioned in Chapter 2, previous research addresses decent jobs for youth with different indicators, either referring to the category of NEETs or youth unemployment in general. Although statistics on (un)employment are easily accessible, they cannot account for vulnerable and irregular working conditions. Instead, the NEET label carries three major shortcomings. First, its one-size-fits-all definition is inappropriate to understand the country-specific trends and features of employment. Second, the concept of NEET does not differentiate between subgroups and contextual characteristics. Third, the NEET indicator refers to *youth* as the age group 15-24, although the definition of *youth* depends on the context. Finally, data on NEETs are only available at the national and regional levels, preventing more disaggregated analysis within territorial units. In this section, I review the concept of NEET and alternative measurements of decent jobs. Hence, I introduce the indicators I employ to measure the dependent variable, *decent jobs for youth.*

Earlier studies use (un)employment as an indicator of youth labor participation. However, (un)employment rates cannot capture the extent of vulnerable, underpaid and irregular work. On the one hand, it is reasonable to assume that among those declaring to be unemployed or inactive in labor questionnaires, some are part of the black labor or earn money from criminal activities (Quintano et al., 2018). On the other hand, irregular employment is potentially disadvantageous for young people for several motives. First, black labor can be characterized by unsafe and unhealthy working conditions, and lack of access to information, markets, finance, training, and technology. Second, labor legislation and social protection do not safeguard irregular workers' rights (ILO, 2019). Third, minors often work in the irregular economy (De Francesco, 2019). Fourth, irregular working agreements often entail low wages and excessively long working hours, turning into exploitation (Pugliese, 2009). Finally, workers in black labor do not pay taxes on their wages, which has consequences on the individual retirement pension and overall social welfare (De Francesco, 2009).

Instead, a large section of previous research investigates the conditions of youth in the job market employing the NEET indicator (see among others Sergi et al., 2018; Quintano et al, 2018; Contini et al., 2019; De Luca et al., 2019; Bradley et al., 2020; Odoardi et al., 2021; Cinquegrana et al., 2021; Amendola, 2022; Ungaro et al., 2022; Ministero per le Politiche Giovanili, 2022). The acronym NEET stands for people who are *not in education, employment, or training* for a given period (Amendola, 2022). Given its definition, the NEET indicator can comprehensively report the magnitude of young people not participating in the labor market or schooling, as well as early leavers and young people struggling in the school-to-work transition. Although international organizations' surveys – such as the EU Labor Force Survey (Amendola, 2022a) – use the term NEET to study the integration of young people in the labor market (Sergi et al., 2018), the indicator presents several issues.

First, the NEET category does not distinguish between *unemployed* and *inactive* youths (Quintano et al., 2018), nor accounts for precarious working conditions. Inactive young people have different motivations and needs for not working or searching for a job. Young mothers in charge of

their children, disabled or sick people, volunteers, housekeepers, and youths taking a gap year fall within this category (Amendola, 2022; Bradley et al., 2020). The NEET status does not record the precarious working conditions of young people with irregular contracts, part-time and fixed terms, underpaid jobs, ignores social inequalities and disregards context-specific circumstances (Cefalo et al., 2015; Sergi et al., 2018). Differentiating between NEET subgroups is fundamental to account for trends and patterns among young people based on their characteristics, experiences, and conditions.

The second issue with the NEET indicator concerns the *age* of youth. International statistics, as well as the SDG #8.6 indicator, refer to young people between 15 and 24 years of age (UN, n.d; Liotti 2020). The Eurostat (n.d.) and a section of the literature (Sergi et al., 2018; Cavalli et al., 2022; Odoardi et al., 2021), instead, define NEETs as those aged 15 to 29. Alternative understandings consider the 15-34 or 15-24 age group (Amendola, 2022; Buonanno, 2006), and further separate the teenage group (aged 16-19) from older youths (aged 20-24), as the two categories exhibit different behavior towards the labor market and the education system (Bradley et al., 2020). Finally, the Italian Institute for Statistics (ISTAT) gathers data on teenagers and young people aged 15 to 34 (ISTAT, n.d.). However, the age group to be considered depends on the country-specific settings.

I argue that the 15-24 age class is too narrow and does not properly fit the Italian context. First, only a limited number of teenagers are part of the labor force, as they are still in education and training (Sergi et al., 2018). Instead, young people aged 20 to 24 have just completed secondary education or are attending university. As for teenagers, within this group the portion of youth having stable employment is limited (Eichhorst et al., 2014), as Italian university students graduate with a bachelor at 27-year-old, and eventually find a stable job at the age of 32 (Pastore, 2018).

Finally, official data on NEETs are not available for provinces, but only at the regional and national levels. Therefore, the NEET indicator is not the optimum measurement for analyzing the job conditions of youth with more detailed disaggregated statistics. Given the topic at hand, I ultimately consider indicators of employment, unemployment, average earnings and participation at the provincial level as the most suitable measurements of decent jobs for youth.

4.5. Decent Jobs for Youth

In light of the shortcomings of the NEET concept and unemployment statistics, I argue that the youth in the labor market in Italy shows specific features that cannot be depicted by the concept of NEET, in terms of age group, employment opportunities, and conditions. Acknowledging the limits of the NEET label, and the characteristics of youth participation in the economy, I measure the availability of decent jobs for youth by applying the official indicators proposed by the Decent Jobs for Youth Initiative and previous research. In Table 2, I summarize the indicators and refer to academic research employing the same measurements.

Following the Guide on Measuring Decent Jobs for Youth published by the International Labor Organization (2018) I measure decent jobs as employment rate; adequate earnings; and labor force

participation rate. The youth employment rate is derived by dividing the number of employed young people by the number of young people in the same age group. Adequate earnings, instead, is the mean nominal hourly wage in local currency (ILO, 1982, para. 9). Finally, the labor force participation rate is the proportion of a country's population in the working age that engages actively in the labor market, either by actively looking for a job or working, relative to the country's total working-age population (ILO, 2016).

Considering the issue with the categorization of *youth* in the NEET indicator, I include people between 15 and 34 years of age in the sample, to have a more realistic picture of the difficulties of youth in the labor market and the long transition from education to work in Italy (Quintano et al., 2018). Furthermore, I disaggregate the sample of youth by age group, measuring each indicator for 15-34, 15-24, and 25-34 years old (where data availability allows). In doing so, I follow the ILO's recommendation to disaggregate the data by age, and the previous work by Baldissera and Cornali (2020) and Caroleo and Mazzotta (1999), to account for the different behavior of every age class in the labor market (ILO, 2018, p. 6).

I retrieved the data for all three indicators at the provincial level from ISTAT for the latest year available. I use *employment rates* to test Hypothesis 1 (on regular employment). I employ official statistics on employment rates to measure employment for three age groups (15-34; 15-24; 25-34) for the year 2021. Second, I use *adequate earnings* to test Hypothesis 2 (on wages) measured in mean hourly wage for the 15-29 age class for the year 2020. Due to data availability, I could not choose a later year or an additional age range. For the sake of variables comparability, I decided not to use the alternative age groups reported by ISTAT (30-49 or 50+ years old). Third, I measure the indicator *participation rate* to test Hypothesis 3 (on labor participation) with nonparticipation rates for three age groups (15-34; 15-24; 25-34) for the year 2020. The ISTAT statistics on non-participation rates include a) the share of unemployed people and b) the potential workforce not seeking a job but being available to work. Finally, I use the indicator *unemployment* to test Hypothesis 4 (on irregular employment). I gather data for unemployment rates (i.e. the share of people not working but actively seeking a job and available to work immediately) in 2021 to measure *black labor* for three age groups (15-34; 15-24; 25-34) for the year 2021.

While the rationale for using employment rates is straightforward, I believe that the choice of using nonparticipation and unemployment rates, and average earnings requires a more detailed explanation. First, *non-participation rates* is a more comprehensive indicator of unemployment, as it accounts for the so-called *available inactive people*, i.e. youth available to work but not actively seeking a job or engaging in the labor market (Palombi et al., 2022). Including people available but inactive can provide a more complete picture of the phenomenon under study, as people engaging in the illegal or irregular economy might declare themselves unemployed or inactive (Siniscalchi, 2002; Lisi et al., 2010; Quintano et al., 2018). For instance, in Italy about 45% of unemployed workers and 10% of

inactive people were working irregularly or in illegal activities in 2002, and percentages could be higher for youths (Boeri et al., 2002).

Second, I aim at measuring the impact of the mafia on young people working irregularly. The ISTAT and other official statistics on the shadow economy only cover irregular employment at the regional or national level and do not disaggregate the data by age. As other indicators are unavailable, I believe unemployment is the best proxy variable of black labor among young people. Although I recognize that the indicator is not the most precise measure of the magnitude of the irregular economy, I follow the findings of previous studies which demonstrate that the higher the unemployment rate is, the more people engage in the shadow economy (see among others, Schneider, 2012; Boeri et al., 2002; Dell'Anno and Solomon, 2008; Mauleòn and Sardà, 2016; Huynh et al., 2019).

Finally, using data on average wages cannot depict the precariousness of young people in the job market. Looking at median data might be more informative and realistic when the population is not symmetrical (Wilson, 2015), as mean income statistics tend to be overestimated. In fact, the median income of young people was 9.600€ in 2015 (15.354€ in the EU) (ISTAT, 2015; Eurostat, 2023a), while the mean income was 11.916€ (INPS, 2016). Nevertheless, I decided to follow the ILO indications and the previous literature (see Table 1) and use the average hourly wage.

Acknowledging the limits of the indicators selected, and the difficulties of comprehensively measuring decent jobs for youth and the precariousness of young people in the labor market, I argue that the variables I use can - at least partially – draw interesting insights into the phenomenon under analysis.

Table 2. Description of the indicators used in this thesis to measure decent jobs for youth, with reference to previous research

Indicator	Source	Description	Previous research
Employment rate (%)	ISTAT	Age group(s) under study: 15-34; 15-24; 25-34. Year: 2021. Unit of measure: % of people. Territorial disaggregation: provinces. The indicator measures the percentage of employed people in relation in relation to the corresponding total population of the age group. Employed people are those who (during the reference week): a) worked for at least one hour for pay or profit; b) worked for at least one hour as contributing family workers, even if unpaid; c) were temporarily absent from work (for instance due to holidays or sick leave); d) Self-employed; and e) Contributing unpaid family workers (if the total duration of the absence period is 3 months or less). (ISTAT, 2020, p. 6).	Peri, 2004; Mocetti and Rizzica, 2021; Boeri et al., 2002; Mennella, 2009; Colin et al., 2017; Odoardi et al., 2021; White, 1989; European Commission, 2019; Barone et al., 2015; Caroleo et al., 1999.
Nonparticipation rate (%)	ISTAT	Age group(s) under study: 15-34; 15-24; 25-34. Year: 2020. Unit of measure: % of people. Territorial disaggregation: provinces. The indicator measures the percentage of people who are a) unemployed; AND b) the potential work force that do not seek a job but is available to work (i.e. available inactive) in relation to the total labor force and the total available inactive people belonging to the same age group (ISTAT, n.d.).	ILO, 2018 p. 71; Caroleo et al., 1999; Palombi et al., 2022; Cicciomessere et al., 2012; Ammermüller et al., 2009; Cooray et al., 2018; De Luca et al., 2019.

Table 2. (Continued)

Adequate earnings (average wage)	ISTAT	Age group(s) under study: 15-29. Year: 2020. Unit of measure: Euros. Territorial disaggregation: provinces. The indicator measures the average hourly income for people employed in the private sector for the corresponding age group.	ILO 2018, p. 71; Daniele, 2021; SDGs 8.5.1; Boeri et al., 2002; White, 1989; European Commission, 2019; Lavagnini et el., 2015; Ammermüller et al., 2009; Huyunh et al., 2019; Pi et al., 2020.
Unemployment rate (%)	ISTAT	Age group(s) under study: 15-34; 15-24; 25-34. Year: 2021. Measure: % of people. Territorial disaggregation: provinces. The indicator measures the percentage of unemployed people in relation to the corresponding total labor force in the same age group. Unemployed people are those who: a) are actively seeking a job but not currently working; b) already found a job starting within three months from the reference week but are available to work immediately (ISTAT, 2020, p. 6).	Mennella, 2009; Boeri et al., 2002; Odoardi et al., 2021; SDGs 8.3.1; Giammatteo et al., 2021; White, 1989; Coniglio et al., 2010; European Commission, 2019; Zizza, 2002; Cefalo et al., 2015; Amendola et al., 2022; De Luca et al., 2019; Liotti, 2020; Bradley et al., 2020; Sergi et al., 2020; Ammermüller et al., 2009; Peri, 2004.

4.6. Methodology and Data

To investigate to what extent the presence of the mafia impacts the availability of decent jobs for youth, I conduct a quantitative cross-sectional case study on Italy. I gathered data on 106 provinces (out of 107 provinces) for the independent and dependent variables. Hereafter, I describe the main explanatory and dependent variables. I report the descriptive statistics in Table 3. Then, I introduce the instrument, control, and alternative explanatory variables which I employ for the robustness checks. I include the description of the control and alternative data in Appendix 2.

I conduct a cross-sectional case study, replicating the method of several authors, who study the relationship between (organized) crime and (un)employment (Peri, 2004; Mocetti and Rizzica, 2021; Juàrez et al, 2022; Mennella, 2009; Rosas, 2013; Boeri et al., 2002). A case study is defined as *an intensive study of a single unit for the purpose of understanding a larger class of (similar) units* (Gerring, 2004, p. 342). The *unit* refers to a spatially bounded entity, such as a nation-state, observed at a specific point in time (Gerring, 2004). Case study designs are useful for discovering causal mechanisms rather than casual effects, and exploring, rather than confirming existing theoretical explanations (Gerring, 2004). Also, as I argue in Chapter 3.1, Italy represents an extreme case. An extreme case exemplifies unusual values of the explanatory or dependent variable, and facilitates exploratory research (Seawright and Gerring, 2008).

Cross-sectional studies imply gathering data at one point in time and allow for studying the outcome of a phenomenon for a given population at a specific point in time (Levin, 2006). I claim that conducting a cross-sectional analysis of Italian provinces is the most suitable method to investigate the impact of OC on the outcome of interest, i.e. the availability of decent jobs for youth (Levin, 2006). By employing this method, I can investigate the variation within regions and between provinces both in terms of the presence of the mafia as well as decent jobs for young people (Peri, 2004). I acknowledge that a cross-sectional study cannot assess causal relations, given the limited period considered. However, it can highlight associations between the explanatory and dependent variables and contribute to suggesting hypotheses for future research (Levin, 2006).

To measure the independent variable, *presence of organized crime,* in Italian provinces I employ the Synthetic Index of Mafia Presence by the Bank of Italy (Mocetti and Rizzica, 2021). All the indicators in the Index are continuous, taking values between 0 (minimum value of mafia presence) to 1 (maximum value of mafia presence), weighted for the province population (Mocetti and Rizzica, 2021). The Province of Monza e della Brianza (in Lombardy, North of Italy) scores the lowest value (.049), while Vibo Valentia (in Calabria, South of Italy) the highest (.614). As Figure 3 shows, the provinces most affected by the presence of the mafia are in the South, with few exceptions. This trend is in line with the findings proposed by alternative studies and measurements on mafia presence (see among others Calderoni, 2011; Dugato et al., 2019; Transcrime, n.d.)

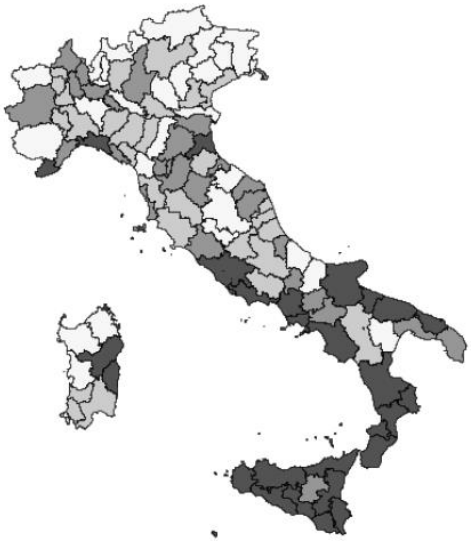

Figure 3. Provincial distribution of the Mafia Presence Index. Darker colors indicate a higher presence of the mafia (Mocetti and Rizzica, 2021, p. 11)

To measure the dependent variable, *decent jobs for youth*, I employ several indicators for different age groups. *Wage 2020 (15-29),* measures the average hourly income of people employed in the private sector in Euro recorded in 2020. *Unemployment %* measures the rate of unemployed people belonging to the age group, here referring to people involved in the irregular economy. *Employment %*, measures the percentage of employed people. Finally, the variable *nonparticipation %* measures the rate of young people unemployed or being available inactive.

I include the correlation statistics for the variables in Appendix 4. Due to space constraints, an in-depth analysis of the preliminary correlations of all dependent variables with the presence of the mafia is not possible. In general, for every age group, Pearson's correlation coefficient indicates a strong positive correlation between the presence of mafia and unemployment and nonparticipation; a strong negative correlation with employment; and a moderate negative correlation with average hourly wages. Moreover, regardless of the age group under study, the same five Southern provinces represent the extreme cases of each correlation: Vibo Valentia, Reggio Calabria, Crotone, Foggia, and Naples (Appendix 5).

Table 3. Descriptive statistics

Variable	Min	Max	Mean	SD
Mafia presence (Synthetic Index)	.049	.614	.18152	.099566
	Monza e della Brianza	Vibo Valentia		
Wage 2020 (15-29) in Euro	9.39	13.45	11.1929	.63443
	Ragusa	Bolzen		
Employment % 2021 (15-34)	19.4	56.9	42.134	9.3246
	Vibo Valentia	Rovigo		
Employment % 2021 (15-24)	6.8	36.3	18.359	5.8612
	Vibo Valentia	Bolzen		
Employment % 2021 (25-34)	31.2	81.8	64.176	13.6941
	Vibo Valentia	Vicenza		
Unemployment % 2021 (15-34)	4.9	42.4	17.760	9.3083
	Bergamo	Siracusa		
Unemployment % 2021 (15-24)	9.1	60.2	29.011	12.1054
	Bolzen	Agrigento		
Unemployment % 2021 (25-34)	2.6	38.7	14.225	8.9197
	Bergamo	Siracusa		
Nonparticipation % 2020 (15-34)	9.6	68.7	29.839	14.9347
	Bolzen	Vibo Valentia		
Nonparticipation % 2020 (15-24)	14.1	83.8	44.704	16.8866
	Agrigento	Bolzen		
Nonparticipation % 2020 (25-34)	6.6	67.5	24.596	14.4191
	Bergamo	Vibo Valentia		
Valid N	106			

Note: I specify the provinces recording the Minimum and Maximum values for every variable.

4.6.1. Accounting for the Risk of Endogeneity

Given the topic at hand, and the characteristics of cross-sectional data, the research analysis presents a high risk of endogeneity (Barone et al., 2013; Ullah et al., 2021; Cinquegrana et al., 2021; Juàrez et al., 2022). Endogeneity occurs when the independent variable is correlated with the error term and may lead to spurious correlations. The literature highlights three primary sources of endogeneity: measurement errors, omitted variable bias, and simultaneity[8] (Ullah et al., 2021). Not accounting for endogeneity might produce inaccurate results, misleading policy recommendations, and unreliable suggestions for future research (Ullah et al., 2021).

Previous studies on the topic recognize the issue of potential endogeneity and stress the importance of carefully interpreting the correlation results (see among others Peri, 2004; Cinquegrana et al., 2021; Juàrez et al., 2022). Within the topic of economic performance and OC, endogeneity might be due to measurement errors and reverse causality. On the one hand, measurement errors of indicators assessing the presence of OC are plausible due to the nature of the phenomenon, as discussed in section 4.2. On the other hand, individuals have several reasons for joining OC, among which coercion (i.e. for fear or repercussions); interests (i.e. cooperation increases mutual economic returns); values (i.e. due to cultural, moral, or religious reasons, individuals value cooperation more than rewards or sanctions); personal bonds of kin or friendship (Gambetta, 2020); and the lack of employment (Peri, 2004; Juàrez et al., 2022). Hence, OC could also be the consequence of low-quality jobs.

For this reason, I aim at assessing the robustness of the specifications by performing several additional tests, emulating previous research. I include several control variables[9] in the ordinary-least squared (OLS) analysis to exclude any other potential explanatory factor biasing the results, replicating the robustness checks of other authors (see among other Buoanno, 2006; Huynh et al., 2020, Cooray et al., 2018; Mocetti and Rizzica, 2021). Also, I repeat the same statistical tests with alternative measures of the independent variable[10] (Juàrez et al., 2021; Neanidis et al., 2017; Buonanno, 2006). A further fundamental assumption of OLS is the independency between the explanatory variable and the error term, which might not hold in cross-section analysis (Ullah et al., 2021). Thus, I control for endogeneity with additional tests.

I conduct a two-stage least squared (2SLS) regression employing an instrumental variable (IV), previously used by other authors to control for endogeneity (Peri, 2004; Odoardi et al., 2021; Barone et al., 2015; Odoardi et al., 2020; Iriarte, 2017). IVs are variables uncorrelated to the error term but correlated with the independent variables, and that are not explanatory variables in the original

[8] Discussing the three primary sources of endogeneity is beyond the scope of the paper. For a comprehensive explanation, see Ullah et al., 2021.

[9] For the sake of space, I include the control variables, description, sources, and the literature previously using the same variables in Appendix 2 and 3.

[10] For the sake of space, I include a detailed description of the alternative measures of crime and the results of the statistical tests in Appendix 2 and 3.

regression model (Ullah et al., 2021). The 2SLS regression is one of the available tests for the IV estimation technique, along with limited information maximum likelihood estimation and the generalized method of moment (Ullah et al., 2021), which have been also used in other research on the topic (Peri, 2004; Buonanno, 2006; Buonanno et al., 2009; Huynh et al., 2019; Cooray et al., 2018; Baraldi et al., 2022; Liotti, 2019; Neanidis, 2017; Iriarte, 2017; Barone et al., 2013; Barone, 2015).

Although the robustness checks cannot completely solve the issue of endogeneity (Peri, 2004), I should be able to mitigate the impact of bias on the results. Hereafter, I introduce the control variables used for the statistical tests, and then I present the results of the OLS analysis with control variables, for every group age (15-34; 15-24; 25-34). Also, I report the outcome of the robustness checks with alternative measures of OC and the 2SLS regression with instrumental variable in Appendix 6, 7 and 8.

4.6.2. Control and Other Variables

As mentioned in the previous section, I conduct statistical tests including several control variables, two alternative measures of organized crime (OC), and an instrumental variable. I include the table with the details of the variables and the descriptive statistics in Appendix 2 ad 3.

The instrumental variable is *separate waste disposal*. I employ this indicator as the literature widely demonstrates that it is highly correlated to the presence of OC (D'Amato et al., 2015; Di Cataldo et al., 2022; Agovino et al., 2016; Agovino et al., 2017). Furthermore, I use two alternative measures of the explanatory variable, *rule of law* and *mafia presence (objective crimes).* The first indicator is a composite measure of features typical of societies affected by the presence of OC: crimes against property, number of crimes reported, duration of the trial, magistrate productivity, submerged economy, and tax evasion (Nifo et al, 2014). The second indicator, instead, is a composite measure of the crimes directly attributed to the mafia: mafia affiliation, number of municipalities dissolved due to infiltration, and number of firms taken from the mafia (Mocetti and Rizzica, 2021).

Finally, I control for the GDP of the province in the year 2020; corruption; secondary and tertiary education enrolment; and the earliest data available following the 2008 economic crisis for every indicator of decent jobs. Following previous studies (for more information, see Appendix 2), I control for GDP as low employment and participation rates might be due to the economic underdevelopment of the province (Cefalo et al., 2015; Cinquegrana et al., 2021). I also include corruption in the models, as previous studies demonstrate that it affects the economic performance of a territory and job availability (Blackburn et al., 2017; Mauleòn et al., 2016; Huynh et al., 2019; Cooray et al., 2018; Nifo et al., 2014). I control for secondary and tertiary education enrolment, as young people attending secondary schooling and university might be unemployed or not in the labor market (Quintano et al., 2018; Mennella, 2009; Buoanno et al., 2006). Finally, I use the lagged version of the dependent variable to account for structural or long-term trends in the indicators caused by the Great Recession (Eichhorst et al., 2014; Leonardi et al., 2015; Amendola, 2022).

5. Results

The presence of organized crime (OC) impacts the availability of decent jobs for young people to a different extent for each age group. This first finding is particularly relevant as it underlines the importance of disaggregating the analysis by age, as the behavior towards the labor market changes between teenagers and young adults. The main independent variable is strongly related to all the indicators of decent jobs for the 25-34 age class. Intuitively, this group is more presented in the labor market than people aged 15-24, who could still be in secondary and tertiary education instead. The results are robust to the use of the IV and alternative measures of OC. I provide the results of the 2SLS analysis with the instrumental variable (*separate waste disposal*), and the OLS regression with alternative measures of OC in the tables of the analysis in Appendix 6, 7 and 8, together with a detailed analysis of the results. I repeated the OLS analysis with data for adults (35-49)[11], to assess the impact of the presence of organized crime on the quality of jobs for adults compared to young people.

5.1. The Impact of the Mafia on Regular Employment

Table 4 shows that the presence of the mafia is statistically significant and negatively correlates with employment only for the 15-34, and for the 25-34 age classes. The results of the OLS regression indicate that in the provinces where OC is more present, employment for 15-34- and 25-34-years old people is lower. This finding is in line with the one proposed by Coronado et al. (2018) for Mexico, Mulok et al. (2016) for Malaysia, Peri (2004) and Detotto et al. (2013) for Italy, who demonstrate that the presence of OC is a determinant of employment opportunities. Moreover, the presence of the mafia does not correlate with employment for adults[12], indicating that OC has an impact on the quality of jobs only for young people.

Concerning the 15-34 age group, moving from a province with a low mafia presence, such as Matera, to one with a higher presence, such as Messina, employment decreases by 1%. The explanatory term remains significant when including several control variables in the model. The employment rate from an earlier period is a more significant predictor of youth employment ($p < .001$). This finding is in line with the results by Eichhorst et al. (2014), Leonardi et al. (2015), and Liotti (2020), among others, who identify structural unemployment as a determinant of job opportunities for young people, especially following the Great Recession. Second, higher GDP does not correspond to higher employment, in contrast to the studies indicating that areas with higher economic productivity offer more jobs (among others Amendola, 2022; Cefalo et al., 2015; Cinquegrana et al., 2021). Corruption is also not significant, against the evidence by De Angelis et al. (2020), who find a positive and significant relationship. Lastly, secondary and tertiary education enrolments are not statistically significant. The finding is in contrast with the argument by Eichhorst et al. (2014), who suggest that education

[11] Due to space constraints, I only include the results in Appendix 9.

[12] See note 11.

attendance impacts the employment rate of youth in two ways. First, teenagers (15-19) are still in the education system or training and are generally low-skilled. Second, young people aged 20-24 have either just completed their secondary or tertiary education, and seeking a full-time job. This result is also in contrast with the evidence by Quintano et al. (2018), Mennella (2009), and Buonanno et al. (2006), and could instead be explained by the literature assessing the structural problems of the Italian school system, presented in Chapter 2.

The presence of the mafia does not significantly correlate to employment for the 15-24 age group. Instead, the employment rate from 2010 is the only term significant in the model ($p < .001$). Against the expectations, as argued for the 15-34 age group, GDP, corruption, and education attendance cannot explain unemployment for this age category.

Finally, all the explanatory variables are statistically significant in the model with employment rates for the 25-34 age group. First, employment decreases by 2.4% between provinces with a lower presence of mafia, such as Turin, and those more affected, such as Naples. The explanatory variable remains significant when including several control terms in the model. As for the other age classes, the employment rate from the previous period is also positively correlated and statistically significant ($p < .001$). Second, in contrast to the results of the previous age classes, GDP is significantly related to employment, indicating that richer provinces also report higher employment, as expected from the literature (Amendola, 2022; Cefalo et al., 2015; Cinquegrana et al., 2021). Third, where corruption is more pervasive, employment is lower, in line with the findings by Cooray et al. (2018) and De Angelis et al. (2020). Finally, contrary to the previous age groups and in line with the studies by Quintano et al. (2018), Mennella (2009), and Buonanno et al. (2006), tertiary education corresponds to a decrease in the employment rate.

5.2. The Impact of the Mafia on Adequate Earnings

Table 4 shows that the presence of the mafia positively correlates with hourly earnings for people aged 15-29. The explanatory variable remains significant when including several control variables in the model. Recalling that due to data unavailability and coherence, I can only consider the 15-29 age class, the results indicate that in the provinces where the mafia is more present, the average wage of young people is lower.

In more detail, average hourly wages decrease by 1.2€ moving from Bologna (lower presence of mafia) to Trapani (higher presence of mafia). This result is in contrast with the findings by Iriarte (2017) and Coronado et al., (2018), who demonstrate that the presence of OC increases wages in affected municipalities, to retain workers in compromised environments. Nevertheless, the authors' evidence applies to Mexico and developing countries, and thus may not be generalizable to high-income settings. Moreover, in this Model, all the control variables are significant.

As expected, in the provinces where GDP is higher, wages are also higher. Previous studies demonstrate that better economic performance corresponds to higher quality jobs (among others

Amendola, 2022; Cefalo et al., 2015; Cinquegrana et al., 2021). Moreover, an increase in corruption corresponds to an increase in average hourly earnings, in contrast to the evidence by Cooray et al. (2018) who show that corruption negatively affects wages. Current hourly wages strongly correlate with average earnings from 2014 ($p < .001$). This finding is in line with the large body of literature addressing the structural characteristics of the labor market impacting the quality of jobs for young people, especially following the Great Recession (see among others Eichhorst et al., 2014; Leonardi et a., 2015; Amendola, 2022). Finally, the presence of the mafia corresponds to lower wages for young people but not for adults[13].

Table 4. OLS regression of mafia presence on regular employment and average hourly wages

	Employment % (15-34) 2021	**Employment % (15-24) 2021**	**Employment % (25-34) 2021**	**Wage (15-29) 2020**
Mafia presence	-.104*	-.133	-.249***	-.127*
(Synthetic Index)	(4.553)	(4.808)	(9.128)	(.338)
GDP	.006	.132	.259*	.136*
	(.000)	(.000)	(.000)	(.000)
Corruption	-.053	-.040	-.138**	.101*
	(.087)	(.099)	(.179)	(.008)
Secondary education	. 153	.559		
enrolment	(.000)	(.000)		
University enrolment	-.173	-.721	-.245*	
	(.000)	(.000)	(.000)	
Employment % (15-34)	.842***			
2019	(.051)			
Employment % (15-24)		.621***		
2010		(.082)		
Employment % (25-34)			.575***	
2010			(.068)	
Wage (15-29) 2014				.776***
				(.064)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for the year 2019 for nonparticipation %. Data on enrolment to secondary education for the year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** $p < .001$; ** $p < .01$; * $p < .05$.

[13] See note 11.

5.3. The Impact of the Mafia on Irregular Employment

Table 5 shows that the presence of the mafia positively correlates with unemployment for every age group ($p < .001$). Recalling that I use unemployment rates as a proxy for irregular employment, the results of the OLS regression indicate that in the provinces where the mafia is more present, more young people between 15 to 34 years old might work with irregular contracts. The results remain significant when including several control variables in the model.

Concerning the 15-34 age group, unemployment (read *irregular employment*) increases by 3.7% moving from Rome (lower presence of mafia) to Caserta (higher presence). Adult unemployment decreases by 3.7% as well[14], thus the presence of the mafia does not impact young people and adults differently. In this model, the unemployment rate from an earlier period also significantly correlates to the current unemployment rate. As for regular employment and wages, this finding demonstrates that the structural disadvantages that young people face in the labor market are a strong determinant of the quality of jobs (Eichhorst et al., 2014; Leonardi et a., 2015; Amendola, 2022). Second, lower GDP corresponds to higher unemployment, in line with earlier literature demonstrating the negative relationship (among others Amendola, 2022; Cefalo et al., 2015; Cinquegrana et al., 2021). Third, corruption is not significant in the model, in contrast with the study by Cooray et al. (2018) who prove that it positively affects the presence of the shadow economy. Finally, while secondary education attendance is not significant, an increase in university enrolment corresponds to higher unemployment. This result is partially in line with the expectations from the literature, showing that when more young people attend education, unemployment is higher (Quintano et al., 2018; Mennella, 2009; Buonanno et al., 2006).

The presence of the mafia significantly correlates with the unemployment rate for the 15-24 age class. An increase in one standard deviation of the presence of the mafia corresponds to an increase in unemployment of 2.8%. As for the 15-34 age category, the unemployment rate from 2010 is also positively correlated. However, in contrast to the previous age category and previous literature, GDP, corruption, and education attendance are not significant.

The results are similar for the 25-34 age group. Unemployment increases by 3.5% moving from provinces with a lower presence of OC, such as La Spezia, to those more highly affected, such as Syracuse. O'Higgins (2017) notes that irregular employment decreases with age and is more prevalent among younger and less experienced people. However, my results indicate the opposite. I suspect that this inconsistency between the evidence by O'Higgins (2017) and the one present here is because unemployment rates are only a proxy of irregular work and not an absolute measurement. As for the other age classes, the unemployment rate from the previous period is also equally statistically significant and positively correlated. Any other explanatory variable is not significant in the model.

[14] See note 11.

Table 5. OLS regression of mafia presence on irregular employment

	Unemployment % (15-34) 2021	**Unemployment % (15-24) 2021**	**Unemployment % (25-34) 2021**
Mafia presence (Synthetic	.376***	.282***	.347***
Index)	(7.045)	(9.774)	(6.373)
GDP	-.328*	-.160	-.167
	(.000)	(.000)	(.000)
Corruption	.068	.048	.072
	(.150)	(.210)	(.137)
Secondary education	-.526	-.118	
enrolment	(.000)	(.000)	
University enrolment	.792*	.274	.135
	(.000)	(.000)	(.000)
Unemployment % (15-34)	404***		
2010	(.069)		
Unemployment % (15-24)		.508***	
2014		(.083)	
Unemployment % (25-34)	.		.511***
2010			(.098)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for the year 2019 for nonparticipation %. Data on enrolment to secondary education for the year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

5.4. The Impact of the Mafia on Youth Labor Participation

Table 6 shows that the presence of the mafia is positively correlated with labor participation for every age group. The results of the OLS regression indicate that in the provinces where the mafia is more present, more young people between 15 to 34 years old do not participate in the labor market, also in comparison to adults[15]. The presence of the mafia remains significant when including several control variables in the model.

Concerning the 15-34 age group, an increase of one standard deviation in the explanatory variable corresponds to an increase in nonparticipation by 1.7% ($p < .01$). In this model, the nonparticipation rate from an earlier period is also significantly correlated to the current rate. As for the other indicators of decent jobs, this finding proves that long-term trends of the economy determine the current behavior of young people in the labor market (Eichhorst et al., 2014; Leonardi et a., 2015; Amendola, 2022). GDP is not a significant explanatory term for labor market participation, in contrast with previous evidence demonstrating that better economic performance influences people's behavior in the economy (among others Amendola, 2022; Cefalo et al., 2015; Cinquegrana et al., 2021). Corruption is also not

[15] See note 11.

significant, in line with the study by de Angelis et al. (2020), who does not find a significant relationship with labor market participation. Finally, deviating from the findings by Quintano et al. (2018), Mennella (2009), and Buonanno et al. (2006), attending secondary and tertiary education is not significantly correlated with participation in the economy.

The results are similar for the 15-24 age group. Moving from a province with a lower presence of mafia, such as Florence, to one with a higher presence, such as Bari, corresponds to an increase in nonparticipation by 1.6%. As for the 15-34 age category, the nonparticipation rate from 2010 is significantly correlated ($p < .001$). However, in contrast to people aged 15-34, and partially analogously with previous evidence, university enrolment positively correlates with nonparticipation, while secondary education attendance is not. Instead, I would expect secondary education attendance to be significant as well, as students are generally outside the labor force and do not participate in the economy, based on the ILO's (2018) definition of the labor market (mentioned in note 4). Any other control variable is not significant.

Finally, nonparticipation of people aged 25-34 increases by 2% when moving from Palermo (lower mafia presence) to Catanzaro (higher presence). As for the other age classes, the nonparticipation rate from the previous period is more significantly correlated ($p < .001$). Any other explanatory variable is not significant in the model.

Table 6. OLS regression of mafia presence on nonparticipation

	Nonparticipation % (15-34) 2020	**Nonparticipation % (15-24) 2020**	**Nonparticipation % (25-34) 2020**
Mafia presence	.165**	.164*	.190**
(Synthetic Index)	(8.776)	(13.976)	(8.689)
GDP	-.110	-.223	-.122
	(.000)	(.000)	(.000)
Corruption	.043	.049	.059
	(.161)	(.267)	(.161)
Secondary education	-.417	-.571	
enrolment	(.000)	(.000)	
University enrolment	.492	.780*	.086
	(.000)	(.000)	(.000)
Nonparticipation % (15-	740***		
34) 2010	(.067)		
Nonparticipation % (15-		.582***	
24) 2010		(.095)	
Nonparticipation % (25-	.		.717***
34) 2010			(.071)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

6. Discussion

In this Chapter, I aim to critically evaluate the theoretical explanations and analysis in light of the results. First, discuss the differences between age groups. Second, I reflect on the hypotheses advanced in Chapter 3.2, and the validity of the indicators selected considering the evidence. Lastly, I consider the problem of endogeneity for the models including control and instrumental variables, and alternative measures of organized crime (OC). In the next Chapter, I summarize the focus and findings of the thesis, and I advance suggestions for future research and policymaking.

First, the notable differences among age groups and between indicators demonstrate the importance of disaggregating the *youth* and *decent jobs* to avoid having biased results and falsely generalizable conclusions. I refer to studies investigating the age of OC affiliates to explain why the presence of OC impacts the 25-34 age group more strongly. Kleemans et al. (2008) find that 43% of people involved in OC are between 30 and 50 years old in the Netherlands, due to existing social ties which individuals develop during their lives. Similarly, Savona et al. (2020) demonstrate that the average age is 25 for first crime (in general) and 34 for mafia-related crimes, among people affiliated with OC in Italy.

Second, the statistical results partially confirm the hypotheses advanced in Chapter 3.2. The provinces with a higher presence of mafia record lower less decent jobs for young people, with consistent variation and significance between age groups and indicators. I assumed that the presence of OC reduces the inflow of investments and thus reduces productivity, and fewer jobs are available. Under these circumstances, employers are more likely to hire adults due to their experience and skills. The evidence presented here supports the assumption that mafia-affected provinces record lower levels of youth employment. Second, as a consequence of the larger supply of young workers and the limited demand, average hourly earnings for young people are lower where the mafia is more present, especially in comparison with adults' wages.

Third, where OC is more present and controls irregular activities, it builds informal social networks that young people rely on to find a job. Thus, *irregular employment* is higher among young people than adults. The findings are in line with prior evidence suggesting that the territories experiencing higher OC presence in the irregular economy report higher unemployment (Schneider, 2012; Boeri et al., 2002; Dell'Anno and Solomon, 2008; Mauleòn and Sardà, 2016; Huynh et al., 2019; Khanna et al., 2019). Fourth, I expected that where the mafia is more present, more profitable income opportunities than legal jobs are more available, and thus participation in the labor market is lower. The evidence confirms the hypothesis. However, not all young not participating in the labor market are involved in the illegal economy, and I do not claim that every young person declaring to be inactive or unemployed is affiliated with the mafia. Instead, I follow the argument by Boeri et al. (2002) and Quintano et al. (2018), who state that young people declaring to be unemployed or inactive might engage in criminal activities instead (Boeri et al., 2002; Quintano et al., 2018).

Although I acknowledge that unemployment and nonparticipation rates are weak instruments to measure the magnitude of irregular and illegal economies, more precise indicators are not available at the provincial level, nor disaggregated by age. As discussed in Chapter 3.2, the shadow economy is complicated to accurately measure, and I was constrained to choose the variables the closest to the phenomenon under study. Nevertheless, if unemployment rates were a perfect measure for recording only the share of people not working, the impact of the presence of the mafia on employment and unemployment should be similar in all models and for all age groups. Instead, the correlation between unemployment and the presence of the mafia is about three times larger than for employment rates.

Endogeneity is a second limitation of my results. Despite I implemented several alternative models' specifications, and the results are robust among the tests, I admit that I could not completely erase the risk of reverse causality. In fact, the lack of decent jobs could induce young people to commit crimes (Gambetta, 2000; Peri, 2004; Juàrez et al., 2022; Peri, 2004; Detotto et al., 2013; Carboni et al., 2016). However, the presence of the mafia remains significant when controlling for several alternative explanatory variables, including the lagged indicators for decent jobs. Future research could further investigate the direction of causality with different methodological designs than a cross-sectional study, such as difference-in-difference or the synthetic control method, which earlier research on similar topics have used (among others Mirenda et al., 2021; Pinotti, 2015)

In addition, the variables omitted from the analysis might have biased the results. The control variables I chose may not be the only explanatory terms suitable for my research. For instance, Leonardi et al. (2015) use (un)employment rates from 2013, instead of 2010, claiming that the consequences of the Great Recession reached their peak only in that year. However, as previous studies widely prove, youth nonparticipation, low wages, and unemployment are structural problems in the labor market, and data for any previous year would still be significant, as the results indicate. Otherwise, statistics about (foreign direct) investments (Pinotti, 2013; Pinotti, 2015; Neanidis et al., 2017; Liotti, 2020) might also be suitable for investigating the relationship. Nevertheless, I could not employ these explanatory variables due to data unavailability, and I leave the task to future research.

Finally, I recognize that the alternative measures of OC present two main issues. On the one hand, due to the low frequency of crimes attributable to the mafia, using objective crimes can bias the measurement and underestimate the phenomenon (Mocetti and Rizzica, 2021). Also, the variable *objective crime*s is an indicator of the Synthetic Index of Mafia Presence, which can partially explain why the results are similar between the two models. On the other hand, the variable *rule of law* records the features of societies where the mafia is present, but not the crimes directly attributed to the mafia. Thus, this indicator is a weaker estimate of the presence of the mafia than the Synthetic Index. Despite the weaknesses of the variables, the results are consistent among models and specifications, and as Peri (2004) demonstrates, the presence of OC is often a stronger determinant of job availability than economic variables and production.

7. Conclusions

The levels of unemployed youth and NEETs are concerning both at the global and national levels. The UN (2020) estimated that 68 million young people are looking for a job; 123 million are working but living in poverty; and 270 million are not in employment, education, or training (NEET). The international community has been tackling the alarming conditions of young people in the labor market and raising attention to problems beyond unemployment. In fact, vulnerable and irregular employment, working poverty, underemployment, and inadequate earnings are obstacles to reaching decent jobs for young people (ILO, 2018).

Earlier studies investigate the determinants of youth condition in the labor market, mainly focusing on unemployment and NEET status. Structural features of the economy, the job market, the education system, skills mismatch, and individual characteristics are the main problems impeding young people to have decent jobs (see among others O'Higgins, 2017; Bradley et al., 2020; Odoardi et al., 2021; Cinquegrana et al., 2021; Pastore, 2018; Amendola, 2022). In addition, a smaller section of the literature addresses the link between crimes (such as theft or robbery) on (youth) unemployment (see among others Mennella, 2009; Juarez et al., 2020; Buonanno, 2006). However, to the best of my knowledge, no studies investigate the magnitude of the impact of OC on the quality of jobs for young people, despite evidence demonstrating that mafia-type groups influence the economic development and productivity of affected regions.

In contrast to crime in general, organized criminal (OC) groups are hierarchical and profit-driven organizations infiltrated into politics and engaging in the (ir)regular economy and illicit activities (UNODC, 2004; Abinsky, 2012). OC is a serious and transnational problem affecting 79.2% of the global population and managing illicit activities which produce between 2 and 5% of the world's GDP (UNODC; 2011; Global Initiative, 2022). It also severely impacts society, and economic development and growth.

Thus, this thesis aimed at answering the question of *to what extent does the presence of organized crime impact the availability of decent jobs for young people?*. I assume that where OC is more present, regular employment, wages, and labor participation are lower, while irregular employment is higher. I explain that OC discourages investments, thus reducing productivity and the availability of jobs. As fewer jobs are available, employers hire more experienced and skilled workers, at the expense of young people. Consequently, the supply of young labor is larger than the demand, and wages are lower. Third, OC increases the availability of more profitable income sources than the ones in the regular economy. Thus, young people have higher *opportunity costs* in engaging in the labor market. Finally, OC often manages irregular activities and builds *informal social networks* for young people to easily find employment in the irregular economy.

I conduct a cross-sectional study of Italian provinces to test the hypotheses. I claim that Italy is a suitable case study as it shows unusual levels of youth unemployment and NEET, as well as the widespread presence of the mafia. I measure the explanatory variable, *presence of OC,* employing the

Synthetic Index of Mafia Presence proposed by the Bank of Italy (Mocetti and Rizzica, 2021). In my opinion, the Index is the most comprehensive, valid, and recent measurement of OC, vis-à-vis alternative tools. I measure the independent variables, *decent jobs for youth*, using ISTAT data at the provincial level on four indicators. I use employment rates to measure regular employment; unemployment rates for irregular employment; nonparticipation rates for engagement in the labor market; and average hourly wage for adequate earnings. In contrast to previous research, I disaggregate the age of *youth* for three groups, 15-34; 15-24; and 25-34, to properly assess the different behavior of young people in the labor market.

I perform an OLS analysis with the main explanatory and several control indicators and further verify the robustness of the models with the use of an instrumental variable (*separate waste collection*) and alternative measures of OC (*objective crimes* and *rule of law*), to reduce the impact of endogeneity. The results are robust to different model specifications. Overall, the provinces where the mafia is more present, have lower regular employment, nonparticipation and wages, and higher irregular employment, although OC has a stronger and more consistent impact on the 25-34 age group. In contrast to previous research, other structural factors such as the education system and economic productivity are often not correlated with the indicators of decent jobs, while long-term trends of (un)employment, nonparticipation, and wages are strong predictors.

This thesis presents a valuable contribution to the research on the quality of employment for young people and organized crime (OC) but also presents several shortcomings. First, I demonstrate the importance of disaggregating the youth by age, to assess age-specific effects. However, I did not further divide the youth sample by gender, although OC could impact men and women asymmetrically. I leave the task to future investigation which might uncover interesting insights into the relationship. Second, the results are in line with the work by Peri (2004), suggesting that the presence of OC may be a stronger determinant of decent jobs for youth than structural economic and educational features. However, given the nature of the phenomenon, the methodological design employed, and the high risk of endogeneity, the evidence of the analyses should be carefully interpreted as causality but rather as a correlation. Future studies can uncover other mechanisms by which the mafia influences the job opportunities for young people, and thus more confidently explain causal relationships. Third, this thesis is a singular effort to quantify the impact of the presence of the mafia on the conditions of young people in the labor market in Italy, as earlier research has not focused on youth in particular. Despite focusing on Italy, I believe the findings of this thesis can be valid for several countries when considering the context-specific features of the labor market and OCGs, and adopting appropriate measurements. Lastly, I only investigated employment opportunities, vulnerable and irregular work, and adequate earnings, which still cannot provide a complete assessment of the quality of jobs for young people. I suggest eventual research to consider other indicators (for instance, measuring working hours or involuntary part-time) proposed by the ILO (2018) to fill this gap.

Finally, I recognize that both the indicators of the explanatory and dependent variables might not be perfectly accurate. As extensively discusses in Chapter 4.2, the presence of OC is hard to record with statistical tools, and the Synthetic Index of Mafia Presence is not free from measurement errors. Moreover, drawing conclusions about the precise magnitude of people involved in the shadow economy from unemployment is not realistic. Future research should develop more precise tools to measure the extent to which young people work with irregular contracts.

Having a realistic estimate of the magnitude of the problem can help policymakers to create adequate policy instruments and programs to target the issue. Research must investigate the collateral effects of the mafia on the younger generations, not limited to economic repercussions. Hence, the international community should recognize OC as a transnational issue for young people looking for jobs, as the education system and the overall economic development are not the only determinants of the quality of employment for youth. If politics does not tackle all the sources of the problem, both nationally and internationally, young people will always be penalized when applying for jobs. Additionally, policymakers should offer more profitable legal and decent alternatives to working with irregular contracts, without social protections and low wages, and to being involved in criminal activities. Finally, disaggregating the youth is absolutely important to design appropriate policy measures, considering the variations and the characteristics of each age group, to maximize the impact of programs targeting the labor market.

Living in high criminal-density contexts alters the youth's perception of the social, economic, and political environment and opportunities (Saviano, 2012). Creating favorable conditions for market competition, regular economy, personal and economic development is the first step to achieve decent jobs for young people.

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A1. NUTS 2 and NUTS 3 regions in Italy with score of presence of mafia

Table A1. Italian Provinces with Respective Regions and Geographical Macro-Area

Province (NUTS 3)	Region (NUTS 2)	Geographical macro-area	Synthetic Index of Mafia Presence
Agrigento	Sicilia	Isle	0.2679427
Alessandria	Piemonte	North-West	0.1510692
Ancona	Marche	Center	0.1783335
Arezzo	Toscana	Center	0.0961402
Ascoli Piceno	Marche	Center	0.1723852
Asti	Piemonte	North-West	0.1353292
Avellino	Campania	South	0.1347969
Bari	Puglia	South	0.1904632
Barletta-andria-trani	Puglia	South	0.2793654
Belluno	Veneto	North-East	0.2706246
Benevento	Campania	South	0.0745997
Bergamo	Lombardia	North-West	0.1603145
Biella	Piemonte	North-West	0.1295529
Bologna	Emilia-Romagna	North-East	0.1441078
Brescia	Lombardia	North-West	0.2057672
Brindisi	Puglia	South	0.1097647
Cagliari	Sardegna	Isle	0.1585895
Caltanissetta	Sicilia	Isle	0.25229
Campobasso	Molise	South	0.1477046
Caserta	Campania	South	0.3085045
Catania	Sicilia	Isle	0.1113928
Catanzaro	Calabria	South	0.3261199
Chieti	Abruzzo	South	0.2673707
Como	Lombardia	North-West	0.411648
Cosenza	Calabria	South	0.1156153
Cremona	Lombardia	North-West	0.0984205
Crotone	Calabria	South	0.3203708
Cuneo	Piemonte	North-West	0.1096543
Enna	Sicilia	Isle	0.4214739
Fermo	Marche	Center	0.1128787
Ferrara	Emilia-Romagna	North-East	0.1680629
Firenze	Toscana	Center	0.1180009
Foggia	Puglia	South	0.154749
Forli	Emilia-Romagna	North-East	0.205696
Frosinone	Lazio	Center	0.4761789
Genova	Liguria	North-West	0.1285156
Gorizia	Friuli-Venezia Giulia	North-East	0.1534348
Grosseto	Toscana	Center	0.2216853
Imperia	Liguria	North-West	0.0836245
Isernia	Molise	South	0.1489144
La Spezia	Liguria	North-West	0.2271647
L'aquila	Abruzzo	South	0.1491747

Province (NUTS 3)	**Region (NUTS 2)**	**Geographical macro-area**	**Synthetic Index of Mafia Presence**
Latina	Lazio	Center	0.1543863
Lecce	Puglia	South	0.1162967
Lecco	Lombardia	North-West	0.2175114
Livorno	Toscana	Center	0.2082983
Lodi	Lombardia	North-West	0.0840355
Lucca	Toscana	Center	0.1897469
Macerata	Marche	Center	0.1598438
Mantova	Lombardia	North-West	0.1139161
Massa	Toscana	Center	0.1806995
Matera	Basilicata	South	0.1221066
Messina	Sicilia	Isle	0.1439567
Milano	Lombardia	North-West	0.1052228
Modena	Emilia-Romagna	North-East	0.2534722
Monza e della Brianza	Lombardia	North-West	0.1946366
Napoli	Campania	South	0.1105442
Novara	Piemonte	North-West	0.0490468
Nuoro	Sardegna	Isle	0.4747567
Oristano	Sardegna	Isle	0.1647026
Padova	Veneto	North-East	0.217609
Palermo	Sicilia	Isle	0.0797808
Parma	Emilia-Romagna	North-East	0.1304741
Pavia	Lombardia	North-West	0.2752896
Perugia	Umbria	Center	0.1421177
Pesaro - Urbino	Marche	Center	0.1005056
Pescara	Abruzzo	South	0.1131067
Piacenza	Emilia-Romagna	North-East	0.1153843
Pisa	Toscana	Center	0.2049882
Pistoia	Toscana	Center	0.1300657
Pordenone	Friuli-Venezia Giulia	North-East	0.1397111
Potenza	Basilicata	South	0.1850835
Prato	Toscana	Center	0.0706966
Autonomous province of Bolzen	Trentino-Alto Adige/*Südtirol*	North-East	0.1215442
Autonomous province of Trento	Trentino-Alto Adige/*Südtirol*	North-East	0.2148287
Ragusa	Sicilia	Isle	0.2628389
Ravenna	Emilia-Romagna	North-East	0.2216492
Reggio Calabria	Calabria	South	0.5746063
Reggio Emilia	Emilia-Romagna	North-East	0.1503406
Rieti	Lazio	Center	0.1196563
Rimini	Emilia-Romagna	North-East	0.1798852
Roma	Lazio	Center	0.2368043
Rovigo	Veneto	North-East	0.1141024
Salerno	Campania	South	0.2627025

Province (NUTS 3)	Region (NUTS 2)	Geographical macro-area	Synthetic Index of Mafia Presence
Sassari	Sardegna	Isle	0.1134835
Savona	Liguria	North-West	0.1592029
Siena	Toscana	Center	0.1329934
Siracusa	Sicilia	Isle	0.2399343
Sondrio	Lombardia	North-West	0.10205
Taranto	Puglia	South	0.2133369
Teramo	Abruzzo	South	0.1493404
Terni	Umbria	Center	0.0988517
Torino	Piemonte	North-West	0.1611639
Trapani	Sicilia	Isle	0.2960839
Treviso	Veneto	North-East	0.1184568
Trieste	Friuli-Venezia Giulia	North-East	0.0950243
Udine	Friuli-Venezia Giulia	North-East	0.2046038
*Valle d'A*osta	Valle d'Aosta/*Vallée d'Aoste*	North-West	0.0644727
Varese	Lombardia	North-West	0.182908
Venezia	Veneto	North-East	0.1267476
Verbania	Piemonte	North-West	0.1554947
Vercelli	Piemonte	North-West	0.1190068
Verona	Veneto	North-East	0.1138991
Vibo Valentia	Calabria	South	0.6135932
Vicenza	Veneto	North-East	0.0890744
Viterbo	Lazio	Center	0.1867877

A2. Description of Instrumental, Control, and Alternative Independent Variables

Table A2. Description of Instrumental, Control, and Alternative Independent Variables.

Indicator	Source	Description	Previous research
Employment rate (%)	ISTAT	Use: control variable. Age group(s) under study: 15-34; 15-24; 25-34. Year: 2019 (for age group 15-34); 2010 (for age group 15-24; 25-34). Unit of measure: % of people. Territorial disaggregation: provinces. The indicator measures the percentage of employed people in relation in relation to the corresponding total population of the age group. Employed people are those who (during the reference week): a) worked for at least one hour for pay or profit; b) worked for at least one hour as contributing family workers, even if unpaid; c) were temporarily absent from work (for instance due to holidays or sick leave); d) Self-employed; and e) Contributing unpaid family workers (if the total duration of the absence period is 3 months or less). (ISTAT, 2020, p. 6).	Peri, 2004; Mocetti and Rizzica, 2021; Boeri et al., 2002; Mennella, 2009; Colin et al., 2017; Odoardi et al., 2021; White, 1989; European Commission, 2019; Barone et al., 2015; Caroleo et al., 1999.
Nonparticipation rate (%)	ISTAT	Use: control variable. Age group(s) under study: 15-34; 15-24; 25-34. Year: 2010. Unit of measure: % of people. Territorial disaggregation: provinces. The indicator measures the percentage of people who are a) unemployed; AND b) the potential work force that do not seek a job but is available to work (i.e. available inactive) in relation to the total labor force and the total available inactive people belonging to the same age group (ISTAT, n.d.).	ILO p. 71; Caroleo et al., 1999; Palombi et al., 2022; Cicciomessere et al., 2012; Ammermüller et al., 2009; Cooray et al., 2018; De Luca et al., 2019.
Adequate earnings (average wage)	ISTAT	Use: control variable. Age group(s) under study: 15-29. Year: 2014. Unit of measure: Euros. Territorial disaggregation: provinces. The indicator measures the average hourly income for people employed in the private sector for the corresponding age group.	ILO p. 71; Daniele, 2021; SDGs 8.5.1; Boeri et al., 2002; White, 1989; European Commission, 2019; Lavagnini et el. (2015); Ammermüller et al., 2009; Huyunh et al., 2019; Pi et al., 2020.
Unemployment rate (%)	ISTAT	Use: control variable. Age group(s) under study: 15-34; 15-24; 25-34.	Mennella, 2009; Boeri et al., 2002; Odoardi et al.,

		Year: 2010 (for age group 15-34; 25-34) 2014 (for age group 15-24). Measure: % of people. Territorial disaggregation: provinces. The indicator measures the percentage of unemployed people in relation to the corresponding total labor force in the same age group. Unemployed people are those who: a) are actively seeking a job but not currently working; b) already found a job starting within three months from the reference week but are available to work immediately (ISTAT, 2020, p. 6).	2021; SDGs 8.3.1; Giammatteo et al., 2021; White, 1989; Coniglio et al., 2010; European Commission, 2019; Zizza, 2002; Cefalo et al., 2015; Amendola et al., 2022; De Luca et al., 2019; Liotti, 2020; Bradley et al., 2020; Sergi et al., 2020; Ammermüller et al., 2009; Peri, 2004.
Secondary Education Enrloment	ISTAT	Use: control variable. Year: 2019; 2021. Measure: thousands of people. Territorial disaggregation: provinces. The indicator measures the number of people enrolled in secondary education for the year of reference.	Rosas, 2013; Cinquegrana et al. 2021; Peri, 2004; Juàrez et al., 2020.
University Enrloment	MIUR	Use: control variable. Year: 2019-2020; 2021-2022. Measure: thousands of people. Territorial disaggregation: provinces. The indicator measures the number of people enrolled in tertiary education for the academic year of reference.	Buonanno, 2006; Contini, 2010; Peri, 2004; Odoardi et al., 2021; Coniglio et al., 2010; Baldissera et al., 2020; Corrado et al., 2018
Corruption	ANAC	Use: control variable. Year: 2017 Measure: % of crimes of corruption, embezzlement, and extortion Territorial disaggregation: provinces. The indicator measures the share of the number of judicial procedures for crimes of corruption, embezzlement, and extortion on the total resident population of the province. (crimes for every 100.000 inhabitants).	Mocetti et al., 2021; Neanidis et al., 2017; Blackburn et al., 2017; Lisciandra et al., 2017; Colin et al., 2017; Daniele et al., 2015; Euroepan Commission, 2010; Agovino et al., 2018;

GDP	EUROSTAT	Use: control variable. Year: 2020. Measure: Euro Territorial disaggregation: provinces. The indicator measures the Gross Domestic Product (GDP) at current market prices for NUTS 3 regions.	Eboli et al., 2021; Mauleòn et al., 2016. Mocetti et al., 2021; Pinotti, 2015; Pinotti, 2011; Lisciandra et al., 2017; Colin et al., 2017; Ardizzi et al., 2012; Corrado et al., 2018.
Mafia presence (objective crime)	Bank of Italy	Use: alternative measure of independent variable. Year: 2010-2019 Measure: continuous scale from 0 to 1 Territorial disaggregation: provinces. The composite indicator measures the crimes directly attributed to the mafia: mafia affiliation, number of municipalities dissolved due to infiltration, number of firms taken from mafia	Mocetti and Rizzica (2021)
Rule of Law	IQI	Use: alternative measure of independent variable. Year: 2019 Measure: Territorial disaggregation: provinces. The composite indicator measures the features of societies where the mafia is present: crimes against property, crimes reported, trial times, magistrate productivity, submerged economy, tax evasion.	Nifo et al., 2014
Separate Waste Disposal	ANAC	Use: instrumental variable. Year: 2017 Measure: % of separate waste. Territorial disaggregation: provinces. The indicator measures the percentage of waste subject to separate disposal.	D'Amato et al., 2012; Di Cataldo et al., 2021; Avogino et al., 2018; Agovino et al., 2016;

A3. Descriptive Statistics

Table A3. Descriptive Statistics of Control, Instrumental and Alternative Independent Variables.

Variable		Min	Max	Mean	SD
Mafia presence (objective crimes)	Indep.	.000	.977	.07032	.153896
Rule of law 2019	Indep.	.000	1.000	.56932	.242771
Separate waste disposal 2017	Instr.	.113	.878	.55312	.172439
Wage 2014 (15-29)	Contr.	9.05	12.07	10.5770	.57640
Unemployment % 2010 (15-34)	Contr.	6.5	61.8	26.862	10.4730
Employment % 2019 (15-34)	Contr.	22.5	60.5	42.805	10.0431
Nonparticipation % 2010 (15-34)	Contr.	5.3	56.8	25.996	14.3963
Unemployment % 2010 (25-34)	Contr.	2.9	32.6	12.330	6.7238
Employment % 2010 (25-34)	Contr.	37.8	85.3	66.677	13.9525
Nonparticipation % 2010 (25-34)	Contr.	3.6	50.8	20.775	13.3259
Unemployment % 2014 (15-24)	Contr.	12.4	70.6	41.542	12.8605
Employment % 2010 (15-24)	Contr.	8.2	39.0	21.507	6.2937
Nonparticipation % 2010 (15-24)	Contr.	9.3	77.3	40.873	15.9743
GDP 2020	Contr.	1622.90	172308.9	15607.44	23374.28
University enrolment (2019-2020)	Contr.	2906	149886	16218.52	19796.00
University enrolment (2021-2022)	Contr.	2805	153427	16667.85	20143.39
Secondary education enrolment (2019)	Contr.	3018	183490	25208.50	28182.33
Secondary education enrolment (2021)	Contr.	2994	189989	25657.92	28913.99
Corruption 2017	Contr.	.000	1.000	.79226	.177889
Valid N	106				

A4. Correlation Statistics

Table A4. Correlation Statistics between the Synthetic Index of Mafia Presence and the Independent Variables.

Variable	Mean	SD	r
Mafia presence (Synthetic Index)	.18152	.099566	1
Wage 2020 (15-29) in Euro	11.19	.63443	-.407***
Unemployment % 2021 (15-34)	17.76	9.3083	.651***
Employment % 2021 (15-34)	42.13	9.3246	-.667***
Nonparticipation % 2020 (15-34)	29.83	14.9347	.698***
Unemployment % 2021 (15-24)	29.01	12.1054	.568***
Employment % 2021 (15-24)	18.35	5.8612	-.541***
Nonparticipation % 2020 (15-24)	44.70	16.8866	.607***
Unemployment % 2021 (25-34)	14.22	8.9197	.638***
Employment % 2021 (25-34)	64.17	13.6941	-.671***
Nonparticipation % 2020 (25-34)	24.59	14.4191	.701***
Valid N			

Note: Mean, Standard Deviation (SD), and Pearson's correlation coefficient (r). *** $p < .001$

A5. Scatterplots

Figure A1. Scatterplot of correlation between Unemployment (15-34) and Mafia Presence.

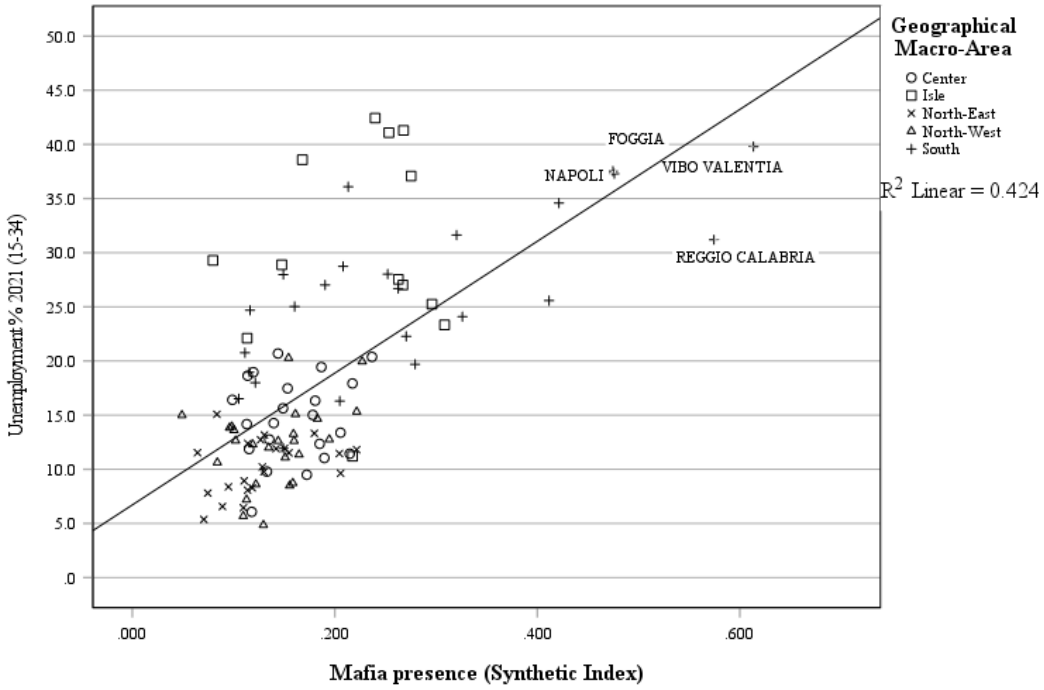


Figure A2. Scatterplot of correlation between Unemployment (15-24) and Mafia Presence.

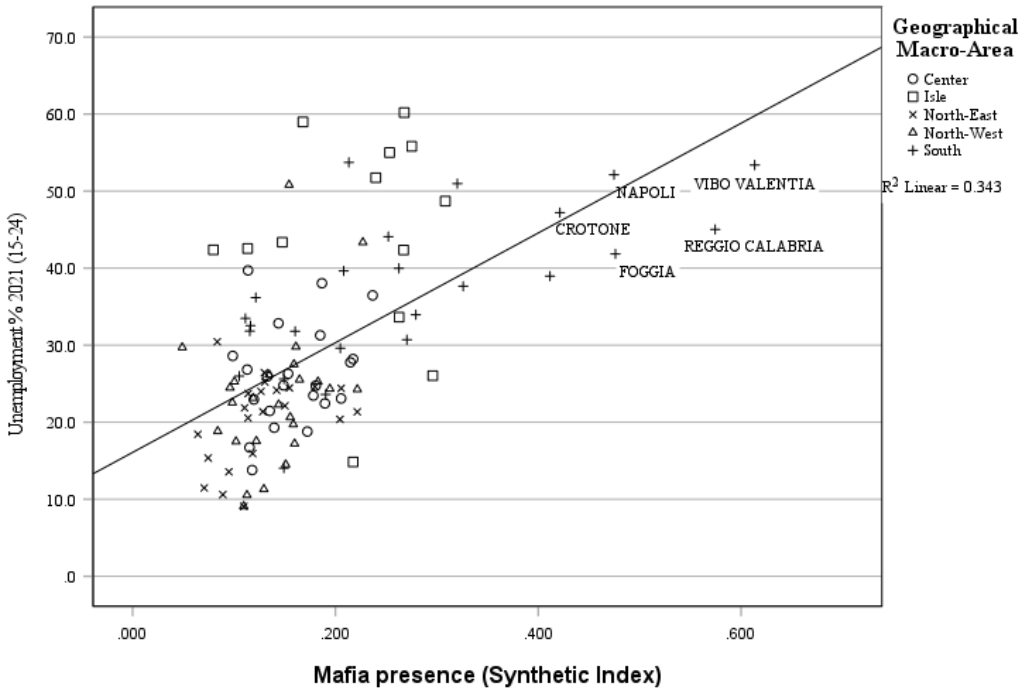


Figure A3. Scatterplot of correlation between Unemployment (25-34) and Mafia Presence.

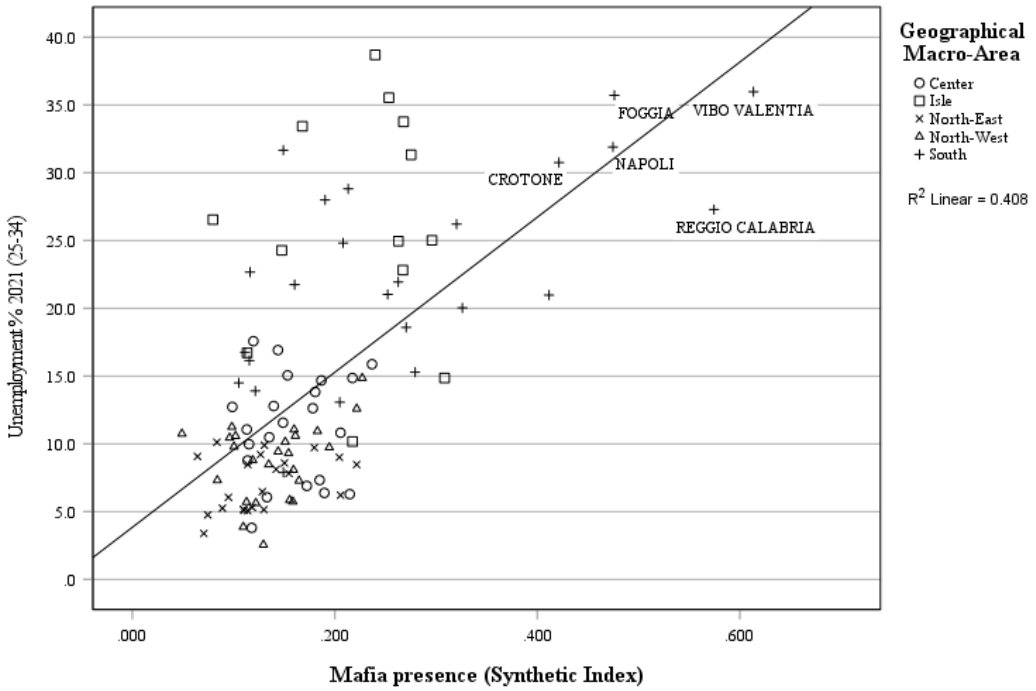


Figure A4. Scatterplot of correlation between Employment (15-34) and Mafia Presence.

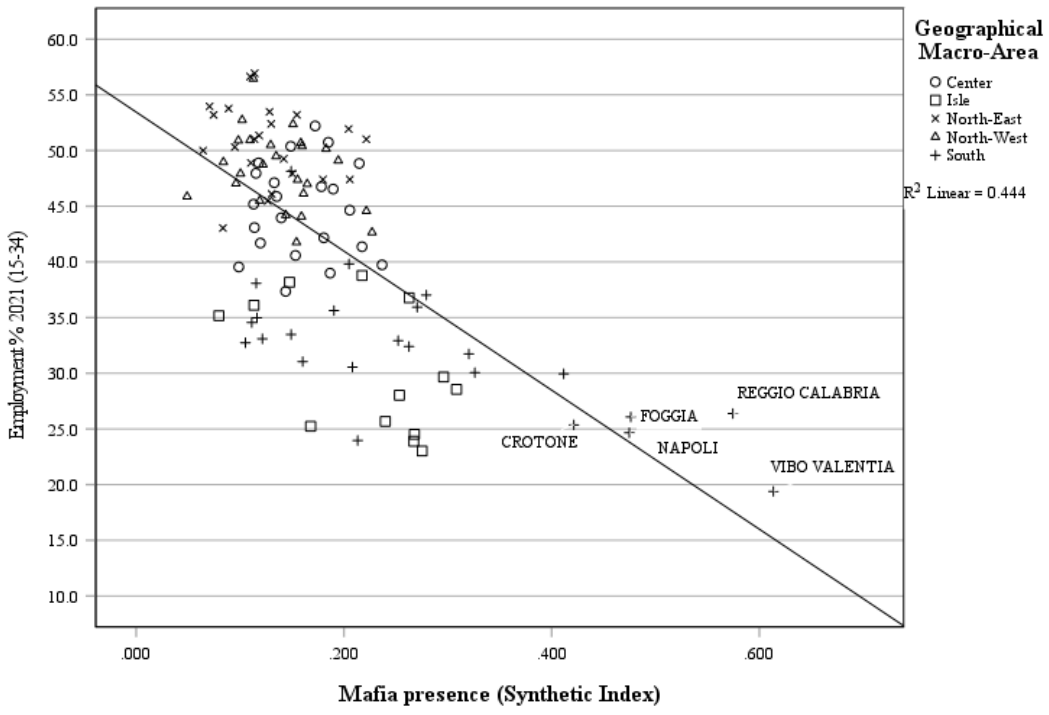


Figure A5. Scatterplot of correlation between Employment (15-24) and Mafia Presence.

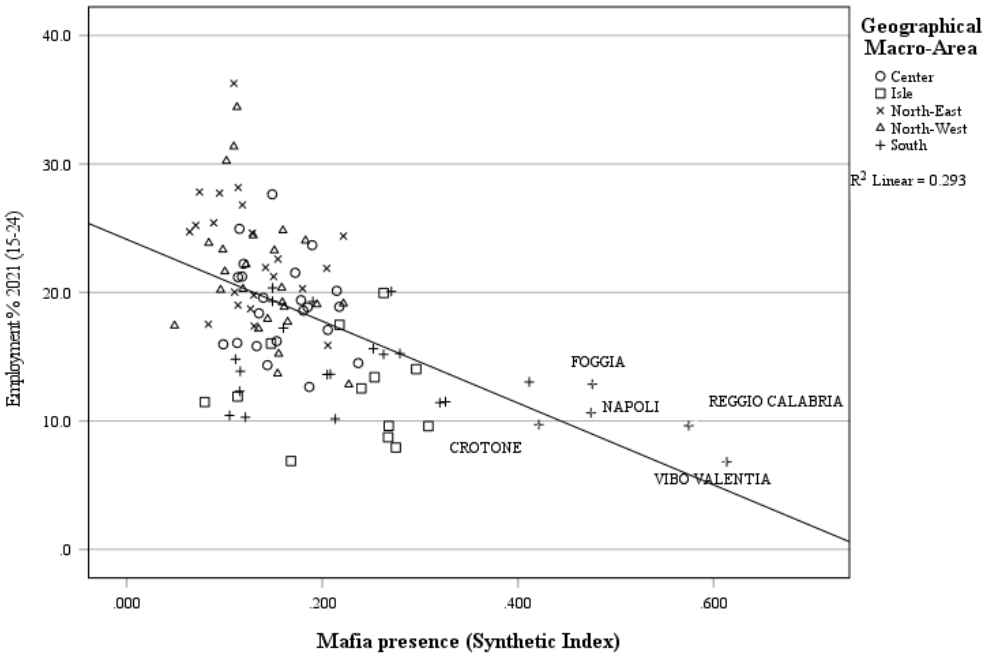


Figure A6. Scatterplot of correlation between Employment (25-34) and Mafia Presence.

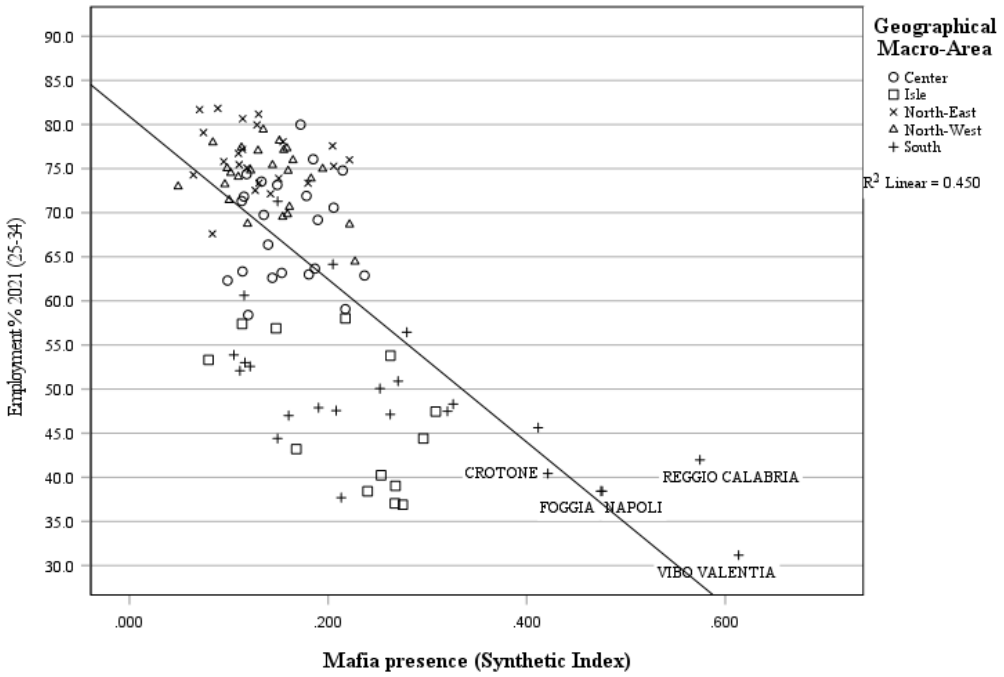


Figure A7. Scatterplot of correlation between Nonparticipation (15-34) and Mafia Presence.

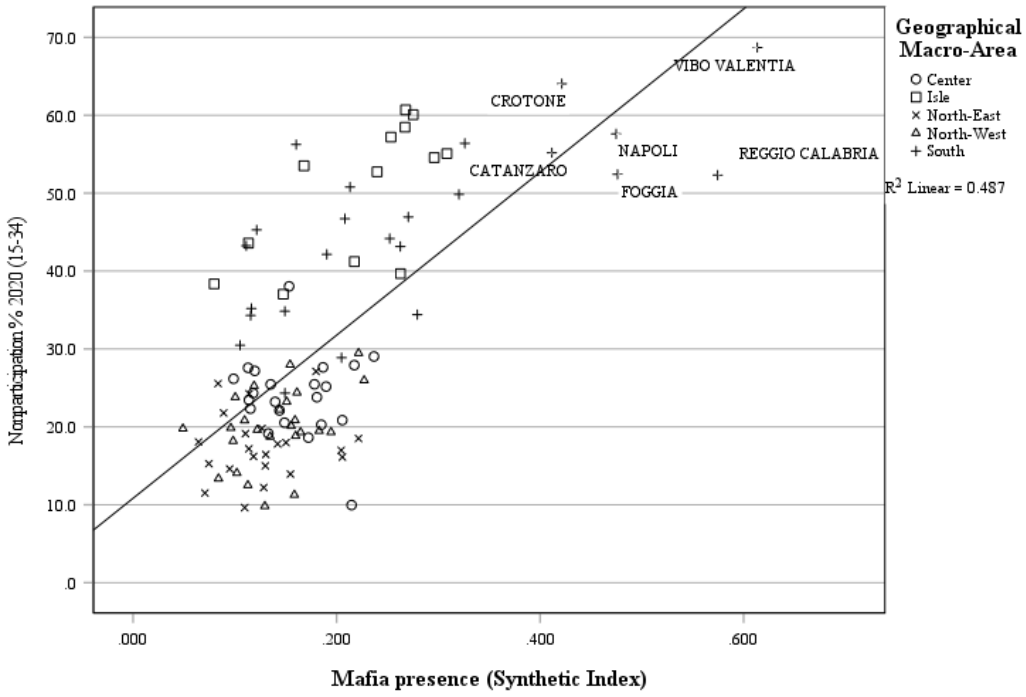


Figure A8. Scatterplot of correlation between Nonparticipation (15-24) and Mafia Presence.

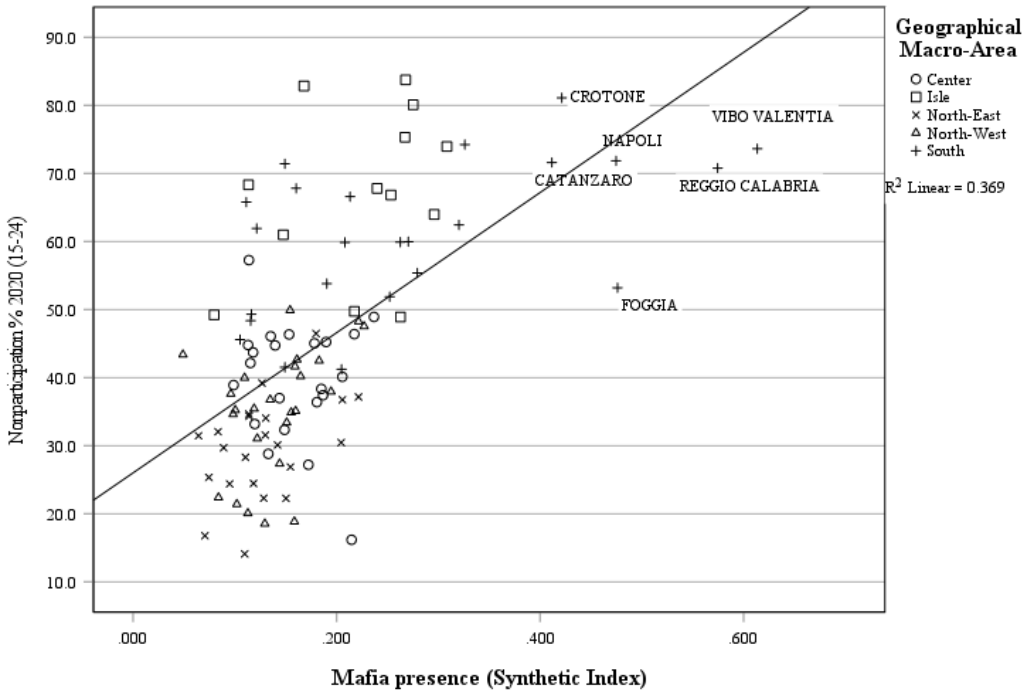


Figure A9. Scatterplot of correlation between Nonparticipation (25-34) and Mafia Presence.

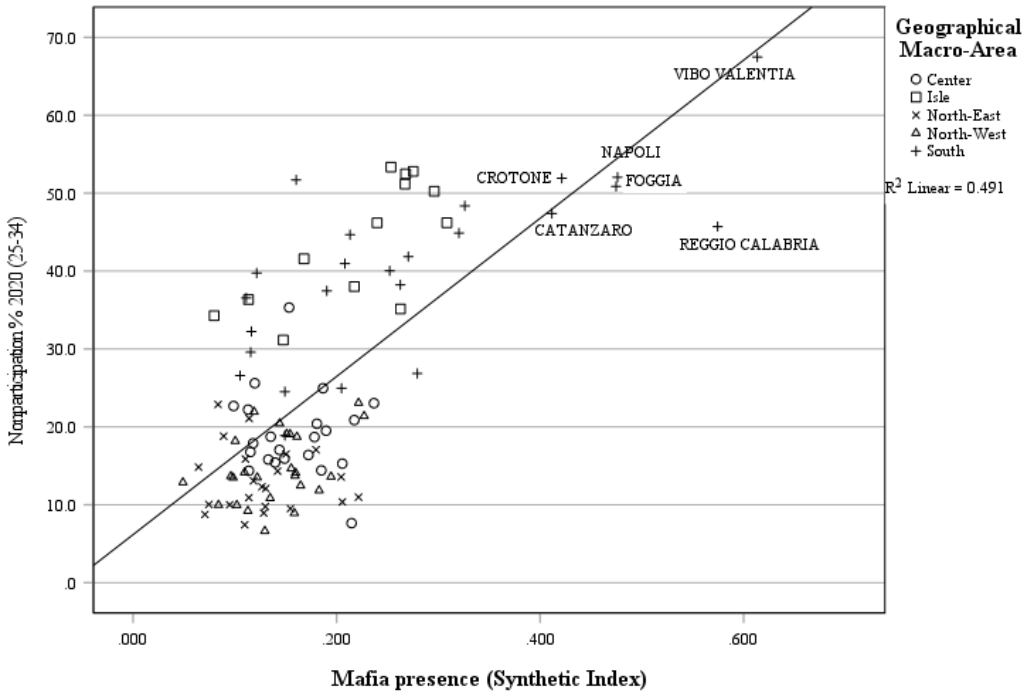
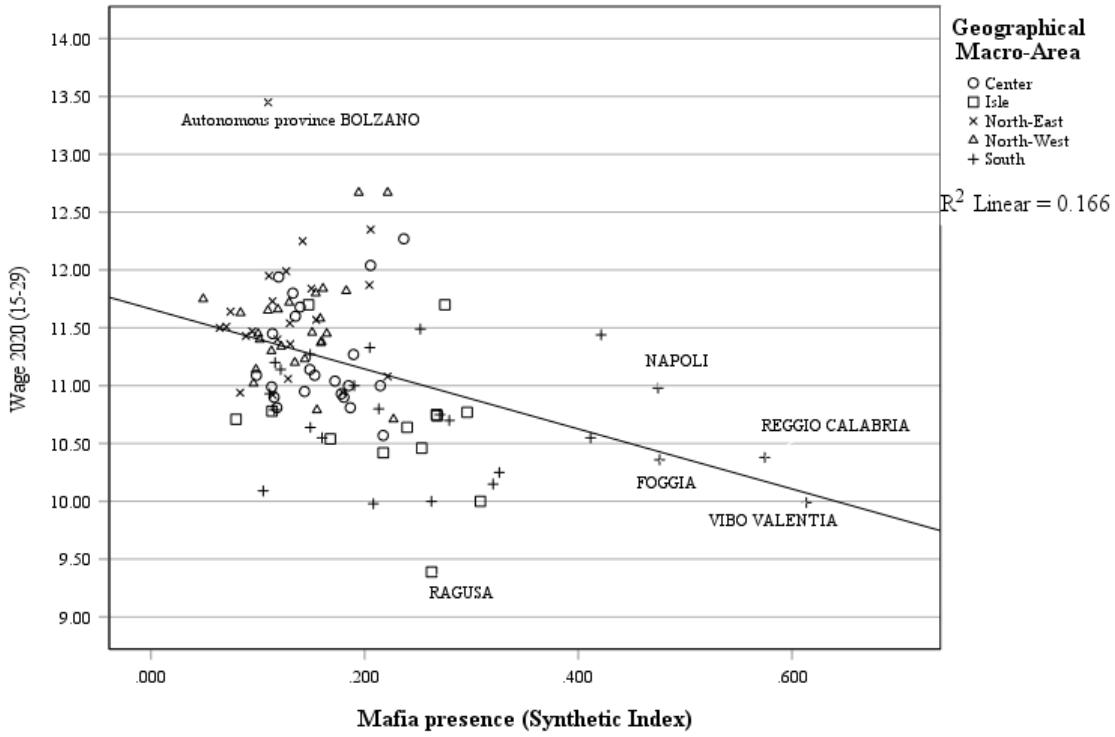


Figure A10. Scatterplot of correlation between Wage (15-29) and Mafia Presence.



A6. Robustness checks: 2SLS analysis with instrumental variable (separate waste disposal)

The presence of organized crime is significantly correlated to every indicator of decent jobs in the 2SLS analysis with the instrumental variable, with a few exceptions. For the 15-34 age group, the presence of the mafia is statistically significantly correlated with unemployment ($p<.001$) and nonparticipation ($p < .05$), when instrumenting for separate waste disposal. An increase of .1 point in the explanatory variable corresponds to 11% more irregular work and 7% less participation in the labor market. For these two indicators of decent jobs, no other explanatory variable is significant. Instead, the presence of the mafia is not significant for employment and wages. Structural employment is the only term correlated with current employment rates, while GDP, corruption, and previous wages can explain current hourly earnings, similarly to the main analysis.

Concerning the 15-24 age group, instead, the presence of the mafia correlates to all the indicators of decent jobs. The provinces where the mafia is more present, employment is lower of 5% ($p < .05$). Structural employment is a stronger predictor ($p < .01$) in this model as well. Interestingly, instead, the presence of the mafia is the only significant explanatory variable for unemployment rates. When instrumenting separate waste disposal, unemployment increases by 8% ($p < .001$) in mafia-affected areas. The evidence that structural unemployment is not significant in this model, might strengthen the argument that unemployment rates correspond to employment in the irregular economy. Finally, an increase in the presence of mafia correlates with 10% less participation ($p < .01$). Secondary education attendance is also significant ($p < .05$).

Finally, the results of the 2SLS analysis with the instrumental variable are similar to the OLS regression for the 25-34 age class. In the provinces where the mafia is more present, employment is lower by 10% ($p < .001$), unemployment by 11% ($p < .001$), and nonparticipation by 8% ($p < .05$). No other variables are significant. Thus, in this model, only the presence of the mafia can explain unemployment and the involvement in the shadow economy.

Table A5. 2SLS analysis (15-34) with instrumental variable (separate waste disposal).

	Employment % (15-34) 2021	**Unemployment % (15-34) 2021**	**Nonparticipation % (15-34) 2020**	**Wage (15-29) 2020**
Mafia presence (Synthetic	-.248	1.168***	.795*	-.074
Index)	(21.539)	(25.229)	(50.510)	(.768)
GDP	.004	-.021	-.100	.124*
	(.000)	(.000)	(.000)	(.000)
Corruption	-.056	.055	.039	.097*
	(.091)	(.219)	(.238)	(.008)
Secondary education	.268	-.935	-.744	
enrolment	(.000)	(.000)	(.000)	
University enrolment	-.259	.774	.698	
	(.000)	(.000)	(.000)	
Employment % (15-34) 2019	.748***			
	(.146)			
Unemployment % (15-34)		.079		
2010		(.135)		
Nonparticipation % (15-34)			.320	
2010			(.246)	
Wage (15-29) 2014				.801***
				(.085)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A6. 2SLS analysis (15-24) with instrumental variable (separate waste disposal).

	Employment % (15-24) 2021	**Unemployment % (15-24) 2021**	**Nonparticipation % (15-24) 2020**
Mafia presence (Synthetic Index)	-.514*	.853***	1.055**
	(14.478)	(29.352)	(4.952)
GDP	.026	.032	-.113
	(.000)	(.000)	(.000)
Corruption	-.061	.043	.060
	(.111)	(.258)	(.395)
Secondary education enrolment 2021	.860	-.575	-1.115*
	(.000)	(.000)	(.000)
University enrolment	-.854	.450	1.075
	(.000)	(.000)	(.000)
Employment % (15-24) 2010	.413**		
	(.147)		
Unemployment % (15-24) 2014		.262	
		(.136)	
Nonparticipation % (15-24) 2010			.029
			(.286)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A7. 2SLS analysis (25-34) with instrumental variable (separate waste disposal).

	Employment % (25-34) 2021	**Unemployment % (25-34) 2021**	**Nonparticipation % (25-34) 2020**
Mafia presence (Synthetic Index)	-1.095***	1.160***	.817*
	(.44.227)	(25.081)	(50.981)
GDP	.080	.156	-.086
	(.000)	(.000)	(.000)
Corruption	-.105	.057	.064
	(.293)	(.209)	(.234)
University enrolment	.090	-.328	-.060
	(.000)	(.000)	(.000)
Employment % (25-34) 2019	.131		
	(.191)		
Unemployment % (25-34) 2010		.213	
		(.195)	
Nonparticipation % (25-34) 2010			.320
			(.255)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

A7. Robustness checks: OLS analysis with alternative explanatory variable (objective Crimes)

The presence of the mafia measured in Objective Crimes is correlated to any indicator of decent jobs for the 15-34 age category (Table 8). However, for every age group, the previous versions of the dependent variables are more strongly correlated. An increase in mafia presence corresponds to 1.3% less employment ($p < .01$), 3.5% more unemployment ($p < .001$), 1.7% less participation ($p < .01$). Interestingly, the results indicate wages are lower by 1.2€ in mafia-affected provinces which is the same estimate of the main analysis. Several control variables are significant. First, The provinces with higher GDP register lower unemployment and higher average hourly earnings ($p < .05$). Second, as for the OLS analysis, where corruption is higher, wages are also higher ($p < .045$) for 15-29 years old. Third, areas with higher secondary and tertiary education attendance record lower participation ($p < .05$). Similarly, university enrolment correlates with unemployment ($p < .05$).

Concerning the 15-24 age class (Table 9), in the provinces where the mafia is more present, unemployment is higher by 3% ($p < .001$) and nonparticipation by 2.4% ($p < .01$). For all the indicators, however, previous rates are more strongly correlated with current trends ($p < .001$). Furthermore, Secondary education attendance can explain nonparticipation ($p < .05$), while university enrolment is significant for employment and nonparticipation rates ($p < .05$).

Finally, mafia-affected provinces register 2.4% less employment ($p < .001$), 2.8% more unemployment ($p < .001$), and 1.4 % less participation ($p < .05$) for the 25-34 age category (Table 10). Also, where corruption is higher, employment is lower ($p < .05$). Again, structural conditions of the labor markets are stronger explanatory variables for every indicator ($p < .001$).

Table A8. OLS analysis (15-34) with objective crimes.

	Employment % (15-34) 2021	**Unemployment % (15-34) 2021**	**Nonparticipation % (15-34) 2020**	**Wage (15-29) 2020**
Mafia presence (objective	-.132**	.356***	.170**	-.120*
crimes)	(2.977)	(4.750)	(5.916)	(.211)
GDP	-.006	-.308*	-.097	.123*
	(.000)	(.000)	(.000)	(.000)
Corruption	-.049	.057	.037	.104*
	(.086)	(.153)	(.162)	(.008)
Secondary education	.245	-.708	-.501*	
enrolment	(.000)	(.000)	(.000)	
University enrolment	-.254	.972*	.569*	
	(.000)	(.000)	(.000)	
Employment % (15-34) 2019	.825***			
	(.051)			
Unemployment % (15-34)		.414***		
2010		(.070)		
Nonparticipation % (15-34)			.736***	
2010			(.068)	
Wage (15-29) 2014				.790***
				(.061)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** $p < .001$; ** $p < .01$; * $p < .05$.

Table A9. OLS analysis (15-24) with objective crimes.

	Employment % (15-24) 2021	**Unemployment % (15-24) 2021**	**Nonparticipation % (15-24) 2020**
Mafia presence (objective crimes)	-.155	.299***	.234**
	(3.128)	(6.326)	(9.025)
GDP	.111	-.120	-.190
	(.000)	(.000)	(.000)
Corruption	-.035	.036	.042
	(.098)	(.209)	(.262)
Secondary education	.657	-.277	-.723*
	(.000)	(.000)	(.000)
University enrolment	-.800*	.402	.899*
	(.000)	(.000)	(.000)
Employment % (15-24) 2010	.614***		
	(.080)		
Unemployment % (15-24) 2014		.515***	
		(.081)	
Nonparticipation % (15-24) 2010			.542***
			(.093)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A10. OLS analysis (25-34) with objective crimes.

	Employment % (25-34) 2021	**Unemployment % (25-34) 2021**	**Nonparticipation % (25-34) 2020**
Mafia presence (objective crimes)	-.243***	.275***	.142*
	(5.847)	(4.428)	(5.872)
GDP	.231	-.183	-.113
	(.000)	(.000)	(.000)
Corruption	-.133*	.071	.057
	(.180)	(.000)	(.165)
University enrolment	-.231	.178	.093
	(.000)	(.000)	(.000)
Employment % (25-34) 2010	.588***		
	(.066)		
Unemployment % (25-34) 2010		.528***	
		(.105)	
Nonparticipation % (25-34) 2010			.747***
			(.073)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

A8. Robustness checks: OLS analysis with alternative explanatory variable (Rule of Law)

The presence of the mafia measured with Rule of Law is correlated to any indicator of decent jobs for the 15-34 age category, but wages (Table 11). An increase in the presence of mafia corresponds to 2% less employment ($p < .001$), 5.5% more unemployment ($p < .001$), and 2.5% less participation ($p < 01$). Moreover, regions with higher GDP have less unemployment ($p < .01$) and higher wages ($p < .05$). Again, the previous versions of the dependent variables are more strongly correlated ($p < .001$), except for unemployment ($p < .05$).

Concerning the 15-24 age class (Table 12), in the provinces where the mafia is more present, employment is lower by 3% ($p < .01$), unemployment higher by 4% ($p < .001$), and nonparticipation also lower by 5% ($p < .001$). Provinces with higher GDP also have more participation in the labor market ($p < .05$) among 15-24 years old. For all the indicators, however, previous rates are more strongly correlated with current trends ($p < .001$).

Finally, the presence of mafia is highly correlated to decent jobs for 25-34 years old (Table 13). In mafia-affected provinces, employment is lower by 5% ($p < .001$), unemployment higher by 5% ($p < .001$), and participation lower by 3% ($p< .001$). Richer provinces have lower employment ($p < .01$) and higher unemployment ($p < .05$). Also, where corruption and university enrolment are higher, employment is lower ($p < .05$). As in the majority of the models, previous trends in the indicators are stronger explanatory variables for measure of decent jobs ($p < .001$).

Table A11. OLS analysis (15-34) with Rule of law.

	Employment % (15-34) 2021	**Unemployment % (15-34) 2021**	**Nonparticipation % (15-34) 2020**	**Wage (15-29) 2020**
Rule of law	.214***	-.540***	-.247**	.046
	(2.212)	(3.276)	(4.718)	(.164)
GDP	.047	-.371**	-.157	.118*
	(.000)	(.000)	(.000)	(.000)
Corruption	-.059	.080	.046	.096
	(.083)	(.142)	(.160)	(.008)
Secondary education	.048	-.112	-.207	
enrolment	(.000)	(.000)	(.000)	
University enrolment	-.106	.449	.335	
	(.000)	(.000)	(.000)	
Employment % (15-34) 2019	.727***			
	(.061)			
Unemployment % (15-34)		.198*		
2010		(.078)		
Nonparticipation % (15-34)			.636***	
2010			(.087)	
Wage (15-29) 2014				.804***
				(.075)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: data on enrolment to secondary education for year 2019 for Nonparticipation. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** $p < .001$; ** $p < .01$; * $p < .05$.

Table A12. OLS analysis (15-24) with Rule of law.

	Employment % (15-24) 2021	**Unemployment % (15-24) 2021**	**Nonparticipation % (15-24) 2020**
Rule of law	.303**	-.413***	-.465***
	(2.251)	(4.606)	(6.843)
GDP 2020	.127	-.209	-.270*
	(.000)	(.000)	(.000)
Corruption 2017	-.060	.060	.063
	(.096)	(.203)	(.246)
Secondary education enrolment	.427	.088	-.299
	(.000)	(.000)	(.000)
University enrolment	-.583	.137	.550
	(.000)	(.000)	(.000)
Employment % (15-24) 2010	.470***		
	(.093)		
Unemployment % (15-24) 2014		.343***	
		(.095)	
Nonparticipation % (15-24) 2010			.300**
			(.112)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A13. OLS analysis (25-34) with Rule of law.

	Employment % (25-34) 2021	**Unemployment % (25-34) 2021**	**Nonparticipation % (25-34) 2020**
Rule of law	.473***	-.464***	-.266***
	(3.539)	(3.241)	(4.489)
GDP	.275**	-.269*	-.172
	(.000)	(.000)	(.000)
Corruption	-.113*	.075	.055
	(.153)	(.135)	(.160)
University enrolment	-.249*	.246	.141
	(.000)	(.000)	(.000)
Employment % (25-34) 2010	.391***		
	(.065)		
Unemployment % (25-34) 2010		.309***	
		(.123)	
Nonparticipation % (25-34) 2010			.612***
			(.090)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %.

Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Note: standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

A9. OLS regression of the presence of Mafia on decent jobs for adults

Table A14. OLS regression of decent jobs for adults.

	Employment % (35-49) 2021	Unemployment % (35-49) 2021	Nonparticipation % (35-54) 2020	Wage (30-49) 2020
Mafia presence (Synthetic Index)	-.060	.369***	.133***	-.032
	(4.891)	(2.942)	(3.009)	(.316)
GDP	.029	-.121	-.051	.054*
	(.000)	(.000)	(.000)	(.000)
Corruption	-.041	.109	.038	.009
	(.094)	(.135)	(.073)	(.007)
Employment % (35-44) 2010	.630***			
	(.096)			
Employment % (45-54) 2010	.284**			
	(.096)			
Unemployment % (35+) 2010		556***		
		(.135)		
Nonparticipation % (35-54) 2010			.848***	
			(.047)	
Wage (30-49) 2014				.938***
				(.030)

Note: standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

A10. OLS regression with individual indicators of the Synthetic Index of Mafia Presence: power syndicate crimes

Table A15. OLS analysis of power syndicate crimes on employment and wages

	Employment % (15-34) 2021	**Employment % (15-24) 2021**	**Employment % (25-34) 2021**	**Wage (15-29) 2020**
Mafia presence (power	-.107*	-.131	-.286***	-.152**
syndicate crimes)	(3.254)	(3.233)	(6.438)	(.247)
GDP	.032	.150	.322**	.131*
	(.000)	(.000)	(.000)	(.247)
Corruption	.-059	-.045	-.144**	.096*
	(.087)	(.099)	(.175)	(.008)
Secondary education	.100	.482		
enrolment	(.000)	(.000)		
University enrolment	-.159	-.679	-.355**	
	(.000)	(.000)	(.000)	
Employment % (15-34)	.828***			
2019	(.054)			
Employment % (15-24)		.620***		
2010		(.081)		
Employment % (25-34)			.522***	
2010			(.070)	
Wage (15-29) 2014				.757***
				(.064)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A16. OLS analysis of power syndicate crimes on unemployment

	Unemployment % (15-34) 2021	**Unemployment % (15-24) 2021**	**Unemployment % (25-34) 2021**
Mafia presence (power syndicate crimes)	.355*** (5.018)	.210** (7.090)	.358*** (4.344)
GDP	-.411** (.000)	-.232 (.000)	-.234 (.000)
Corruption	.086 (.152)	.060 (.216)	.083 (.135)
Secondary education enrolment	-.322 (.000)	.039 (.000)	
University enrolment	.722 (.000)	.229 (.000)	.242 (.000)
Unemployment % (15-34) 2010	.376*** (.072)		
Unemployment % (15-24) 2014		.516*** (.088)	
Unemployment % (25-34) 2010			.482*** (.098)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** $p < .001$; ** $p < .01$; * $p < .05$.

Table A17. OLS analysis of power syndicate crimes on nonparticipation

	Nonparticipation % (15-34) 2020	**Nonparticipation % (15-24) 2020**	**Nonparticipation % (25-34) 2020**
Mafia presence (power syndicate crimes)	.193*** (6.017)	.176* (9.710)	.246*** (5.813)
GDP	-.148 (.000)	-.255 (.000)	-.168 (.000)
Corruption	.051 (.159)	.057 (.266)	.066 (.155)
Secondary education enrolment	-.351) (.000)	-.475 (.000)	
University enrolment	.448 (.000)	.737* (.000)	.152 (.000)
Nonparticipation % (15-34) 2010	.707*** (.067)		
Nonparticipation % (15-24) 2010		.562*** (.096)	
Nonparticipation % (25-34) 2010			.663*** (.069)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

A11. OLS regression with individual indicators of the Synthetic Index of Mafia Presence: enterprise syndicate crimes

Table A18. OLS analysis of enterprise syndicate crimes on employment and wages

	Employment % (15-34) 2021	**Employment % (15-24) 2021**	**Employment % (25-34) 2021**	**Wage (15-29) 2020**
Mafia presence	-.009	-.022	-.007	.013
(enterprise syndicate	(3.232)	(3.545)	(7.174)	(.290)
crimes)				
GDP	.005	.170	.309*	.104
	(.000)	(.000)	(.000)	(.000)
Corruption	-.050	-.033	-.147	.092
	(.089)	(.100)	(.191)	(.008)
Secondary education	.075	.472		
enrolment	(.000)	(.000)		
University enrolment	-.112	-.686	-.339*	
	(.000)	(.000)	(.000)	
Employment % (15-34)	.911***			
2019	(.043)			
Employment % (15-24)		.692***		
2010		(.072)		
Employment % (25-34)			.708***	
2010			(.064)	
Wage (15-29) 2014				.834***
				(.059)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A19. OLS analysis of enterprise syndicate crimes on unemployment

	Unemployment % (15-34)	**Unemployment % (15-24)**	**Unemployment % (25-34)**
	2021	**2021**	**2021**
Mafia presence (enterprise	-.018	.113	-.016
syndicate crimes)	(6.097)	(7.972)	(5.589)
GDP	-.475**	-.237	-.308*
	(.000)	(.000)	(.000)
Corruption	.075	.043	.080
	(.168)	(.221)	(.153)
Secondary education	-.319	.036	
enrolment	(.000)	(.000)	
University enrolment	.795	.205	.349*
	(.000)	(.000)	(.000)
Unemployment % (15-34)	.557***		
2010	(.071)		
Unemployment % (15-24)		.642***	
2014		(.080)	
Unemployment % (25-34)			.636***
2010			(.103)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A20. OLS analysis of enterprise syndicate crimes on nonparticipation

	Nonparticipation % (15-34) 2020	**Nonparticipation % (15-24) 2020**	**Nonparticipation % (25-34) 2020**
Mafia presence (enterprise syndicate crimes)	-.078 (6.009)	-.061 (9.770)	-.089 (6.078)
GDP	-.121 (.000)	-.246 (.000)	-.145 (.000)
Corruption	.047 (.165)	.049 (.271)	.061 (.166)
Secondary education enrolment	-.277 (.000)	-.427 (.000)	
University enrolment	.416 (.000)	.703 (.000)	.169 (.000)
Nonparticipation % (15-34) 2010	.845*** (.055)		
Nonparticipation % (15-24) 2010		.684*** (.079)	
Nonparticipation % (25-34) 2010			.828*** (.060)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

A12. OLS regression with individual indicators of the Synthetic Index of Mafia Presence: business subjective crimes

Table A21. OLS analysis of business subjective crimes on employment and wages

	Employment % (15-34) 2021	**Employment % (15-24) 2021**	**Employment % (25-34) 2021**	**Wage (15-29) 2020**
Mafia presence	-.026	-.124	-.114	-.083
(business subjective	(2.745)	(2.890)	(6.059)	(.238)
crimes)				
GDP	.007	.163	.306*	.120*
	(.000)	(.000)	(.000)	(.000)
Corruption	-.052	-.034	-.146**	.094
	(.089)	(.100)	(.188)	(.008)
Secondary education	.070	.453		
enrolment	(.000)	(.000)		
University enrolment	-.110	-.666	-.328*	
	(.000)	(.000)	(.000)	
Employment % (15-34)	.096***			
2019	(.047)			
Employment % (15-24)		.685***		
2010		(.075)		
Employment % (25-34)			.649***	
2010			(.069)	
Wage (15-29) 2014				.798***
				(.064)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A22. OLS analysis of business subjective crimes on unemployment

	Unemployment % (15-34) 2021	**Unemployment % (15-24) 2021**	**Unemployment % (25-34) 2021**
Mafia presence (business subjective crimes)	.265*** (4.540)	.113 (6.480)	.267*** (4.157)
GDP	-.384* (.000)	-.230 (.000)	-.226 (.000)
Corruption	.076 (.157)	.053 (.220)	.079 (.142)
Secondary education enrolment	-.270 (.000)	.103 (.000)	
University enrolment	.634 (.000)	.161 (.000)	.234 (.000)
Unemployment % (15-34) 2010	.489*** (.068)		
Unemployment % (15-24) 2014		.589*** (.084)	
Unemployment % (25-34) 2010			.565*** (.098)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.

Table A23. OLS analysis of business subjective crimes on nonparticipation

	Nonparticipation % (15-34) 2020	**Nonparticipation % (15-24) 2020**	**Nonparticipation % (25-34) 2020**
Mafia presence (business subjective crimes)	.133** (4.993)	.075 (8.153)	.171*** (5.009)
GDP	-.108 (.000)	-.233 (.000)	-.127 (.000)
Corruption	.046 (.162)	.049 (.271)	.061 (.160)
Secondary education enrolment	-.320 (.000)	-.469 (.000)	
University enrolment	.413 (.000)	.709 (.000)	.111 (.000)
Nonparticipation % (15-34) 2010	.786*** (.058)		
Nonparticipation % (15-24) 2010		.652*** (.085)	
Nonparticipation % (25-34) 2010			.754*** (.062)

Note: data on university enrolment for the academic year 2019-2020 for nonparticipation %. Data on university enrolment for the academic year 2021-2022 for the other dependent variables.

Data on enrolment to secondary education for year 2019 for nonparticipation %. Data on enrolment to secondary education for year 2021 for the other dependent variables.

Standardized coefficient with standard error in brackets. *** p < .001; ** p < .01; * p < .05.