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# Local Secessions, Homophily, and Growth. A Model with some Evidence from the Regions of Abruzzo and Molise (Italy, 1963)[*]

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**ABSTRACT**

This paper analyses the case of a local secession, i.e. the birth of a new local jurisdiction by separation from an existing one. We present a stylized model in which society is composed of heterogeneous groups and individuals have an homophily bias. The model predicts that: i) separations, such as the split of a territory into distinct administrative units, occur when the costs of mixed communities are sufficiently large; ii) the smaller community drives the decision to secede; iii) welfare gains from the split are associated with positive population growth; iv) higher payoffs under separations, however, might be related to taste for sameness only, with no (or even negative) effect on economic growth. Then, we bring the model to the data by exploiting the secession of the Italian region of Molise from Abruzzo, a unique event in Italian history, which took place in 1963. Historical records document that the split was the result of pressures from Molise, the smaller community. Our evidence suggests that the split was associated with population inflows in both areas. Finally, the main empirical findings, derived by using a synthetic control approach, show that the split caused significant benefits, in both regions, in terms of per-capita GDP growth.

**Keywords**: local jurisdictions, secessions, regional growth.

**JEL Classification**: H77, H10, R11, R12.

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## 1. Introduction

Over the last thirty years, a vast literature has analyzed the determinants of the size of jurisdictions, both by considering secessions from sovereign states and federalism. The main conclusion is that jurisdictions have to balance heterogeneous preferences towards public good provision and redistributive taxation against economies of scale and spillovers across areas. Thus, what mainly matters is the level of centralization at which fiscal policy decisions are taken.

The story we consider here is different from – but not incompatible with – traditional explanations based on fiscal factors. The case of our study, the split of Molise, Italy, from the region Abruzzo in 1963, raises indeed some questions. At the time of separation, Italian regions had very little discretion about local fiscal policy, which was basically decided at the central level. Also, the picture about the chance and the nature of a future regional devolution was quite blurred, to say the least. But then, which were the advantages from a split? This paper proposes an explanation based on "homophily", the bias for sameness, where people from a group (Molise) prefer to interact among themselves, and separate as much as possible from the other group (people from Abruzzo). Even when the immediate gains from direct management of local fiscal policies are absent, such an attitude can be explained in terms of taste for cultural similarity, or in terms of improved coordination. For example, more coordination at the local level can put greater political pressure on central government's decisions. A *fortiori*, if devolution eventually occurs, an homogeneous community will be likely to benefit even more, as suggested by Oates (1972) and others.

The model builds on - and, by considering mobility, significantly extends - the framework introduced by Dalmazzo, Pin, and Scalise (2014), where society is composed of heterogeneous groups, and individuals have an homophily bias: they like to interact with people of their own kind, but they dislike interacting with people from other groups (see, e.g., Currarini, Jackson, and Pin, 2009). In the present framework, we consider two communities that have conflicting interests (such

as breeders and farmers), or different "cultures"[1]. The two groups of individuals, denoted by α and β, live in the same area, and each individual chooses an action, termed as "effort" or "investment". The composition of society is crucial for individual decisions. For instance, individual investment is likely to be encouraged when a member of group α can lobby with other type-α individuals for the provision of specific services. By contrast, when the activity of members in group β is substantial, there is more pressure to twist the provision of services in favour of group β's interests, and group α's members may find investment less profitable.

The literature on country secessions has several analogies with the topic of this paper. The theory of the size of nations by Alesina and Spolaore's (1997, 2003) balances the advantages of unification, in terms of economies of scale in public good provision, market size and uninsurable shocks, with the costs of heterogeneity. Average distance in individuals' culture and preferences is likely to increase with the size of the country, and matters for the provision of public goods. Buchanan and Faith (1987) and Bolton and Roland (1997) focus on taxation and redistribution across poor and rich regions as the main driver of secessionist politics, quoting the examples of the Flanders and Catalonia. In particular, Buchanan and Faith (1987) argue that the threat of secessions may put a limit on the level of taxation imposed on wealthy regions, while Bolton and Roland (1997) show that even poorer regions like Wallonia or Scotland may support separatism, whenever their residents are more inclined to redistributive policies. Interestingly, Alesina, Spolaore, and Warcziarg (2000) argue that the removal of trade barriers across countries reduces the losses which are otherwise borne when parting from a larger nation. Thus, openness leads to political disintegration.

However, the analogy with country secessions must not be exaggerated in the case of interest here. Abruzzo and Molise were and are part of a union, Italy, that provided a common market together with defense, justice and transportation infrastructure. At the time of the separation

[1] For example, split communities are likely to fuel conflict about political representation of specific interests, both at the local and central government level. Alternatively, the "cultural" view on parochialism proposed by Bowles and Gintis (2004) emphasizes the role of ethnically-based trust and exclusion in societal networks.

decision, fiscal discretion at the local level was also largely limited. In this perspective, many of the fiscal arguments put forward by Buchanan and Faith (1987), Bolton and Roland (1997) or – within the "fiscal decentralization" literature by, e.g., Oates (1972) and Besley and Coate (2003)[2] – seem to have limited relevance. By contrast, the argument put forward by Alesina, Spolaore, and Warcziarg (2000) is central: under the Italian sovereignty, the separation between Abruzzo and Molise entailed small costs at the local level. At the same time, a separation could guarantee the advantages brought from political administrations, or political representatives, closer to the local community (see, e.g., Alesina, Baquir, and Hoxby, 2004), and put more distance between two culturally heterogeneous communities.

For these reasons, the model we propose emphasizes cultural differences across communities and the role of homophily, rather than stressing standard fiscal issues as taxation and the allocation of public funds. We suggest that individual contribution will be stronger in homogeneous societies, since the individual's action is a strategic complement of actions of individuals from the same group, while is a strategic substitute of actions from individuals belonging to the other group. An immediate implication of our theoretical framework is that the impact of the secession on the welfare of both communities can be evaluated by looking at their population flows. In particular, if members of a community benefit (suffer) from separation, they will have lower (higher) incentive to migrate away. Another implication is that the smaller community pushes to get on its own. The model encompasses two reasons why separations might lead to higher payoffs. To the extent that the split is due only to the taste for sameness, more homogeneous communities might be "happier" but not necessarily richer. The desire of being on its own might run against a more efficient exploitation of the economies of scale associated with size. In this case, we should observe post-separation positive population trends, which go hand in hands with a declining economy. However,

[2] The seminal contribution of Oates (1972) emphasized the conflict between tailoring public goods provision to the preferences of smaller groups and the presence of spillovers across districts. See also Faguet (2004). Besley and Coate (2003) emphasize the political process generated by locally elected representatives, where the "winning coalition" may produce both misallocation and uncertainty on the provision of local public goods.

separations might be good also for economic efficiency. For example, an homogeneous region may set an economic environment that is more favorable to trade and entrepreneurship, as in the "parochialist" view of Bowles and Gintis (2004). Alternatively, an homogeneous society is likely to have more "voice", when higher community involvement exerts stronger pressure on the central government. Thus, as a results of a community split we might observe upward sloped trends for both population and growth.

In the empirical analysis, we consider the impact of the Molise secession from Abruzzo in 1963. As predicted by the model the separation was due to the pressures coming from the smaller community, that of Molise. The consequences on long-term growth (in terms of per-capita GDP) are analyzed by using a synthetic control approach ("SC", hereafter), which is particularly appealing for small-sample comparative studies: see Abadie and Gardeazabal (2003); Abadie, Diamond, and Hainmueller (2010). We find, that *both* regions gained from the split. Our findings also suggest that such higher growth rates were due to higher rates of private and public capital accumulation, and did not derive from public employment expansions over the 1970s and 1980s. Unfortunately, the SC routine is not implementable for population. We therefore resort to a different identification strategy (Difference-in-Differences, hereafter also "DID") and show that the 1963 secession increased local population dynamics, in both Molise and Abruzzo, thus substantiating the theoretical model. Overall, our evidence seems to be consistent with the cultural homophily story proposed here: the findings suggest that the positive impact on population began right after the separation while the economic benefits from the secession started to accrue only in the Seventies, when Italy's devolution materialized. The taste for sameness seems the *prima-facie* cause of the split, which later on – when regions gained substantial discretion in the allocation of public funds and power to legislate – resulted also in higher economic growth.

The paper is organized as follows. Section 2 gives a brief historical account of the process which led to the split between Abruzzo and Molise. In Section 3, we propose a theoretical model that gives

an interpretation for the motivations of split. Section 4 provides evidence on the impact of the separation for both Abruzzo and Molise. Section 5 concludes.

## 2. Pushing for independence: a dig into the history of Molise's secession

Since the birth of the Kingdom of Italy (1861), the country had been characterized by a high degree of centralization in government, considered as a "*necessary remedy for the weak integration of the new nation state*" (Putnam, Leonardi, and Nanetti, 1993, p. 18). Introduced by the Italian Constitutional law of 1948, Regions were the first attempt to attribute functions which were typical of the central government (in particularly, the power to legislate) to a more decentralized level. Article 5 of the Italian Constitutional Law stated that "*Italy recognizes and promotes autonomies*", whereas the Article 115 specified that "*regions are constituted as autonomous entities with their own powers and functions, in accordance with the principles set out in the Constitutional Law*". Despite the intention of the Constituent Assembly to devolve substantial powers to the Regions, the implementation process took years to reach the goal: it was gradually awarded starting from the seventies.[3] Figure 1 shows a map of the Italian regions.

[Figure 1]

In this context, the events of Abruzzo and Molise represent a unique case study. Historically, the region of Molise experienced various jurisdictional arrangements. For most of the time, Molise was either by itself, or part of coalitions that did not include Abruzzo. The region enjoyed autonomy and integrity during the Middle Ages. Then, – under the rule of Frederick II – it was merged with inner areas of Lazio and Campania. During the Spanish domination, Molise was part of the present province of Foggia (in the Apulia region). Autonomy was re-gained under Napoleon, but then again

[3] Here we provide an account of the features of the Italian "ordinary" regions, covering 85% of Italy's population; "special" statute Regions (Sicily, Sardinia, Aosta Valley, Trentino-Alto Adige, established and operating since 1948; and Friuli-Venezia Giulia, that gained her special status in 1963) were given greater autonomy - both in terms of competences and fiscal capacity.

- under the Kingdom of Naples - the territory was divided in four different jurisdiction, where some municipalities were merged with others located in Abruzzo (see also Petrocelli, 2006).

In the aftermath of the Second World War, during the works of the Constituent Assembly, political representatives from the region asserted that Molise should be recognized as an autonomous entity. This consideration mainly stood on the presumption that Molise was a "*territorial entity with its own characteristics, both from the ethnic, geographic, economic and social point of view*" (see the transcript of the Parliamentary acts,[4] p. 26,744). This recommendation was, at first, favorably considered by a sub-commission of the Constituent Assembly but, eventually, it was not admitted: since many other territories were advocating autonomy, the Constituent Assembly decided to restrict the list of regions to be included in the Constitutional Law to 19 areas. The list did not include Molise as an autonomous region, but Abruzzo and Molise as a whole.

The Constitutional Law (Art. 132) envisaged the birth of new Regions, provided that some conditions were met. There must have been: i) at least 1 million inhabitants in the Region; ii) a proposal by a set of municipal councils representing at least 1/3 of the populations concerned; iii) the approval by majority vote of the involved populations through a *referendum*. As Molise had less than 400,000 inhabitants, quite far from the one-million threshold, Art. 132 would not have served the cause of the autonomy. However, in 1948, a transitory legal provision (number XI) was introduced. This norm stated that, for 5 years following the approval of the Constitutional Law (1948), it would have been possible to change the list of regions without satisfying all the requirements cited in Art. 132. The only condition was to "*consider the opinion of interested populations*". As for the rationale behind this transitory provision, little can be found in the official sources. Likely, it was due to the lobbying activity of the Molise's representatives, who managed to keep the autonomy's option alive.

[4] See, among others: legislature.camera.it/_dati/leg03/lavori/stenografici/sed0557/sed0557.pdf

As an additional obstacle, the Parliament had not yet defined the procedure to consult the "interested population". This issue was solved by Law n.62 (art. 73), approved on the 10th of February 1953, which decreed that the "interested population" had to be consulted through the vote expressed by municipal councils. At that point, however, there was no time left to initiate the consultation procedure. Thanks to the proposal of Senator Giuseppe Magliano, a representative of the Christian Democratic party with origins from Molise, the expiration of the transitory legal provision number XI was postponed to December 1963.

As for the consultation, almost the entire number of municipal councils in Molise agreed to secede. Also 1/3 of municipal councils in Abruzzo were in favor of separation[5]. Thus, the municipal councils favorable to separation added up to a total of 0,9 out of 1,7 million of inhabitants of Abruzzo and Molise. In 1958, Senator Magliano and other colleagues started the parliamentary procedure to approve the secession. The political process was quite uncontroversial (basically, almost all political parties agreed with the proposal),[6] although some dispute arose about the number of Senators that were to be elected in Molise.[7] Notably, also the political representatives of Abruzzo did not oppose. The separation process ended 5 years after its start, just a few days before the deadline (31 December 1963). To give an idea of the enthusiastic reception that the news about independence from Abruzzo had on the local population of Molise, we report the following article from the national newspaper La Stampa, on the 18th of December 1963.

> *MOLISE BECOMES REGION. CAMPOBASSO IS ITS REGIONAL CAPITAL.*
> *Despite the temperature below zero and a frozen wind blowing from the snow-capped mountains, the Campobasso population celebrated the birth of the new region, Molise, this evening. The Palace of the City Council, the Province Council, public offices, and many private homes have illuminated windows. In public places, residents pay tribute and drink to the economic development of the region. The battle engaged by Campobasso and the 136 municipalities of the region began in February 1920, when the Councilor Giovambattista Masciotta, in the session of the Provincial Council of Molise, supported the need for regional autonomy. The issue was reaffirmed in the political elections of 1921, when all the Molisans formed a single list marked by Molise's coat of arms, to protest against the formation of the electoral constituency that merged Campobasso together with Avellino and Benevento. In the postwar period, the question was again and more concretely addressed by the "Liberation Committee" of Molise and, in August 1945, was officially constituted the "Pro Molise Mobilization Committee", which admitted members from every political*

[5] At that time, there were 305 municipalities in Abruzzo; 136 in Molise.

[6] With the only exception of the Italian Social Movement, a right-wing post-fascist party which obtained almost 5% of votes in the 1963 national elections. This party raised doubts on the benefits of decentralized governments.

[7] In Italy the Senate of Republic is elected on regional basis.

*orientation. At last, the issue was brought to Parliament in November 1946: the Constituent Assembly issued a first informal recognition with the promotion of an inquiry aimed to receive the opinions of the municipalities concerned. The bill has been bouncing between the two branches of Italian Parliament from 24 October 1952 to today. It was approved by the Senate only in July [1963] and, in September [1963], by the Chamber of Deputies. Late in the afternoon [17th of December, 1963] the City Council gathered in a special session and unanimously endorsed an agenda to applaud the Parliament's deliberation and to express its delight for the work carried out by the Members of Parliament. At the beginning of the session, several thousand people organized a torchlight procession, which trod through the main streets of the city. Eventually, a laurel wreath was laid on the monument to the fallen* (La Stampa, December 18, 1963, p.15).

Regional devolution made its first and timid appearance in late 1960s. Indeed, the decentralization process had been stalling mainly because of political concerns: the Cristian Democrats worried that, especially in Northern-Central Italy, they might lose power against regional councils controlled by the Communist Party. Thus, for more than 20 years, the Art. 5 of the Constitution remained a dead letter. Eventually, a law providing the electoral rules for the regional councils was approved in 1968, amongst strong opposition by conservative parties. A gradual decentralization process started after the first regional elections in 1970. Some limited functions were attributed to Regions in 1972.[8] A more decisive step to devolution was taken in 1977, following the approval of Law 382 in 1975.

It is important to remark, however, that Italian Regions had traditionally a low level of budgetary autonomy (see, for instance, Scanu, 2017). Autonomy of taxation was absolutely negligible, at least until the 1990s. During the 1970s and 1980s, however, the regional system became a mechanism to transfer selected functions, and the corresponding economic resources, from the central to the local level. For instance, the devolution of 1977 implied that 20,000 offices from the national bureaucracy were dismantled and transferred to the Regions. According to some critics, the process of devolution was responsible for an extraordinary increase in public expenditures, driven by local public employment (see Santoro, 2014). At the same time, the increasing capacity to manage public funds at the local level gave Regions a powerful instrument to tailor their expenditure to residents' needs.

[8] Such functions referred to: local municipal districts and local police; agriculture, hunting and fishing sector; the mineral and mining sector; school assistance; museums and libraries; health and hospital care; transport; tourism and hotel industry; urban planning; craft and professional education.

## 3. The Model

The events we highlighted above emphasize some facets that shape the model proposed here. There were two communities within the same jurisdiction (Abruzzo and Molise), then one community (Molise, the smaller one) pushed for separation into an autonomous jurisdiction, without finding resistance from the other, larger, community (Abruzzo). At the time of the split, in 1963, Italian Regions had very little fiscal discretion. Thus, the new-born region had very little space for raising taxes and allocating expenditure, which are crucial ingredients in the literature on the optimal size of jurisdictions. By building on these observations, we point to cultural-ethnical preferences and homophily as main drivers of the split. Obviously, preference homogeneity/heterogeneity *per se* is no novelty in this kind of literature. Here, however, we postulate that homophily, the preference for sameness, favors cooperation among members of the same community and, thus, it has an impact on individual actions and welfare.

We analyze a mass equal to one of individuals who are born in the area considered. Natives are exogenously parted into two communities, community α and community β, of size $Q \geq \frac{1}{2}$ and $1 - Q$, respectively. The two communities may have conflicting interests, so each community will evaluate the alternative payoffs of its typical member under integration (the two communities co-exist under a single jurisdiction), or secession (the two communities segregate under separate jurisdictions). Each individual is subject to an idiosyncratic preference shock for the alternative locations she considers. Thus, natives will decide whether to remain in the region of birth, or to move elsewhere. Further, individuals conjecture that – after mobility decisions are made – the share of community α will be equal to $q \geq \frac{1}{2}$, and the share of community β will be $1 - q$.

The following timing of events is postulated:

*Time $t = 0$. Political decision about integration or segregation.*
The mass of natives, parted into communities α and β, evaluates the payoffs from integration and secession by conjecturing that the share of stayers in community α is equal to $q \geq \frac{1}{2}$. If either community evaluates segregation more than integration, secession will occur.

*Time* $t = 1$. *Resolution of uncertainty.*
The values of individual preference shocks for each location ("homeland" vs. "elsewhere") are revealed.

*Time* $t = 2$. *Individual mobility choices are made.*
Conditional upon the political decision taken at $t = 0$, and on the resolution of individual uncertainty at $t = 1$, each agent decides whether to remain and implement the optimal action, or to leave.

We now introduce the basics of the model. Individuals in either community choose an action. The strategy of agent $i$ belonging to community α is denoted by $x_i \geq 0$. We may think of $x_i$ as the amount of individual investment in entrepreneurial activities.[9] Such an investment decision is affected by interactions with both own and other group's individuals. We define the average action of members of group α as $\overline{x}_\alpha$, while $\overline{x}_\beta$ is the average action of members of group β.

We consider two polar regimes, denoted by the indicator $I = \{0,1\}$. The two communities can either be fully integrated, with $I = 1$, or fully segregated, with $I = 0$. Under integration, each native conjectures that – should she stay – she will interact with a fraction $q \geq \frac{1}{2}$ of individuals from community α, and a fraction $1 - q$ of individuals from community β. The payoff of agent $i$, belonging to group α, is given by:

$$U_i^I = a \cdot x_i - \frac{k}{2} \cdot x_i^2 + b \cdot q^I \cdot x_i \cdot \overline{x}_\alpha - c \cdot (1-q) \cdot I \cdot x_i \cdot \overline{x}_\beta + A \cdot I + \varepsilon_i. \qquad (1)$$

Similarly, agent $-i$, belonging to group β, chooses $x_{-i} \geq 0$ to maximize her payoff:

$$U_{-i}^I = a \cdot x_{-i} - \frac{k}{2} \cdot x_{-i}^2 + b \cdot (1-q)^I \cdot x_{-i} \cdot \overline{x}_\beta - c \cdot q \cdot I \cdot x_{-i} \cdot \overline{x}_\alpha + A \cdot I + \varepsilon_{-i}. \qquad (2)$$

Focusing on (1) – the interpretation of (2) is strictly analogous – we postulate that $a > 0$ denotes the direct benefit that the individual gets from her investment, which has a quadratic cost that depends on $k > 0$. A central feature of the model is homophily-driven externalities, which affect

[9] As in Dalmazzo, Pin, and Scalise (2014), we might also interpret $x_i$ as "effort" in providing services to own community members, which may – at the same time – reduce utility for members of the other group.

the choice of $x_i$, and whose relevance depends on the size of both parameters $(b, c)$. In particular, $b \in \left(0, \frac{k}{2}\right)$ denotes the impact that $i$ gets from the investment of other members of the same group, α, while $c \in \left(0, \frac{k}{2}\right)$, with $c \leq b$, is the impact that $i$ gets from the investment of members of the *other* group, β. Think, for example, of two different communities living together in the same region under a common administration. A higher activity of own group members, as picked by $\overline{x}_\alpha \cdot q$, will favour the protection of interests, or provision of services which are more likely to suit agent $i$'s needs. By contrast, a higher activity of *other* group members, $\overline{x}_\beta \cdot (1-q)$, will favor the provision of services that better serve other, and possibly conflicting, interests.[10] On the other hand, the constant A ≥ 0 represents the *advantages* arising from integration, which may range from cross-fertilization of ideas, to scale economies in the provision of local services (see, e.g., Alesina, Baquir, and Hoxby, 2004; Andini, Dalmazzo, and de Blasio, 2017). As noticed, however, the advantages of unification between two regions within the same country are far less sizable than those that can be achieved – in terms of national defense, market size, or infrastructures such as transportation and communication – under the unification of sovereign nations (see Alesina and Spolaore, 2003).

On the other hand, if communities are segregated and $I = 0$ holds, the activity of group β members will not affect the payoff of individuals in group α, and vice-versa. Thus, secession will avoid the costs, captured by parameter $c$, of cohabitation for heterogeneous communities.

Finally, $\varepsilon_i$ is an idiosyncratic preference shock for the location considered, distributed as an Extreme Value Type-1 random variable with location parameter equal to zero and scale parameter equal to $\theta > 0$.[11] The same assumptions hold for $\varepsilon_{-i}$. Indeed, given local conditions, individuals

[10] In general, there are alternative stories, such as "parochialism" (see Bowles and Gintis, 2004), to justify the separation of communities. Doing business with people of the same ethnicity may bring advantages such to exclude other ethnic groups from trading.

[11] In this case, the mean value of $\varepsilon_i$ is equal to $\theta \cdot \gamma$ (the parameter $\gamma$ is the Euler-Mascheroni constant, approximately equal to 0.58), while its variance is equal to $\frac{\pi^2}{6} \cdot \theta^2$.

may still express different evaluations about the same location and, possibly, decide to move away. The payoff that individual $i$ can obtain by leaving her birthplace to go elsewhere is given by:

$$\tilde{v}_i = \tilde{u} + \tilde{\varepsilon}_i, \qquad (3)$$

where $\tilde{\varepsilon}_i$, the idiosyncratic preference shock for *other* locations, follows the same Extreme Value Type-1 distribution we postulated for $\varepsilon_i$ in (1). An expression similar to (3) holds for individual $-i$ belonging to group β.

In what follows, we will solve the model backwards. We first characterize the mobility decisions at date $t = 2$, conditionally on the realization of the location shock at date $t = 1$, and on the political outcome (integration or secession) at date $t = 0$. This step determines the conjectured shares $\{q^*, 1 - q^*\}$ that will be verified ex-post. Then, we solve the optimum problems (1) and (2) under conjecture $q^*$ to determine whether the two communities separate, or stay together.

*3.1 The mobility decision*

Suppose that agents of each community have evaluated their optimum problems (1) and (2) at date *t=0*, and uncertainty about preferences for locations has been solved at date *t=1*. The indirect utility of a typical member of community α is, under integration ($I = 1$):

$$v_i^1 \equiv u_i^1 + \varepsilon_i, \qquad (4)$$

and, under segregation ($I = 0$), is:

$$v_i^0 \equiv u_i^0 + \varepsilon_i, \qquad (5)$$

where $\{u_i^0, u_i^1\}$ are characterized in what follows. The individual can get utility (3) by leaving the place of birth. Similar arguments also hold for the typical individual $-i$ from community β.

At date $t$=2, whichever the regime $I = \{0,1\}$, individual $i$ will prefer to stay when it holds that $v_i^I \geq \tilde{v}_i$, that is, when the following inequality is satisfied:

$$u_i^I + \varepsilon_i \geq \tilde{u} + \tilde{\varepsilon}_i \qquad \text{with} \quad I = \{0,1\}. \tag{6}$$

Inequality (6) can be rewritten as $\varepsilon_i - \tilde{\varepsilon}_i \geq \tilde{u} - u_i^I$. Since the difference between two Extreme Value Type-1 random variables is distributed as a Logistic (see Anderson, de Palma, and Thisse, 1992), its CDF is given by $F(\varepsilon_i - \tilde{\varepsilon}_i) = \frac{exp\left\{\frac{\varepsilon_i - \tilde{\varepsilon}_i}{\theta}\right\}}{1+exp\left\{\frac{\varepsilon_i - \tilde{\varepsilon}_i}{\theta}\right\}}$. The fraction of α-individuals who decide to stay, denoted as $\phi_\alpha^I$, is thus given by:

$$\phi_\alpha^I = \frac{1}{1+exp\left\{\frac{\tilde{u}-u_i^I}{\theta}\right\}} \qquad \text{with} \quad I = \{0,1\}, \tag{7}$$

while the analogous fraction for β-individuals, $\phi_\beta^I$, is equal to:

$$\phi_\beta^I = \frac{1}{1+exp\left\{\frac{\tilde{u}-u_{-i}^I}{\theta}\right\}}, \qquad \text{with} \quad I = \{0,1\}. \tag{8}$$

By referring to (7), we can now state a main implication of the model. Since it holds that $\frac{d\phi_\alpha^I}{du_i^I} > 0$, we have the following:

*Result 1. When $v_i^0 > v_i^1$ holds true, it follows that $\phi_\alpha^0 > \phi_\alpha^1$ and vice-versa.*

Result 1 shows that, if segregation produces a payoff higher than the one obtained under integration, it will also raise the fraction of α-individuals who decide to remain. In our context, the possibility to split the original region into two segregated and homogeneously populated areas will reduce the incentive to migrate. A similar conclusion holds for members of community β.

In order to characterize the conditions that guarantee the existence of a self-confirming conjecture, we focus on the case when the communities are integrated, that is $I = 1$. Notice that $\phi_\alpha^1$ and $\phi_\beta^1$ are functions of $q$, since $u_i^1$ and $u_{-i}^1$ are functions of $q$. Ex-post, the share of stayers from

community α is equal to $\frac{Q\phi_\alpha^1}{Q\phi_\alpha^1+(1-Q)\phi_\beta^1} \equiv f(q)$. The conjecture will be confirmed ex-post when the fixed point of $q = f(q)$ is such that $q \geq \frac{1}{2}$. We claim the following:

*Result 2. When the communities are integrated and* $Q > \frac{1}{2}$ *, the existence of a conjecture* $q^* \in \left(\frac{1}{2}, 1\right)$ *which is ex-post self-confirming is guaranteed by a suitably large value of* $\theta$*, a measure of dispersion of individual location preferences.*

Proof. See Appendix A1.

In what follows, we first analyze the optimal decisions of individuals under the conjecture $q^*$, and discuss the conditions under which secession dominates integration.

*3.2 Secession vs. Integration*

At time *t=0*, the communities decide whether to separate or stay together by looking at the typical member's payoff under each option. Consider first individual optimal decisions under the case of integration, that is, when $I = 1$. Each member of community α will calculate the value of $x_i \geq 0$ which maximizes (1), given the actions of the others and conjecture $q^* > \frac{1}{2}$. Similarly, each member of community β will evaluate the action $x_{-i} \geq 0$ which maximizes (2). When individuals in a community play the same action, we have symmetry within groups and it holds that:

$$x_i^1 = \frac{a - c \cdot \overline{x}_{-i} \cdot (1-q^*)}{k - bq^*}; \qquad x_{-i}^1 = \frac{a - c \cdot \overline{x}_i \cdot q^*}{k - b(1-q^*)}. \qquad (9)$$

Since $x_i^1 = \overline{x}_i$ and $x_{-i}^1 = \overline{x}_{-i}$, the two equations in (9) yield the following equilibrium strategies:

$$x_i^{1*} = \frac{a[k-(1-q^*)(b+c)]}{k^2 - bk + q^*(1-q^*)(b^2-c^2)} \quad , \qquad (10)$$

for members of community α, and:

$$x_{-i}^{1*} = \frac{a[k-q^*(b+c)]}{k^2 - bk + q^*(1-q^*)(b^2-c^2)} \quad , \qquad (11)$$

for members of community β.

Substituting the equilibrium actions (10) and (11) into payoffs (1) and (2), we obtain the explicit expressions for (4)-(5), respectively the indirect utility function of community α's and community β's members:

$$v_i^1 = \frac{a^2 k[k-(1-q^*)(b+c)]^2}{2[k^2-bk+q^*(1-q^*)(b^2-c^2)]^2} + A + \varepsilon_i \equiv u_i^1 + \varepsilon_i, \qquad (12)$$

$$v_{-i}^1 = \frac{a^2 k[k-q^*(b+c)]^2}{2[k^2-bk+q^*(1-q^*)(b^2-c^2)]^2} + A + \varepsilon_{-i} \equiv u_{-i}^1 + \varepsilon_{-i}. \qquad (13)$$

Expressions (12) and (13) have some properties which are showed in detail in the Appendix (see Appendix A2). First, both $v_i^1$ and $v_{-i}^1$ are decreasing in the parameter $c$, which captures the costs of an heterogeneous society. Indeed, the higher $c$, the higher the losses produced by actions of members from the other community. Moreover, utility $v_i^1$ is increasing in $q$, while $v_{-i}^1$ is decreasing in $q$. Consequently, since it holds that $v_i^1 = v_{-i}^1$ for $q^* = \frac{1}{2}$, we have the following:

*Result 3. When $q^* > \frac{1}{2}$, then $\min\{v_i^1, v_{-i}^1\} = v_{-i}^1$. In an integrated society, the equilibrium payoff of a member of the minority group is smaller than the one obtained by majority members.*

Result 3 has an immediate intuition. Under $q^* > \frac{1}{2}$, residents from community α are majority and residents of community are β minority. Thus, a typical α's member will suffer relatively small losses from interaction with community β's individuals – indeed, such interactions are less "frequent" – while enjoying relatively high gains from interaction with people of her own group.

We now consider the alternative case, separation, such that $I = 0$. Under separation, the interactions between the two communities are eliminated. This can be the case when a territory is partitioned into two distinct administrative units. The payoff of a community α's member simplifies to $U_i^0 = a \cdot x_i - \frac{k}{2} \cdot x_i^2 + b \cdot x_i \cdot \overline{x}_\alpha + \varepsilon_i$. Similarly, the payoff of the typical individual from community β becomes $U_{-i}^0 = a \cdot x_{-i} - \frac{k}{2} \cdot x_{-i}^2 + b \cdot x_{-i} \cdot \overline{x}_\beta + \varepsilon_{-i}$. When individuals in each community play the same action, we have a symmetric equilibrium such that:

$$x_i^{0*} = x_{-i}^{0*} = \frac{a}{k-b}. \qquad (14)$$

Thus, the utility attainable by α and β community members under separation is, respectively, equal to:

$$v_i^0 = \frac{a^2 k}{2[k-b]^2} + \varepsilon_i \equiv u_i^0 + \varepsilon_i, \qquad (15)$$

and

$$v_{-i}^0 = \frac{a^2 k}{2[k-b]^2} + \varepsilon_{-i} \equiv u_{-i}^0 + \varepsilon_{-i.} \qquad (16)$$

We can now discuss the condition under which separation occurs. We postulate that separation need not be consensual. If one of the communities wants to part from the other, it will do so without any further consequences, such as retaliations of any kind.[12] Consequently, Result 3 implies the following:[13]

*Result 4. Secession will occur when it holds that $u_{-i}^0 > u_{-i}^1$. That is, when the inequality*

$$\frac{a^2 k}{2[k-b]^2} > \frac{a^2 k[k-q^*(b+c)]^2}{2[k^2-bk+q^*(1-q^*)(b^2-c^2)]^2} + A \qquad (17)$$

*is satisfied.*

Since the minority group benefits *less* from integration, as emphasized by Result 3, it is the minority itself that will drive secession whenever condition (17) is satisfied. Also, inequality (17) is more likely to hold when the cost of heterogeneity, as summarized by $c$, is larger. At the same time, secession has an ambiguous impact on the welfare of the majority. Indeed, when $u_{-i}^0 > u_{-i}^1$ holds true, it can either be the case that $u_i^0 > u_i^1$, or $u_i^0 \leq u_i^1$. In the former case, also the majority will benefit from the split while, in the latter case, the majority is better off under integration.

Taken together, Result 1 and Result 4 deliver the following:[14]

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[12] A similar assumption is made, for example, in Buchanan and Faith (1987) and Bolton and Roland (1997).
[13] Recall that $u_{-i}^1$ and $u_{-i}^0$ are defined, respectively, in expressions (13) and (16).
[14] The average payoff of a community β's member for $I = \{0,1\}$ is simply given by $u_{-i}^I + \theta \cdot \gamma$. See Note 11.

*Corollary. If secession increases the payoff of the average member of a community, then the migration outflow from that community will decrease.*

Summarizing, the model has implications that are immediately relevant for the case of Abruzzo and Molise considered here. In particular:

(I) Suppose that the two communities are initially integrated under a single administration. Results 3 and 4 suggest that the smaller community (Molise, here) will drive the decision whether to implement secession or not. This prediction seems to find support: as we documented in Section 2, the political representatives of Molise were those who unceasingly battled for secession.

(II) Secession has an ambiguous impact on the majority's welfare (Abruzzo). Thus, when the minority decides to separate, the majority may either benefit or loose. To this regard, it should be recalled that politicians and a large share of population from Abruzzo did not oppose the split from Molise, perhaps anticipating that, even for Abruzzo's residents, secession would not be unfavorable.

(III) As suggested by the Corollary, if secession raises the average payoff of community members, it will reduce their incentive to migrate away.

Thus, the central empirical implication of the model is quite neat: if secession is beneficial for a region, local population will increase. However, a successful separation may increase population both because of its "amenity" value (the sheer pleasure of living in a more homogeneous society), and because of its economic advantages (homophily may favour production and trade). If we focus on the latter, the payoff function (1) can be seen as net production from individual investment in the presence of strategic interactions. Under secession, only strategic complementarities will survive as, e.g., in the Bryant's game: see Bryant (1983). As a consequence, if the separation is beneficial, both individual investment and net product will be larger. To assess whether secession was a good move, or, on the contrary, was detrimental for economic growth, in the empirical section we will look at per-capita GDP in the aftermath of the split.

## 4. Empirics

In what follows, we will assess if the separation of Molise from Abruzzo had an impact on long run economic performances.[15] To this purpose, we use GDP per capita as outcome of interest and apply the synthetic control approach (SC). We also provide evidence on the population dynamics experimented by such territories.

### *4.1 The synthetic control approach*

The synthetic control has been pioneered by Abadie and Gardeazabal (2003),[16] and it has also been used for the analysis of regional developments in Italy (see, for instance, Barone and Mocetti, 2014; Pinotti, 2015; Barone, David, and de Blasio, 2016). The method can be easily sketched. Let us suppose that the first region (i=1) is treated and j units are untreated. Let $Y_{it}^1$ be the outcome that would be observed for region i (i=1,….j+1) at time t (t=1,….T) if exposed to the secession, and $Y_{it}^0$ be the outcome that would be observed for region i (i=1,….j+1) at time t (t=1,….T) in the absence of the event. The treatment (secession, in our case) occurs in $T_0$ (with $1 \leq T_0 < T$). It is assumed that the treatment has no direct effect on the outcome variable before it occurs so that $Y_{it}^1 = Y_{it}^0$ for any region i and any time such that $t \leq T_0$.

The causal impact of secession is defined as: $\alpha_{it} = Y_{it}^1 - Y_{it}^0$ at time $t > T_0$. Let $D_{it}$ be an indicator that takes value 1 if the region is the one treated (i=1) and $t > T_0$, 0 otherwise. The observed outcome for any region i at time t is given by:

$$Y_{it} = Y_{it}^0 + \alpha_{it} D_{it} \qquad (18)$$

[15] For a general discussion on post-WWII economic and social changes experienced in Abruzzo and Molise see, amongst others, Quintano (1986) and Felice (2008).

[16] As argued by Athey and Imbens (2017, p. 9), this method represents "*the most important innovation in the evaluation literature in the last fifteen years*." Applications include, for example, Abadie and Gardeazabal (2003); Abadie, Diamond, and Hainmueller (2010); Ando (2015); Billmeier and Nannicini (2013); Peri and Yasenow (2015).

We basically aim at estimating $(\alpha_{1T0+1},...,\alpha_{1T})$. For $t > T_0$, $\alpha_{1t} = Y_{1t}^1 - Y_{1t}^0 = Y_{1t} - Y_{1t}^0$ but $Y_{1t}^0$ is by definition not observed. The synthetic control approach suggests estimating $Y_{1t}^0$ as a weighted average of the units in the donor pool. Hence, for $t > T_0$ the causal impact of the secession is derived as:

$$\widehat{\alpha}_{1t} = Y_{1t} - \sum_{j=2}^{j+1} w_j Y_{jt} \qquad (19)$$

where $w_j$ is the weight any region takes in the control group. The weights are picked through a two-step procedure. Let $X_1$ be a (kx1) vector of relevant pre-intervention covariates of the treated unit and $X_0$ be a (kxj) matrix that comprise the same set of characteristics for the j controls in the donor pool. Let V be a (kxk) symmetric and positive semidefinite matrix. The weights in equation (19) are those that minimize the difference between treated and the synthetic control unit with respect to the set of identified covariates evaluated before the intervention took place. Operationally, the vector of weights, $W^*(V)$, are taken to solve the following minimization problem:

$$\min(X_1 - X_0W)'V(X_1 - X_0W) \quad (20)$$

subject to the condition that $w_2 \geq 0, \dots, w_{j+1} \geq 0$, and $w_2 + \cdots + w_{j+1} = 1$. V is chosen so that the synthetic control unit mimic the trajectory of the outcome variable of the treated unit before the intervention:

$$V^* = \operatorname{argmin} \left(Z_1 - Z_0W^*(V)\right)'\left(Z_1 - Z_0W^*(V)\right) \quad (21)$$

where $Z_1$ is a vector holding the outcome variable for the treated region up to the treatment period $T_0$ whereas $Z_0$ is a matrix containing the same variable for the j regions in the control group.

*4.2 Implementation of the synthetic control approach*

In our baseline empirical strategy, Abruzzo and Molise are the two treated regions, while the remaining six Southern (or *Mezzogiorno*) regions not experiencing any territorial split (Apulia, Basilicata, Campania, Calabria, Sicily and Sardinia) constitute the donor pool of control regions. Regions belonging to the South of Italy have very desirable properties as donors. First, they are very similar to Abruzzo and Molise in terms of socio-economic fundamentals, while the remaining part of Italy is different from a number of dimensions such as geography, infrastructures, access to market, etc. that due to data limitations cannot be entirely taken into account. Therefore, the use of Southern regions as donors minimizes the risk that estimates are confounded by omitted variables.

Second, as part of the Southern area of the country, Abruzzo and Molise benefited from a large development program (*Cassa per il Mezzogiorno*), implemented for four decades starting from the 1950s, to stimulate convergence between Italy's South and the more developed North (D'Adda and de Blasio, 2016). Thus, having Southern regions as control units is likely to differentiate out the effects of the *Cassa per il Mezzogiono* on local economic development, allowing us to focus only on the consequences of the split. That being said, we will also use, for robustness purposes, the entire set of Central-Northern Italian regions as controls, with results that vary very little (see Paragraph 4.4).

GDP data cover the period 1951-1992, allowing us to evaluate the impact of the secession on long run growth 30 years after the intervention. The years between 1951 and 1963 are used as the pre-intervention period, whereas years 1964-1992 are used as post-treatment period. We are interested in evaluating the impact of the secession in terms of economic growth: our main outcome variable is GDP per capita (indexed at 1951=100). We use as covariates in the synthetic control procedure (the Xs) the most relevant predictors of subsequent regional economic growth. Similarly to previous literature (see Barone and Mocetti, 2014; Barone, David, and de Blasio, 2016), we include: the initial level of GDP per-capita, past GDP per-capita growth rate, the investment-to-GDP ratio, the share of highly educated as a proxy for human capital, population density, net

imports-to-GDP ratio, and the sectorial composition of value added (agriculture, industry, market service). We also use a measure of the local minimum wage, which might have affected the regional distribution of economic activity during our estimation window (see de Blasio and Poy, 2017). Tables A1 and Table A2 in Appendix provides summary statistics and data description of variables used in estimates.

Data used in the paper derive mostly from CRENoS research center, and have been extensively used in previous research. The only exception is data on educational attainment, which come from the National Institute of Statistics (ISTAT), data on surface (used to build the indicator of population density) released by ISTAT through its *Atlante Statistico dei Comuni*, and the indicator for local minimum wage that is produced by the authors (and available on request).

*4.3 The impact of local secession on economic growth*

Exploiting the synthetic control procedure, we find that the pre-secession, per-capita GDP dynamics of Abruzzo is well approximated by a combination of weights given by Apulia (0.101), Sicily (0.397) and Sardinia (0.502). When the treated unit is Molise, we get positive weights from Apulia (0.589), Basilicata (0.233), Calabria (0.164) and Sicily (0.013). Table 1 compares the pre-secession characteristics of Abruzzo and Molise with their synthetic control counterparts. The synthetic control procedure allows for a good approximation along a large set of covariates, such as GDP per capita and its annual average growth, human capital, the local minimum wage index, and indicators of sectoral economic structure. Some differences, albeit limited in magnitude, refer to investment, net imports and population density. These differences are higher for Molise which, however, is the smallest region in the South of Italy and, therefore, more difficult to mimic by a combination of larger units. The synthetic control procedure allows us to limit the differences with the treated units, which would be much larger when using simple averages of both Central-Northern regions and the *Mezzogiorno* regions never interested by local secessions, as illustrated in the last two columns of the table.

[Table 1]

Figure 2 provides our baseline. It illustrates, respectively for Abruzzo and Molise, the dynamics of per-capita GDP compared to those referring to their synthetic control counterparts. For both regions, the secession seems to have produced a positive impact on long-run growth. From 1964 to 1970, when the split was formally approved but the public sector was still highly centralized, we do not observe any impact of the intervention. For the Abruzzo region, per-capita GDP grew faster than its counterfactual only from 1970 onwards. For Molise, the benefits started to materialize by the mid-seventies. We have also calculated that, over the period 1970-1992, the benefits of secession amounted to roughly a 1% per-year increase in per-capita GDP for both regions, not a negligible gain. According to our theoretical model, separation has to produce gains for the smaller community (Molise), consistently with the evidence. However, separation may have an ambiguous effect on the larger community (Abruzzo). Our evidence thus suggests that even the larger community benefited from the split.

[Figure 2]

To investigate the channels through which secession affected per-capita GDP growth in Abruzzo and Molise, we perform a simple growth accounting exercise. As in Pinotti (2015), we adopt a Cobb-Douglas production function with constant returns to scale in capital and labor (Barro, 1999) of the following form:

$$\ln GDP_t = \ln a_t + \delta \cdot \ln l_t + (1 - \delta) \cdot \ln k_t \quad (22)$$

where a is TFP, $\delta$ if the labor share, $l$ and $k$ are labour (i.e. total employment) and capital. The growth differential (Δ) between Abruzzo and Molise, respectively, and their synthetic counterparts is given by the weighted sum of the growth differential for the three components:

$$\Delta(\mathrm{lnGDP}_t - \mathrm{lnGDP}_{t-1}) = \Delta(\ln a_t - \ln a_{t-1}) + \delta \cdot \Delta(\ln l_t - \ln l_{t-1}) + (1 - \delta) \cdot \Delta(\ln k_t - \ln k_{t-1}) \quad (23)$$

Table 2 shows the results from OLS estimation of equation (23). The regression uses data on Southern regions taken from CRENoS for the period 1970-1992. These data report information on capital (also by type, private – kPR – or public – kP) and labor stocks. As shown in the table, we cannot reject the hypothesis of constant return to scale (CRS), while the factor share for labor seems to be somehow lower than 2/3. When capital is separated into private and public capital, we find that only the former enters significantly, a standard result in the literature.

[Table 2]

Based on the findings in Table 2, Figures 3 and 4 plot the growth of TFP and inputs over the 1970-92 period. Both regions seem to have benefited from public and private investment. Molise, in particular, seems to have enjoyed a significant increase in private capital starting from the middle of the 1970s. This result is noteworthy: historians (see: Santoro, 2014) suggest that the benefits from the autonomy mainly materialized through higher local public employment, driven by the reorganization of office workers from central to the local level of governments. Our findings suggest that redistributive policies implemented through public employment (see Alesina, Danninger, and Rostagno, 2001) have not been a channel through which the gains from autonomy have accrued.

[Figure 3]

[Figure 4]

### *4.4 Robustness analysis*

To test the credibility of our results on long-run growth further, we will consider an additional set of robustness checks.

First, we present a placebo study by virtually reassigning the treatment to regions unaffected by it (see Abadie, Diamond, and Hainmueller, 2010). In our setup, this amounts to estimating a

synthetic control for any unaffected region in the donor pool, calculating the difference between each region per-capita GDP and its synthetic control and comparing them with the growth paths of Abruzzo and Molise. As Figure 5 shows, at the end of the period under consideration, the per-capita GDP gains estimated for Abruzzo and Molise are always larger than those from placebo experiments. The associated pseudo p-value for baseline estimates is below 1%, thus supporting the statistical significance of results. Table 3 shows the balancing properties for the pre-intervention covariates of the placebo experiments.

[Figure 5]

[Table 3]

Figure 5 also shows that, for some regions, the synthetic control method does not find an appropriate counterfactual in the pre-treatment period. These discrepancies in the pre-treatment period might confound the evidence we obtain for the post-secession period. Indeed, a large post-secession root mean squared prediction error (RMSPE) is not enough to establish an impact of the split, if the pre-secession RMSPE is also large. Another way to assess the validity of our placebo test is to look at the ratio of post/pre-treatment RMSPE, i.e. the average of the squared difference between per-capita GDP of a region and its synthetic counterpart before and after treatment. Thus, if the treated region stands out as one of the regions with a high RMSPE ratio, we can conclude that the estimated effect is significant relative to placebos. As Figure 6 shows, Abruzzo and Molise are the regions with the highest ratios: again, the implied pseudo p-value is lower than 1%.

[Figure 6]

Figure 7 and 8 replicate the previous placebo experiments as in Figures 5 and 6 by using the Central-Northern regions of Italy (instead of the Southern regions) as the donor pool. While the finding for Abruzzo remain undisputed, we find that the RMSP of Friuli Venezia-Giulia is very

close to that of Molise. This is not surprising, however, as this regions gained, exactly in 1963, its special status (see Podestà, 2017).

[Figure 7]

[Figure 8]

Figures 9 eliminates Apulia and Basilicata from the donor pool. Pinotti (2015) shows that these two Italy's regions fell pray of organized crime approximately during the same years in which Abruzzo and Molise started to enjoy the benefits of secession. Therefore, having Apulia and Basilicata as controls might lead to overestimation of the split, to the extent that organized crime deters economic growth. As showed in Figure 9, however, our results do not depend on the exclusion of Apulia and Basilicata. Figure 10 eliminates the main donor, as selected by the synthetic control routine, for each treated region. Therefore, Sardinia is dropped out in the estimation for Abruzzo, and Apulia is eliminated when Molise is concerned. Baseline results are still valid. Figure 11 provides the results we obtained when eliminating from the donor pool the two Italian regions that are islands (Sicily and Sardinia). These regions have a special status and are relatively specialized in oil production (therefore, might bring into the picture trends that have little to do with Italy's regional developments during the 1970s and 1980s suffering oil crisis). Again, our results remain undisputed.

[Figure 9]

[Figure 10]

[Figure 11]

Finally, we ran an in-time placebo test, in which the donor pool remains fixed, the treated unit is always Abruzzo or Molise, but the treatment year is changed. We use 1961 as "fake" treatment year: 1961 represents the first year for which we have enough (i.e. 10) pre-fake treatment

observations and all covariates to be used in the synthetic control procedure are available. This placebo experiment basically implies the pre-treatment period is divided into a sub-period acting as a validation period. Figure 12 shows that no divergence is observed before 1970, further confirming our claim that the positive GDP effect of the separation on both regions materialized after that year.

[Figure 12]

*4.5 The impact of local secession on population dynamics*

If a region gains from secession, the model suggests that we should find a positive impact on its population. Figure 13 presents the population dynamics at the regional level of resident population in the Italian Mezzogiorno.

[Figure 13]

At first, we tried to estimate the population effects of the secession by using synthetic control methods. Unfortunately, this route was precluded by the fact that, as evident from Figure 13, no weighted combination of Southern regions could ever mimic the population dynamics registered by Abruzzo and Molise in the pre-treatment period, as these two areas were the only two Southern regions that lost population over the 1950s and 1960s (for a general discussion on the issue see also Doudchenko and Imbens, 2016). Therefore, we resorted to a Difference-in-Differences estimation strategy. We use Census population data available from the National Institute of Statistics (ISTAT) at decadal interval at the municipal level. For the sake of comparability with the results on GDP growth in Paragraph 4.3, we use data on population dynamics from the 1950s onwards. Hence, we have a pre-treatment period (population growth in the 1961-51 decade) and a number of post-treatment periods (the growth rate of population in subsequent decades).

We also make use of a set of covariates taken from the *8milaCensus* database (ISTAT). These variables are available only from 1951 onward. We include available demographic and socio-

economic predictors for population growth at the municipal level. In particular, we consider the masculinity ratio (i.e. ratio between males and females population); the old/age index (i.e. ratio between 65+ and 0-14 years old population), and the average household size. To take into account local remoteness, we use the percentage of residents in scattered houses over total population. To consider wealth and local conditions of the labour market, we consider the home ownership rate (i.e. ratio of owner-occupied units to total residential units), the employment rate, and a measure for local wages (WZ). The level of human capital is picked up by the percentage of people with high school degree or higher level of education. We also add an index for gender differences in educational attainment (i.e. ratio between percentages of males and females - in terms of their respective population - who have a high school, or higher, level of education). All the covariates, at any decade, are included both at their initial level and in growth-rate to take trends into account.

DID estimates in Table 4, Column 1, show that the impact of the split on the population dynamics of treated regions is positive and started already in the 1971-61 decade. Thus, the secession began to reduce the strong (negative) gap in population growth among municipalities located, respectively, in treated and in control regions. Estimated effects are even larger when controlling for socio-demographic and economic characteristics of municipalities (Column 2). Columns (3) and (4) present separate estimates for Molise and Abruzzo: we find that the population response for Molise is substantially higher than the one for Abruzzo. This is in line with the story proposed here, in which the benefits of secession are higher for the small community, the one that makes pressure to split. Finally, in Columns 5 and 6 we use as control group only those municipalities that the synthetic control method selects as appropriate, based on the similarity of pre-intervention trends and other covariates reported in Table 1. Results are in line with those from the previous columns; although the Molise response attenuates somehow.

[Table 4]

To test for the plausibility of the parallel trend assumption, we also present a set of DID regressions where only pre-treatment periods are used. The population Census survey, usually conducted in Italy the first year of any decade, was not carried out in the 1940s, but in 1936. Hence, we test for the validity of the parallel trend assumption by considering population dynamics in treated and control municipalities almost 30 years before secession took place (using population growth in 1961 – i.e. 1961-51 – and in 1951 – i.e. 1951-36). Unfortunately, data on covariates are not available before 1951. Table 5 shows results from the same empirical models we presented in Table 4, when placebo DID regressions without covariates are run. If treated and controls municipalities had moved on similar population growth patterns before the split, satisfying the parallel trend assumption, we should not find any statistically significant value for the estimated DID coefficient of interest. Table 5 suggests that this is indeed the case and, therefore, our DID results in Table 4 appear to be reliable.

[Table 5]

## 5. Conclusions

The secession of Molise from Abruzzo represents a unique case in the post-war Italian history. In the early 1960s, the time of the political process leading to the split, there was a high degree of centralization in the public administration. Thus, the potential advantages from local management of public policies and legislation were still largely unclear. Indeed, the motivations for the split which were commonly put forward hinged on cultural and ethnical differences between the two communities involved.

For these reasons, the model proposed here does not build on the standard fiscal factors that are usually exploited in theories of the size of jurisdictions but, instead, it focuses on the incentives to cooperate in heterogeneous environments. In particular, we look at the incentive to contribute, in terms of individual “effort” or “investment”, when people from one community have, or have not, to interact with people from the other community. If individuals have an “homophily” bias,

contributions will be larger in an homogeneous environment. In this perspective, the separation is likely to have favored the build-up of local social cohesion in Molise and, possibly, even in Abruzzo.

The empirical findings we present actually show that Molise and even Abruzzo enjoyed sizeable demographic and economic advantages after the secession. In line with the model's predictions, we show that the 1963 secession began to halt out-migrations from Molise and Abruzzo already in the Sixties. Local per-capita GDP growth, which materialized after the implementation of the fiscal devolution over the 1970s, has mainly come from an acceleration in the accumulation of private and public capital, rather than from redistributive policies aimed at inflating local public employment.

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Table 1. Economic growth predictor means before secession.

| | Abruzzo | | Molise | | | |
|---|---|---|---|---|---|---|
| | Real | Synthetic | Real | Synthetic | Average of other Mezzogiorno regions (not experiencing the secession) | Average of Central-Northern regions |
| GDP per capita | 3315.8 | 3277.5 | 2920.4 | 2984.9 | 3126.1 | 5568.0 |
| Annual GDP per capita growth rate | 0.043 | 0.042 | 0.050 | 0.047 | 0.046 | 0.043 |
| Investment-to-GDP ratio | 0.255 | 0.323 | 0.214 | 0.367 | 0.313 | 0.271 |
| Share of high educated | 0.038 | 0.038 | 0.033 | 0.034 | 0.051 | 0.052 |
| Population density | 115.4 | 117.0 | 85.6 | 141.2 | 201.5 | 202.1 |
| Net imports-to-GDP ratio | 0.153 | 0.207 | 0.100 | 0.248 | 0.191 | 0.004 |
| Minimum wage index | 80.8 | 81.4 | 79.4 | 80.7 | 83.0 | 94.9 |
| Agriculture share of VA | 0.149 | 0.138 | 0.189 | 0.163 | 0.135 | 0.071 |
| Industry share of VA | 0.227 | 0.251 | 0.217 | 0.216 | 0.231 | 0.343 |
| Market services share of VA | 0.391 | 0.375 | 0.361 | 0.393 | 0.405 | 0.430 |

Notes: The weights used to build the synthetic controls are: Apulia (0.101), Sicily (0.397) and Sardinia (0.502) for the Abruzzo region; Apulia (0.589), Basilicata (0.233), Calabria (0.164) and Sicily (0.013) for the Molise region. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2. The last two columns represent population-weighted averages.

Table 2. Estimated factor share in a Cobb-Douglas regression (Mezzogiorno regions, 1970-1992).

Dependent variable: $\ln \mathrm{GDP}_t - \ln \mathrm{GDP}_{t-1}$

| | | |
|---|---|---|
| $\ln l_t - \ln l_{t-1}$ | 0. 568*** | 0.569*** |
| | (0.077) | (0.077) |
| $\ln k_t - \ln k_{t-1}$ | 0.424*** | |
| | (0.102) | |
| $\ln kPR_t - \ln kPR_{t-1}$ | | 0.349*** |
| | | (0.111) |
| $\ln kP_t - \ln kP_{t-1}$ | | 0.070 |
| | | (0.061) |
| Constant | 0.006 | 0.007 |
| | (0.004) | (0.004) |
| N | 176 | 176 |
| Test CRS | 0.946 | 0.926 |
| Test $\propto = 2/3$ | 0.202 | 0.209 |

Notes: The table presents regression coefficients of production function estimates across Mezzogiorno regions. In the second column is also experimented dividing capital (k) in her private (kPR) and public (kP) component. The bottom part the table presents the Wald tests for constant return to scale (CRS) and labour share being 2/3. Robust standard errors in parenthesis. Significance at ***=1%, **=5%, *=10%.

Table 3. Economic growth predictor means before secession. Placebo estimates.

| | Campania | | Apulia | | Basilicata | | Calabria | | Sicily | | Sardinia | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Real | Synthetic | Real | Synthetic | Real | Synthetic | Real | Synthetic | Real | Synthetic | Real | Synthetic |
| GDP per capita | 3360.9 | 3220.3 | 3158.1 | 3147.6 | 2698.5 | 2925.1 | 2792.2 | 3064.4 | 2931.0 | 3135.1 | 3575.6 | 2992.2 |
| Annual GDP per capita growth rate | 0.041 | 0.045 | 0.047 | 0.046 | 0.047 | 0.045 | 0.044 | 0.046 | 0.053 | 0.047 | 0.032 | 0.044 |
| Investment-to-GDP ratio | 0.313 | 0.289 | 0.274 | 0.303 | 0.641 | 0.317 | 0.322 | 0.388 | 0.273 | 0.292 | 0.373 | 0.410 |
| Share of high educated | 0.048 | 0.036 | 0.037 | 0.042 | 0.027 | 0.037 | 0.034 | 0.038 | 0.045 | 0.036 | 0.033 | 0.038 |
| Population density | 336.1 | 155.3 | 172.7 | 167.5 | 63.9 | 137.0 | 136.1 | 116.8 | 179.6 | 167.2 | 56.4 | 195.2 |
| Net imports-to-GDP ratio | 0.171 | 0.166 | 0.153 | 0.196 | 0.544 | 0.184 | 0.174 | 0.283 | 0.185 | 0.173 | 0.234 | 0.279 |
| Minimum wage index | 88.3 | 82.8 | 83.1 | 82.2 | 76.8 | 79.1 | 77.8 | 80.3 | 81.5 | 82.8 | 81.0 | 81.7 |
| Agriculture share of VA | 0.095 | 0.158 | 0.161 | 0.130 | 0.160 | 0.162 | 0.178 | 0.141 | 0.134 | 0.161 | 0.136 | 0.140 |
| Industry share of VA | 0.273 | 0.225 | 0.211 | 0.232 | 0.248 | 0.205 | 0.190 | 0.238 | 0.195 | 0.213 | 0.303 | 0.240 |
| Market services share of VA | 0.406 | 0.382 | 0.393 | 0.405 | 0.378 | 0.406 | 0.410 | 0.390 | 0.439 | 0.392 | 0.321 | 0.399 |
| Weights | Apulia (0.851) and Sardinia (0.149) | | Campania (0.123), Sicily (0.623) and Sardinia (0.254) | | Calabria (0.635), Sicily (0.243) and Sardinia (0.123) | | Basilicata (0.233), Sicily (0.476) and Sardinia (0.291) | | Apulia (0.950) and Basilicata (0.050) | | Campania (0.399), Basilicata (0.287) and Sicily (0.314) | |

Note: The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2.

Table 4. The impact of local secession on population growth.

| | DID | DID | DID, only Abruzzo as treated | DID, only Molise as treated | DID, only Abruzzo as treated and only regions with positive weight in its SC as controls | DID, only Molise as treated and only regions with positive weight in its SC as controls |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *1961-51 growth rate X TREAT (ref.)* | | | | | | |
| 1971-61 growth rate X TREAT | 0.026** | 0.046*** | 0.035** | 0.076*** | 0.054*** | 0.064*** |
| | (0.012) | (0.014) | (0.014) | (0.013) | (0.019) | (0.014) |
| 1981-71 growth rate X TREAT | 0.062*** | 0.097*** | 0.086*** | 0.135*** | 0.106*** | 0.125*** |
| | (0.015) | (0.017) | (0.018) | (0.012) | (0.020) | (0.015) |
| 1991-81 growth rate X TREAT | 0.082*** | 0.102*** | 0.099*** | 0.136*** | 0.101*** | 0.127*** |
| | (0.014) | (0.016) | (0.018) | (0.013) | (0.025) | (0.018) |
| Covariates | No | Yes | Yes | Yes | Yes | Yes |
| No. of observations | 9052 | 9052 | 8532 | 7924 | 4464 | 4744 |

Notes: All the regressions include a dummy for the treatment (TREAT), time fixed effects (1971-61; 1981-71 and 1991-81), and the constant. We use as covariates 18 relevant predictors (demographic, economic and social) of population growth at the municipal level. At any decade, we include the decadal initial level of: percentage of residents in scattered houses over total population; masculinity ratio (i.e. ratio between males and females population); old/age index (i.e. ratio between 65+ and 0-14 years old population); average household size; home ownership rate (i.e. ratio of owner-occupied units to total residential units); employment rate; a measure for local wages (WZ); an index for gender differences in educational attainments (i.e. ratio of percentages of males and females – in terms of 6+ years old respective population - having a high school or higher level of education); a raw index for educational level (i.e. percentage of people with high school degree or higher level of education over 6+ years old population). All the covariates are also included in decadal growth rates. Robust standard errors clustered at the provincial level (NUTS 3). Significance level at ***1%, **5%, *10%.

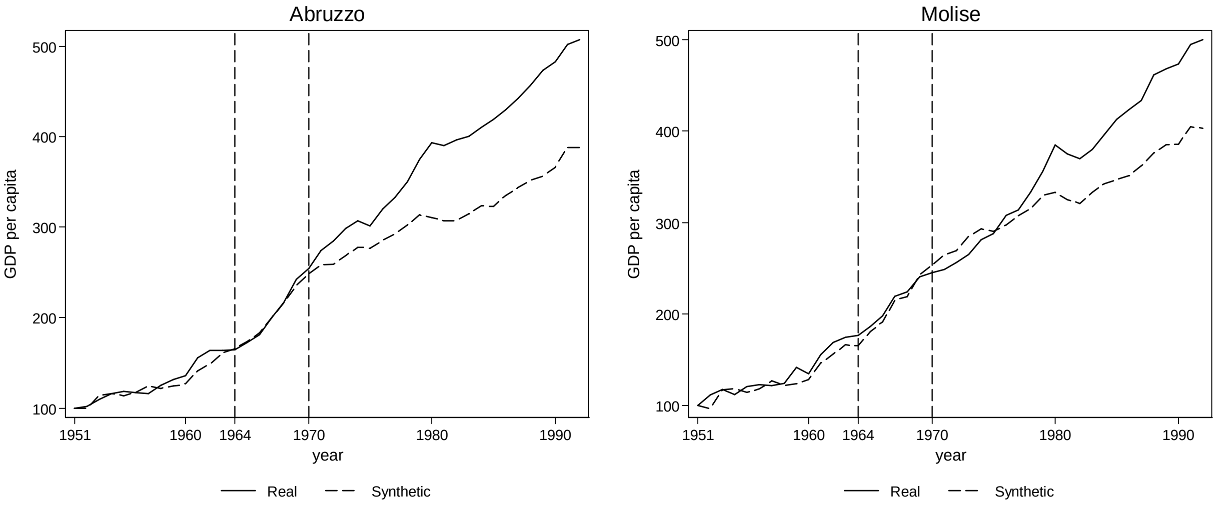
Table 5. Testing the parallel trend assumption in population growth.

| | DID | DID, only Abruzzo as treated | DID, only Molise as treated | DID, only Abruzzo as treated and only regions with positive weight in its SC as controls | DID, only Molise as treated and only regions with positive weight in its SC as controls |
|---|---|---|---|---|---|
| | (1) | (3) | (4) | (5) | (6) |
| *1951-36 growth rate X TREAT (ref.)* | | | | | |
| 1961-51 growth rate X TREAT | -0.008 | -0.001 | -0.023 | -0.016 | -0.031 |
| | (0.021) | (0.021) | (0.037) | (0.027) | (0.038) |
| Covariates | No | No | No | No | No |
| No. of observations | 4526 | 4266 | 3962 | 2232 | 2372 |

Notes: All the regressions include a dummy for the treatment (TREAT), time fixed effect (1961-51), and the constant. Robust standard errors clustered at the provincial level (NUTS 3). Significance level at ***1%, **5%, *10%.

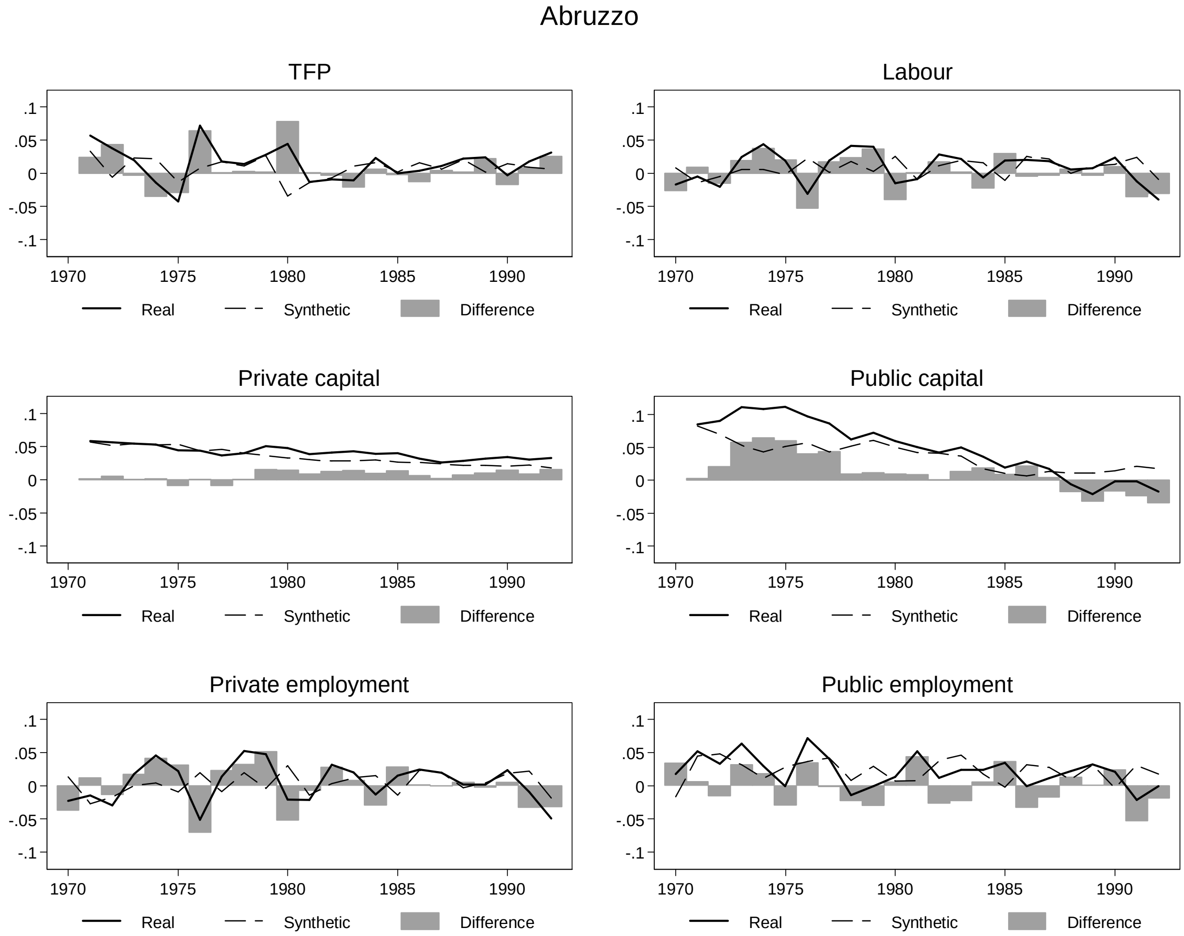
Figure 1. Regions of Italy.

Figure 2. Trends in GDP per capita in Abruzzo and Molise (index 1951=100).



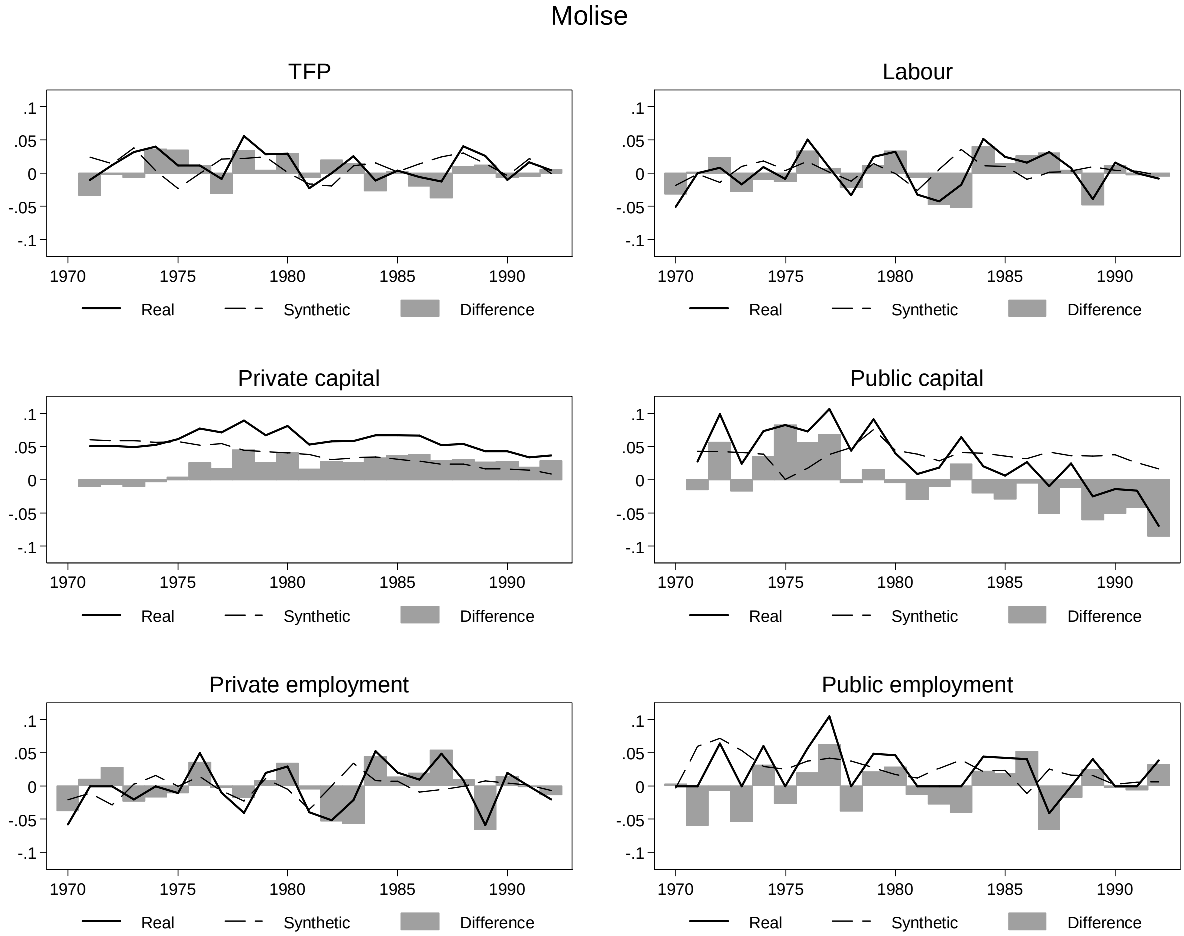

Notes: The graphs report the GDP per capita (index 1951=100) of the treated regions (Abruzzo and Molise) and of the respective synthetic control. The weights are: Apulia (0.101), Sicily (0.397) and Sardinia (0.502) for the Abruzzo region; and Apulia (0.589), Basilicata (0.233), Calabria (0.164) and Sicily (0.013) for the Molise region. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2.

Figure 3. Trends in GDP components in Abruzzo.



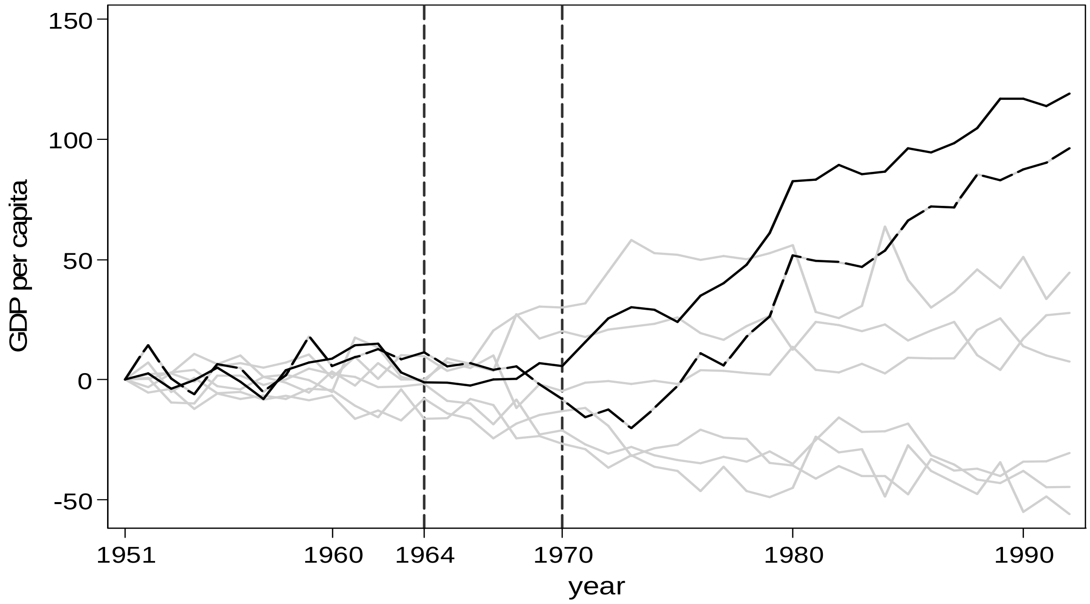

Note: The graph decompose GDP growth in terms of growth of TFP (total factor productivity), labour (total employment), private and public capital, private and public employment. All graphs present the values for Abruzzo (solid line) and the synthetic control (dashed line), as well as the difference between the two series (grey bars). Total factor productivity is calculated as a residual assuming that the factor shares for labour is 2/3, for private capital is 1/3, and for public capital is 0. The weights are: Apulia (0.101), Sicily (0.397) and Sardinia (0.502). The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2.

Figure 4. Trends in GDP components in Molise.



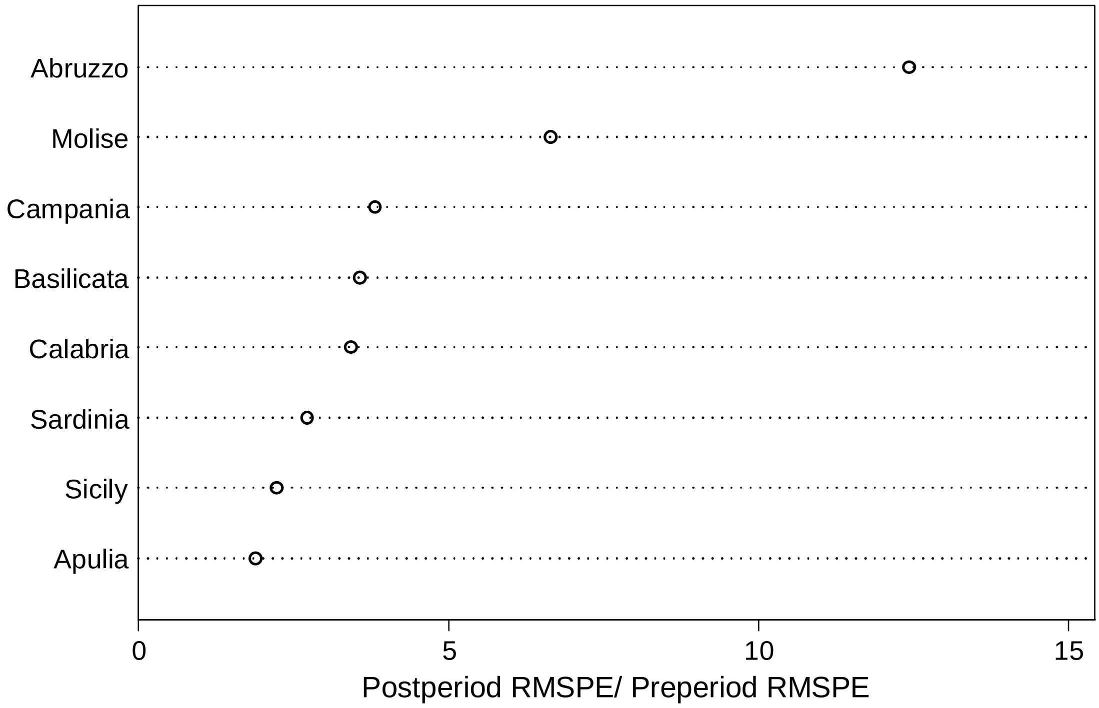

Note: The graph decompose GDP growth in terms of growth of TFP (total factor productivity), labour (total employment), private and public capital, private and public employment. All graphs present the values for Molise (solid line) and the synthetic control (dashed line), as well as the difference between the two series (grey bars). Total factor productivity is calculated as a residual assuming that the factor shares for labour is 2/3, for private capital is 1/3, and for public capital is 0. The weights are: Apulia (0.589), Basilicata (0.233), Calabria (0.164) and Sicily (0.013). The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2.

Figure 5. GDP per capita gaps in Abruzzo and Molise and placebo gaps in all other Mezzogiorno regions (index 1951=100)



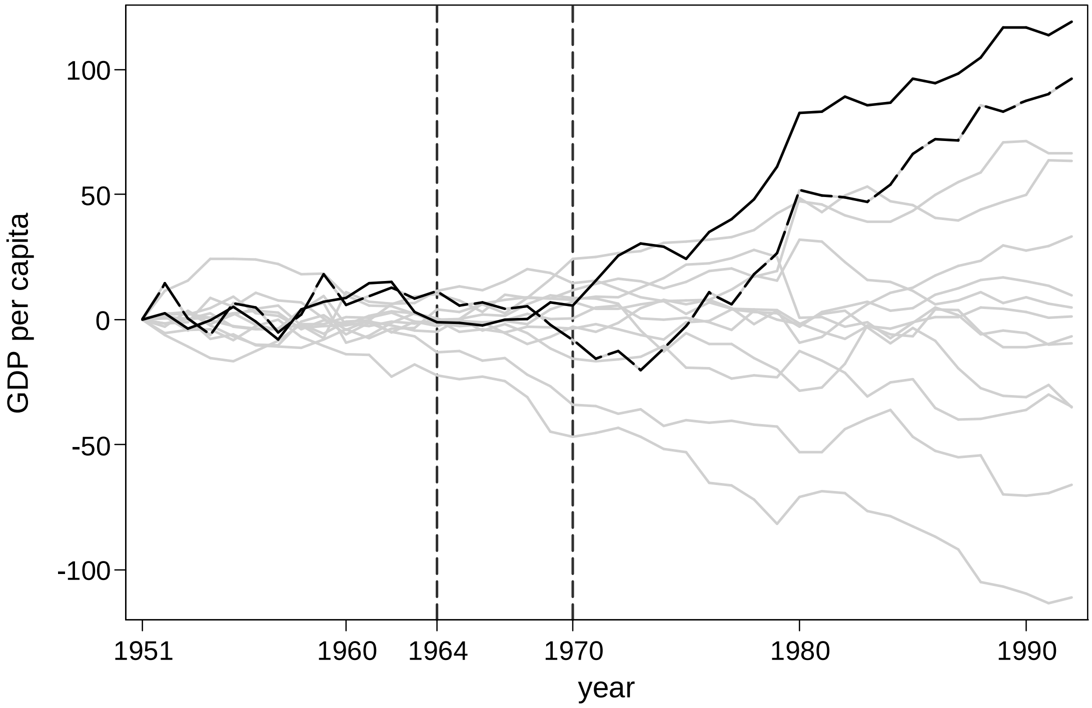

Notes: The black solid line represents the Abruzzo region, the long dash black line represents the Molise region. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2 (details can be found in Table 1 – for Abruzzo and Molise – and in Table 3 for placebo experiments).

Figure 6. Post/Pre policy mean squared prediction error. Other Mezzogiorno regions as the donor pool.



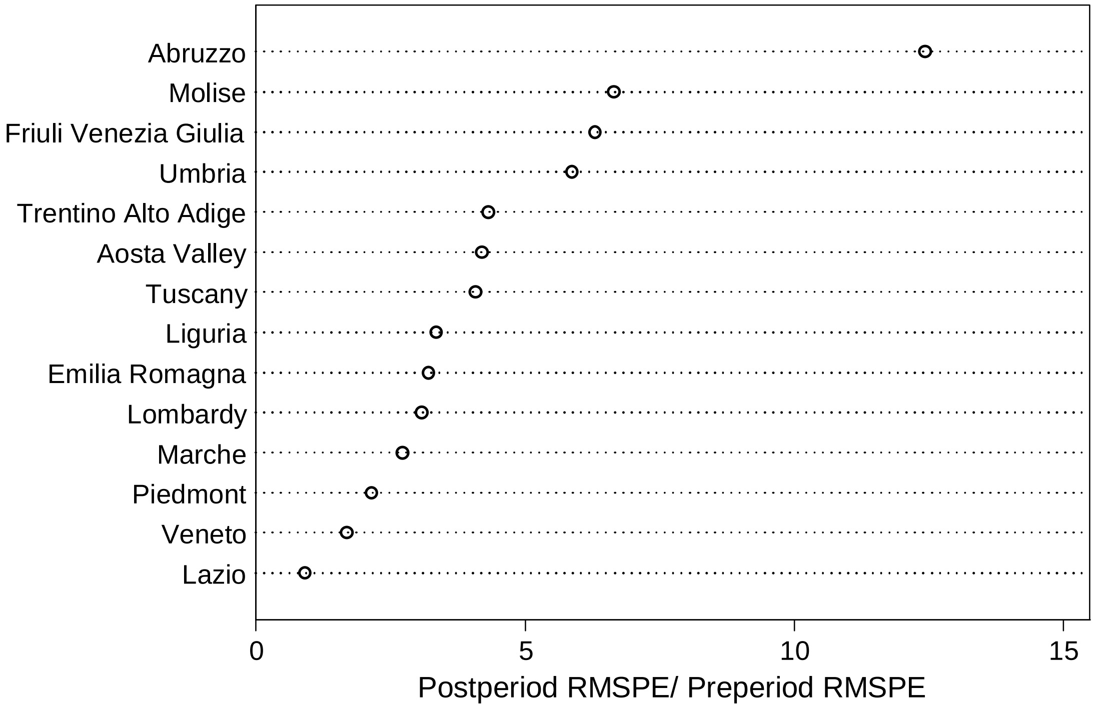

Notes: The Pre period is the time span 1951-1969; whereas the Post period treatment is 1970-1992. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2 (details can be found in Table 1 – for Abruzzo and Molise – and in Table 3 for placebo experiments).

Figure 7. GDP per capita gaps in Abruzzo and Molise and placebo gaps in all Central-Northern regions (index 1951=100)



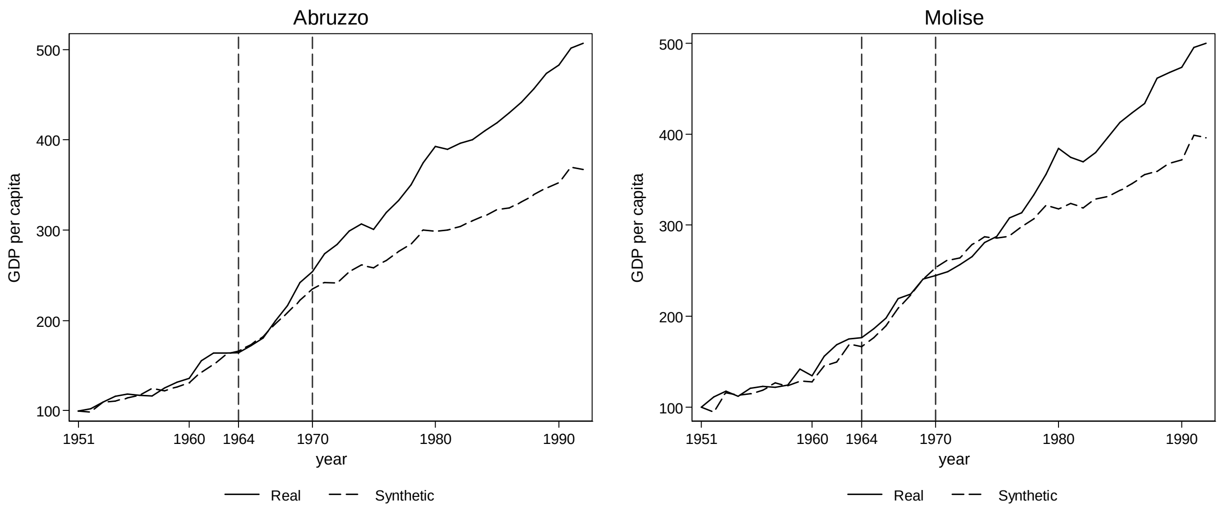

Notes: The black solid line represents the Abruzzo region, the long dash black line represents the Molise region. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2 (details can be found in Table 1 – for Abruzzo and Molise – and are available upon the authors on request for placebo experiments).

Figure 8. Post/Pre policy mean squared prediction error. Central-Northern regions as the donor pool.



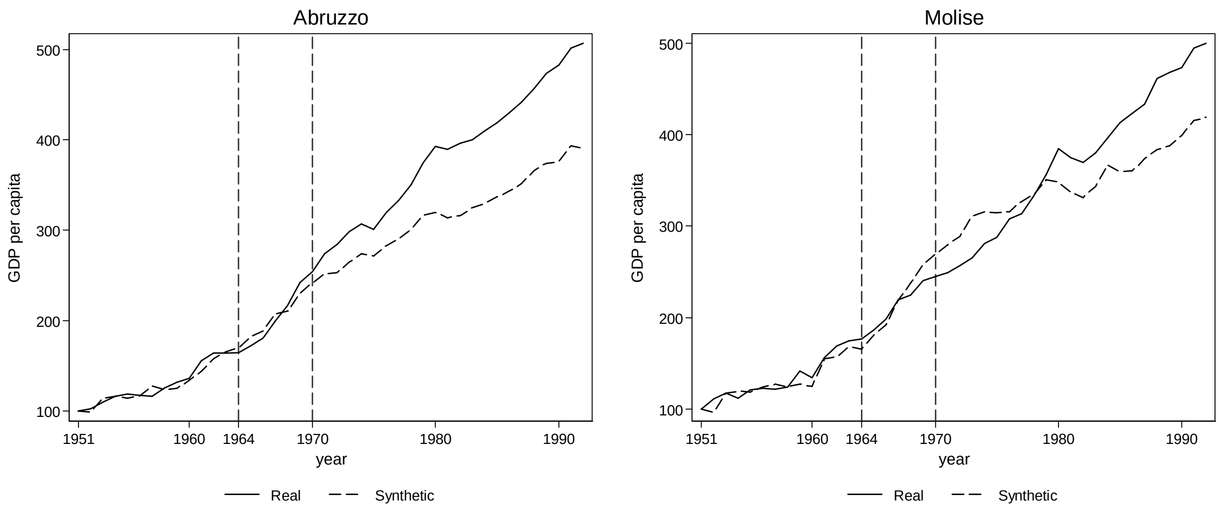

Notes: The Pre period is the time span 1951-1969; whereas the Post period treatment is 1970-1992. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2 (details can be found in Table 1 – for Abruzzo and Molise – and are available from the authors upon request for placebo experiments).

Figure 9. Trends in GDP per capita in Abruzzo and Molise: excluding Apulia and Basilicata (regions suffering expansion of organized crime starting from the 1960s) (index 1951=100).



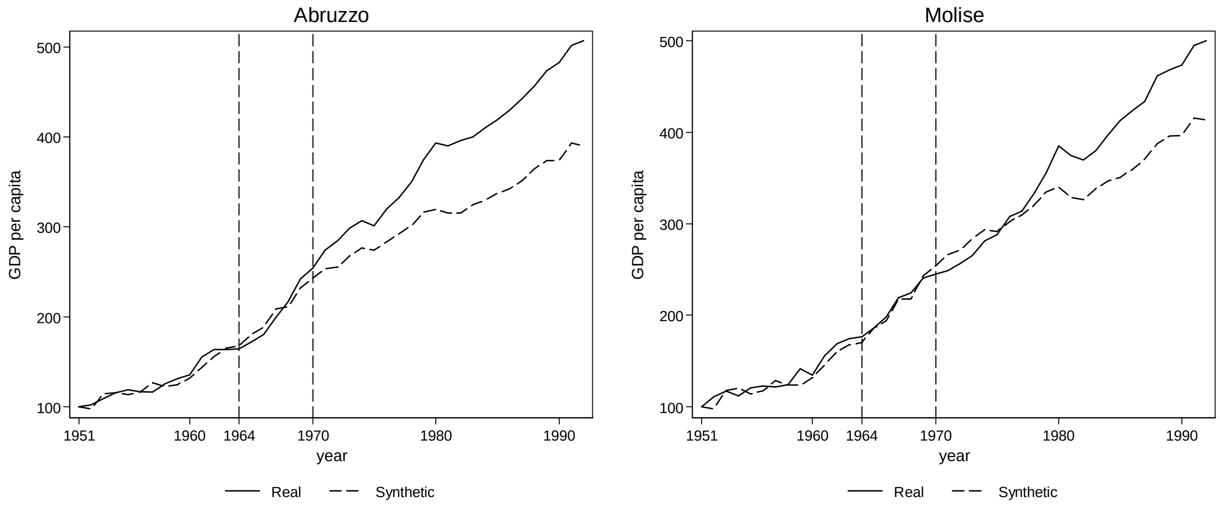

Notes: The graphs report the GDP per capita (index 1951=100) of the treated regions (Abruzzo and Molise) and of the respective synthetic control. The weights are: Campania (0.619), Calabria (0.126), Sicily (0.150) and Sardinia (0.105) for the Abruzzo region; Calabria (0.423), Sicily (0.508) and Sardinia (0.069) for the Molise region. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2.

Figure 10. Trends in GDP per capita in Abruzzo and Molise: excluding the main donor (Sardinia in the case of Abruzzo; Apulia in the case of Molise) (index 1951=100).



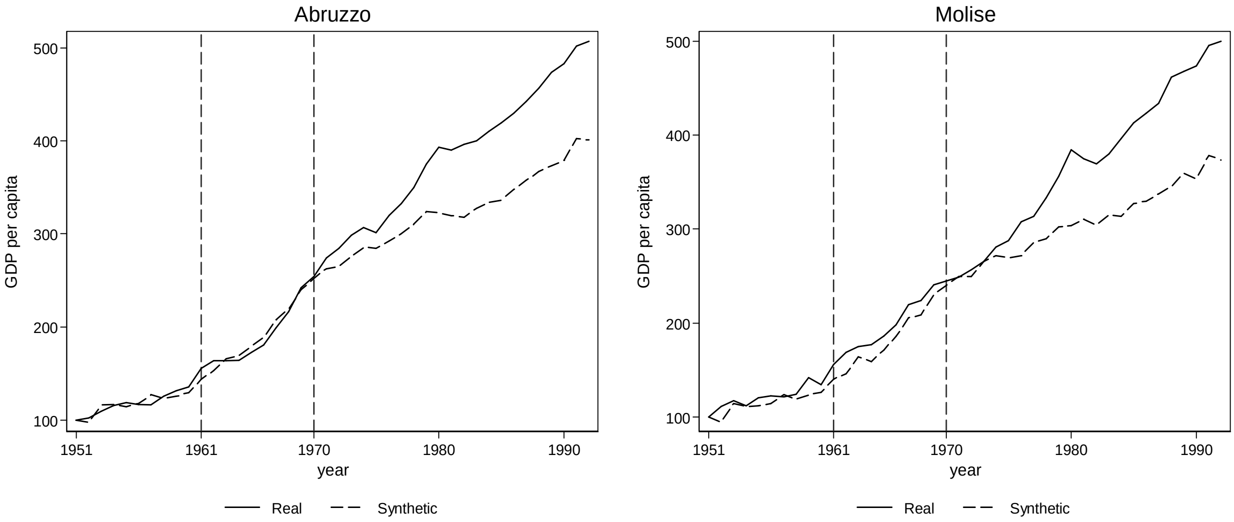

Notes: The graphs report the GDP per capita (index 1951=100) of the treated regions (Abruzzo and Molise) and of the respective synthetic control. The weights are: Campania (0.374), Apulia (0.579), and Calabria (0.029) for the Abruzzo region; Basilicata (0.592), Sicily (0.341) and Sardinia (0.066) for the Molise region. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2.

Figure 11. Trends in GDP per capita in Abruzzo and Molise: excluding the two Italian islands (Sicily and Sardinia) (index 1951=100).



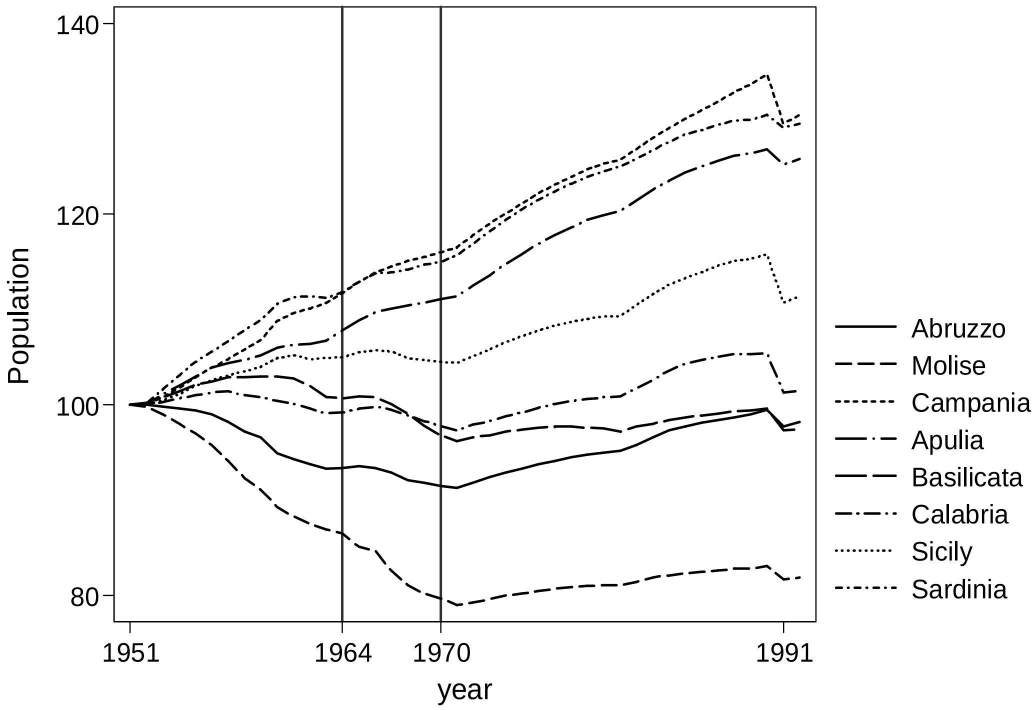

Notes: The graphs report the GDP per capita (index 1951=100) of the treated regions (Abruzzo and Molise) and of the respective synthetic control. The weights are: Campania (0.270), Apulia (0.554), Basilicata (0.040), and Calabria (0.137) for the Abruzzo region; Apulia (0.871) and Basilicata (0.129) for the Molise region. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2.

Figure 12. Trends in GDP per capita in Abruzzo and Molise: fake experiment with treatment's start year 1961 (index 1951=100).




Note: The graphs report the GDP per capita (index 1951=100) of the treated regions (Abruzzo and Molise) and of the respective synthetic control. The weights are: Apulia (0.308), Calabria (0.086), Sicily (0.368) and Sardinia (0.238) for the Abruzzo region; and Apulia (0.331), Calabria (0.641) and Sicily (0.028) for the Molise region. The weights are chosen to minimize the distance between treated and synthetic control units in terms of variables described in Appendix, Table A2, when the treatment is moved to 1961.

Figure 13. Population dynamics in the Italian Mezzogiorno (index 1951=100).




Notes: authors' elaboration based on CRENoS data.

## Appendix.

*A1. Proof of Result 2.*

The function $f(q)=\frac{Q\phi_{\alpha}^{1}}{Q\phi_{\alpha}^{1}+(1-Q)\phi_{\beta}^{1}}$ defined in the text can be rewritten as:

$$f(q)=Q\cdot\left\{Q+(1-Q)\left[\frac{1+exp\left\{\frac{\tilde{u}-u_{i}^{1}}{\theta}\right\}}{1+exp\left\{\frac{\tilde{u}-u_{-i}^{1}}{\theta}\right\}}\right]\right\}^{-1}. \qquad \text{(A1.1)}$$

The conjecture $q\in(0,1)$ is ex-post self-confirming when it is a fixed point of $f(q)\in(0,1)$. Since we assumed that natives of community α are the majority, that is, $Q\geq\frac{1}{2}$, we will concentrate on the correctness of conjectures such that $q\geq\frac{1}{2}$.

Consider first the special case when the natives of the two communities have equal size, $Q=1-Q=\frac{1}{2}$. Under the conjecture $q=\frac{1}{2}$, the members of each community get the same payoff, $u_{i}^{1}=u_{-i}^{1}$. Thus, one obtains that $f(q)=Q=\frac{1}{2}=q$: the conjecture is confirmed.

We next consider the general case for $Q>\frac{1}{2}$, starting with the characterization of the function $f(q)$. Notice first that, for $q=\frac{1}{2}$, $f\left(\frac{1}{2}\right)=Q>\frac{1}{2}$. Hence, point $\left(\frac{1}{2},f\left(\frac{1}{2}\right)\right)$ in the space $\left(q,f(q)\right)$ will lie above the 45° line. As a consequence, the existence of a conjecture $q\in\left(\frac{1}{2},1\right)$ that is confirmed ex-post requires that $f'(q)$ be sufficiently small when positive. From inspection of (1) and (2), notice that $\frac{dU_{i}^{1}}{dq}>0$ for any $x_{i}>0$, and $\frac{dU_{-i}^{1}}{dq}<0$ for any $x_{-i}>0$: thus, $\frac{du_{i}^{1}}{dq}>0$ and $\frac{du_{-i}^{1}}{dq}<0$.[17] Consequently, it holds that:

$$f'(q)=\frac{\frac{Q(1-Q)}{\theta}\left\{\left[1+exp\left\{\frac{\tilde{u}-u_{-i}^{1}}{\theta}\right\}\right]\cdot\frac{du_{i}^{1}}{dq}-\left[1+exp\left\{\frac{\tilde{u}-u_{i}^{1}}{\theta}\right\}\right]\cdot\frac{du_{-i}^{1}}{dq}\right\}}{\left\{Q\left[1+exp\left\{\frac{\tilde{u}-u_{-i}^{1}}{\theta}\right\}\right]+(1-Q)\left[1+exp\left\{\frac{\tilde{u}-u_{i}^{1}}{\theta}\right\}\right]\right\}^{2}}>0. \qquad \text{(A1.2)}$$

[17] This conclusion is further confirmed in Appendix A2.

Finally, to prove the claim in Result 2, we have to check that $f'(q)$ becomes sufficiently small when the dispersion across location preferences, as measured by $\theta$, gets sufficiently large. Since it holds that $\lim_{\theta\to\infty}\left[1+exp\left\{\frac{\tilde{u}-u_i^1}{\theta}\right\}\right]=\lim_{\theta\to\infty}\left[1+exp\left\{\frac{\tilde{u}-u_{-i}^1}{\theta}\right\}\right]=2$, expression (A1.2) implies that $\lim_{\theta\to\infty} f'(q)=0$.

As claimed, a suitably large value of $\theta$ ensures the existence of a fixed point in $\left(\frac{1}{2},1\right)$.

*A2. Properties of* $(v_i^1, v_{-i}^1)$.

The derivative of $v_i^1$ with respect to $q^*$ is given by:

$$\frac{dv_i^1}{dq^*}=\frac{a^2k(b+c)[k-(1-q^*)(b+c)]\{k[k-2b(1-q^*)-c(1-2q^*)]+(b^2-c^2)(1-q^*)^2\}}{[k^2-bk+q^*(1-q^*)(b^2-c^2)]^3}>0. \qquad \text{(A2.1)}$$

Similarly:

$$\frac{dv_{-i}^1}{dq^*}=\frac{a^2k(b+c)[k-q^*(b+c)]\{-k[k-2bq^*-c(1-2q^*)]-(b^2-c^2)(q^*)^2\}}{[k^2-bk+q^*(1-q^*)(b^2-c^2)]^3}<0. \qquad \text{(A2.2)}$$

The derivatives of $v_i^1$ and $v_{-i}^1$ with respect to $c$ are, respectively:

$$\frac{dv_i^1}{dc}=\frac{a^2k(1-q^*)[k-(1-q^*)(b+c)]\{-k[k-b-cq^*]-q^*(1-q^*)(b+c)(b-cq^*)\}}{[k^2-bk+q^*(1-q^*)(b^2-c^2)]^3}<0\ , \qquad \text{(A2.3)}$$

$$\frac{dv_{-i}^1}{dc}=\frac{a^2kq^*[k-q^*(b+c)]\{-k[k-b-2c(1-q^*)]-q^*(1-q^*)(b+c)[b-c(1-2q^*)]\}}{[k^2-bk+q^*(1-q^*)(b^2-c^2)]^3}<0. \qquad \text{(A2.3)}$$

Table A1. Summary statistics of data used in the synthetic control procedure. Full sample (1951-1992).

| | Number of observations | Mean | Standard deviation | min | max |
|---|---|---|---|---|---|
| GDP per capita | 840 | 7077.5 | 3384.5 | 1745.1 | 15589.8 |
| Annual GDP per capita growth rate | 820 | 0.035 | 0.040 | -0.090 | 0.321 |
| Investment-to-GDP ratio | 660 | 0.254 | 0.069 | 0.151 | 0.674 |
| Share of high educated | 100 | 0.107 | 0.069 | 0.022 | 0.296 |
| Population density | 840 | 166.5 | 96.4 | 28.8 | 430.7 |
| Net imports-to-GDP ratio | 600 | 0.070 | 0.124 | -0.141 | 0.544 |
| Minimum wage index | 840 | 95.3 | 7.1 | 74.0 | 100.0 |
| Agriculture share of VA | 660 | 0.068 | 0.037 | 0.018 | 0.198 |
| Industry share of VA | 660 | 0.299 | 0.075 | 0.167 | 0.582 |
| Market services share of VA | 660 | 0.448 | 0.058 | 0.250 | 0.598 |

Table A2. Description of data used in the synthetic control procedure.

| | Description | Period | Specification used in the synthetic control procedure (Xs pre-treatment) | Source |
|---|---|---|---|---|
| GDP per capita | Gross Domestic Product per inhabitant (Euros at 1990 constant prices) | 1951-1992 | Average 1960-1963 | CRENoS |
| Annual GDP per capita growth rate | Annual growth of GDP per capita | 1952-1992 | Average 1951-1963 | CRENoS |
| Investment-to-GDP ratio | Gross fixed investment over GDP (Euros at 1990 constant prices) | 1960-1992 | Average 1960-1963 | CRENoS |
| Share of high educated | People having a upper secondary degree or higher level of education over population with 6 years or more | 1951, 1961, 1971 | Average of years 1951 and 1961 | Population and Houses Census, National Institute of Statistics |
| Population density | People per square km | 1951-1992 | Average 1951-1963 | Data on inhabitants taken from the National Institute of Statistics and data on surface by the *Atlante Statistico dei Comuni* (National Institute of Statistics) |
| Net imports-to-GDP ratio | Difference between the value of imports versus exports over GDP (Euros at 1990 constant prices) | 1963-1992 | Year 1963 | CRENoS |
| Minimum wage index | Local minimum wage | 1951-1992 | Average 1951-1963 | Authors' elaboration based on information provided by collective bargaining agreements and data on workforce (National Institute of Statistics) |
| Agriculture share of VA | Share of value added in agriculture (Euros at 1990 constant prices) | 1960-1992 | Average 1960-1963 | CRENoS |
| Industry share of VA | Share of value added in industry (Euros at 1990 constant prices) | 1960-1992 | Average 1960-1963 | CRENoS |
| Market services share of VA | Share of value added in market services (Euros at 1990 constant prices) | 1960-1992 | Average 1960-1963 | CRENoS |