Market integration accounts for local variation in generalized altruism in a nationwide lost-letter experiment

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What explains variation in levels of prosocial behavior across communities? And are members of the ingroup and outgroup treated differently? According to evolutionary theories of generalized altruism, market integration should lead to greater levels of prosociality: Market exchange forces people to interact with unknown others, thus creating the conditions for the extension of prosocial behavior beyond close-knit circles to include outgroup members and strangers. Moving away from the evolutionary focus on cross-cultural variation, this article uses the market-integration hypothesis to explain intracultural variation in levels of prosociality in an advanced society. Taking advantage of an ideal setting, this study reports results from a large-scale, nationwide lost-letter experiment in which 5,980 letters were dispersed in a sample of 188 Italian communities. The study confirms the relevance of market integration in accounting for differences in levels of prosociality: In areas where market exchange is dominant, return rates are high. It also casts a light on the relationship between ingroup and outgroup prosociality: Return rates for both Italian and foreign recipients are the same; they vary together; and ingroup returns are highly predictive of outgroup returns at the community level.

prosocial behavior | generalized and parochial altruism | lost-letter experiment | market integration | social capital

You are walking down the street on a warm April afternoon and stumble upon a sealed, stamped letter. Someone must have dropped it accidentally. What do you do? And what would your neighbors do? And does it matter who the letter recipient is? In a lost-letter experiment, sealed, addressed, stamped, but unmailed letters are dispersed in public spaces (e.g., sidewalks, storefronts, parks, etc.). Passersby can either ignore, destroy, or mail the envelopes. Rates of return are commonly treated as an unobtrusive behavioral measure of prosocial behavior at the community level (1–3). Here, I present results from a large-scale, nationwide lost-letter experiment to explain within-cultural variation in prosocial behavior.

Humans are prosocial, at least to some extent (4–7), although there is ample variation among individuals, groups, neighborhoods, and countries in their overall levels of prosocial behavior (2, 5, 8–10). What are the sources of this variation? Interestingly, socio-demographic variables do little to explain variation in prosocial behavior at the individual level (4, 5, 11). Scholars have, instead, advanced promising theories that account for cross-cultural variation in prosocial behavior.

In their seminal study of 15 societies, Henrich et al. (5) explain cross-cultural variation in levels of prosocial behavior as a function of how much people rely on market exchange in their daily lives. Namely, "the more frequently people experience market transactions, the more they will also experience abstract sharing principles concerning behaviors toward strangers" (ref. 12, p. 76). According to this theory, the necessity to engage in beneficial market exchanges with strangers has induced certain societies to develop altruism and norms of fairness toward a generalized other. A subsequent cross-cultural comparison of 15 societies confirms the positive relationship between market integration and prosociality (9). The communities for both studies were selected in order to maximize cross-cultural variation, ranging from small-scale hunter-gatherer communities to horticultural and wage laborer societies. Relatedly, Buchan et al. (13) find that globalization, measured as increased worldwide connectedness and interdependence, strengthens cosmopolitan attitudes and "broadens the group boundaries within which individuals perceive they belong" (ref. 13, p. 4138).

The market-integration hypothesis was originally developed within an evolutionary theory framework in order to account for the emergence of norms of fairness in large-scale, complex societies over millennia. Empirical support thus came from extreme cross-cultural variation. In this paper, I change the scale at which the market-integration hypothesis operates and test whether intracultural variation in levels of prosociality in an advanced society could be similarly accounted for by market-exchange dynamics. In fact, even within a single culture, greater market exposure may translate into stronger prosocial norms toward unknown others. Historical, geographic, and socioeconomic reasons may make certain areas of a country more likely to engage in economic transactions with unknown, distant others and thus

Significance

Why do communities vary in their levels of prosocial behavior? And are members of the ingroup and outgroup treated differently? According to the generalized altruism hypothesis, the more people engage in market-exchange dynamics, the more they are forced to interact with unknown others, thus creating the premises for the extension of prosocial behavior beyond close-knit circles to include outgroup members. This paper uses a large-scale, nationwide lost-letter experiment in a sample of Italian communities and finds a positive relationship between market integration and prosociality: In areas where market exchange is dominant, letter-return rates are high. Moreover, prosocial behavior toward ingroup and outgroup members moves hand in hand, thus suggesting that norms of solidarity extend beyond group boundaries.

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foster generalized prosociality, following mechanisms not dissimilar from those evoked in the evolutionary literature on cross-cultural variation. Namely, even within the more limited time frame of a lifetime or a few generations, prosocial behavior may be fostered by macrodynamics, such as market integration and globalization, that "force" individuals and groups to interact with unknown others, by crossing the boundaries of their most proximate social circles (e.g., family, friends, or coethnics). As perceived social distance with a generalized other declines, prosociality toward strangers should rise.

There is, indeed, some sociological literature supporting this intuition. Yamagishi and colleagues explain lower levels of trust and cooperation toward strangers in a collectivist society, Japan, compared to an individualistic one, the United States, arguing that the intense group ties typical of the Japanese society prevent trust from developing beyond group boundaries (8, 14). At the individual level, Ermisch and Gambetta (15) demonstrate that strong family and group ties reduce trust toward strangers by reducing opportunities and motivation for outward exposure. Both findings advance an "emancipatory" theory of trust, in which prosocial behavior toward generalized others develops when people emancipate "from the confines of safe, but closed relationships" (ref. 8, p. 165). In sociology, this theory is often embraced as a viable alternative to theories of social capital based on homogeneity and close-knit networks (16–18).

Combining this sociological tradition with insights from the evolutionary approach, I explore the role of market integration in fostering generalized prosociality in a developed society. Generalized altruism arises from life-course processes reproduced over time and is transmitted over generations through local social norms. Thus, we should expect that both the institutional and historical legacy of a place (19), as well as individuals' more immediate experiences (20), will have a bearing on levels of prosociality. Individuals learn social norms from their personal experiences and the context in which they are embedded. Market integration should thus be conceived both in terms of immediate economic experiences, such as labor-force participation and type of employment, as well as the economic development of a place and its modes of production. For instance, places that have had earlier and deeper experiences with industrialization and globalization and whose modes of production heavily rely on producers' interdependence (21, 22) are expected to have higher generalized prosociality—granted, of course, that the younger generations are still able to find jobs and thus integrate in the productive system.

The experiences that typically push individuals beyond the comfort zone of familiar networks are, of course, not limited to the economic domain. For instance, going through a divorce may increase generalized trust, likely because the sudden disappearance of part of one's support networks creates the need to rely on new, often unknown people (15). However, there is no doubt that economic factors are a major driver of human behavior in many consequential aspects of social life, from migration to marriages and politics, and it is thus plausible to expect them to play a major role in determining exchange patterns. Moreover, economic transactions, for their very nature of being an exchange between parties that bring to the table different types of goods, are likely to occur between people who do not belong to the same social circles (23). For all these reasons, it seems sensible to focus on economic factors.

In the generalized altruism framework, greater levels of prosociality derive from the broadening of group boundaries and, thus, greater inclusiveness. In the abstract, this could lead to a partial elision of the distinction between the ingroup and outgroup. In this respect, the generalized altruism approach leads to predictions that contrast with studies of prosocial behavior highlighting the parochial nature of human altruism. Psychologists have convincingly documented ingroup favoritism in minimal group experiments (24–26) and showed how ingroup preference may bring about outgroup discrimination. In this perspective, "intergroup bias appears a mixed blessing—it creates strong ingroups but potentially fuels intergroup tension, hostility, and competition" (ref. 27, p. 1556). Adopting an evolutionary perspective, scholars advancing the parochial altruism hypothesis suggested that prosocial behavior toward ingroup members developed during periods of violent intergroup conflict and derives from the coevolution of 2 behavioral traits: intergroup favoritism and outgroup hostility (28, 29). The extension of prosocial behavior to nonkin has been often explained on the basis of group selection (30). In the parochial altruism perspective, social norms regarding altruistic and cooperative behavior are confined within the group and do not extend to outgroup members. Indeed, ingroup favoritism goes hand in hand with outgroup aggression.

Researchers are still debating whether differences between ingroup and outgroup treatment derive from ingroup favoritism or hostility toward the outgroup, with more evidence in favor of the former (27). There are also differences with respect to whether intragroup cooperation should inevitably produce intergroup aggression, as suggested by social identity theory, or whether this may not necessarily be the case (31), and the available field-experimental evidence is not exhaustive on this point (32, 33). Although differences exist, this latter set of studies would generally predict greater prosociality toward the ingroup, and ingroup altruism is not expected to extend to members of the outgroup.

The generalized and parochial altruism approaches cannot be directly compared, because they tackle different questions and operate at different levels of analysis. At the heart of the generalized altruism framework, there is an interest in understanding how prosocial behavior extends beyond kinship and close-knit networks. In contrast, work on parochial altruism is concerned with comparing ingroup and outgroup prosociality, and empirical evidence documenting ingroup favoritism and outgroup hostility has come mainly, although not exclusively (34), from individual-level and small-group studies.

However, there is a systematic difference between the 2 theories in the way prosocial behavior comes about: According to the generalized altruism hypothesis, prosociality is fostered by the broadening of group boundaries. The theory is not specific enough to state how this occurs, whether we should expect a gap between ingroup and outgroup, or whether there is a gap when market integration is low, but it then closes as market logics become widespread (thus, the multiple lines for outgroup trends) in Fig. 1. Certainly, it is expected that both ingroup and outgroup prosociality would increase as market integration increases. In contrast, parochial altruism is predicated on the basis of ingroup favoritism. As a consequence, we would not expect similar levels of prosocial behavior toward ingroup and outgroup members, or that ingroup and outgroup prosociality go hand in hand (Fig. 1, *Right*). Actually, in its stricter formulation, greater ingroup solidarity is associated with enhanced outgroup hostility. In addition, the parochial altruism approach does not necessarily imply that market integration or other structural changes are at the basis of greater prosociality (thus, the x axis is not defined).

The large-scale, nationwide lost-letter experiment that I present here provides an ideal setting to test the market-integration hypothesis in the context of a developed society, and it also casts some light on the relationship between ingroup and outgroup prosociality. I exploit regional variation in Italy, a country often studied for its noticeable differences in levels of prosociality (35–37), to study overall variation in prosocial behavior and to test whether within-cultural variation can be explained by levels of market integration. This is a stricter test for the generalized altruism hypothesis because it focuses on within-country variation rather than cross-national comparisons, thus comparing units of analysis that are much more homogeneous with respect to their political and legal institutions, culture,

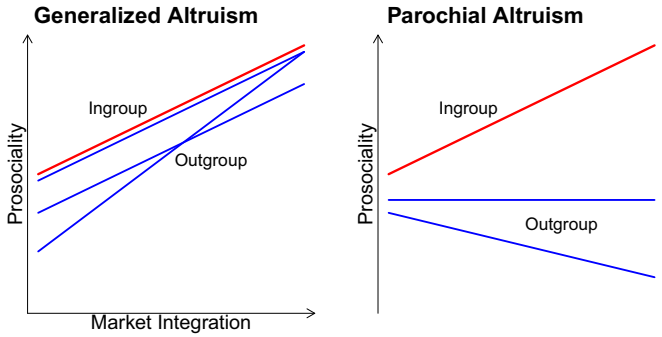

Fig. 1. Hypothetical trends for the generalized altruism and parochial altruism hypotheses.

and educational systems. In addition, by randomly varying the identity of the letter recipients between Italians and immigrants, I am also in the position of comparing levels of ingroup and outgroup prosociality, thus allowing for a direct test of the major point of departure between the general and parochial altruism hypotheses. Namely, I test whether prosocial behavior toward the ingroup goes hand in hand with outgroup prosociality, as implied by theories of generalized prosocial behavior, or whether, instead, prosocial behavior does not extend beyond group boundaries.

Findings strongly support the generalized altruism framework: First, there is a clear association between levels of market integration and prosocial behavior, and the relationship persists, even controlling for a host of geographic, social, and contextual factors. Second, patterns of prosociality toward ingroup and outgroup closely resemble each other.

The Lost-Letter Experiment

Originally employed by Milgram et al. (1) to measure attitudes toward political organizations, the lost-letter technique is an established strategy to obtain unobtrusive measures of prosocial behavior at the community level. Among the virtues of this type of field experiment is the fact that social desirability bias is not a concern because passersby are not aware that their behavior is being studied (3, 38).

Lost-letter experiments have been deployed for 2 main purposes. First, they were used to study differences between localities—for instance, to compare prosocial behavior in urban and rural communities (39) or across city neighborhoods. In cities as different as Chicago (2), London (40), and Berlin (41), recent studies have documented large variation in prosociality across neighborhoods that is related to a host of community-level aspects, economic deprivation being the most prominent.

Second, the lost-letter experiment has been used to measure discrimination toward specific groups, by systematically varying the identity of the recipient (and/or sender). In particular, different individual and organizational names have been used to test discrimination along political (1), religious (33, 42), and ethnic lines (41, 43). Of particular interest, some studies found outgroup discrimination toward certain religious and ethnic groups—namely, between Catholics and Protestants in Northern Ireland (33) and toward Muslims in Sweden (42)—while others found no significant difference in return rates between Dutch and Turkish/Moroccan recipients in the Netherlands (43). Finally, letters from Turkish and Muslim organizations were returned at the same rates as letters from German and Christian organizations in Berlin (41).

Design and Methods. Lost-letter experiments have been mainly carried out in urban settings, and only occasionally in midsized communities or small towns. I present results from a large-scale, nationwide lost-letter experiment. A total of 5,980 letters were dispersed in a nationally representative sample of 188 Italian communities, ranging from neighborhoods in large cities to small towns. To guarantee a sufficient number of observations for each community size, the sample of communities was stratified by population size. The sampled communities are representative of the corresponding population with respect to income and macroregion (*SI Appendix*, section 1A), thus allowing for an unbiased estimate of regional variation in levels of prosocial behavior. The research design was approved by the New York University IRB (case no. 13-9399). Informed consent was waived. *SI Appendix*, Table S1 reports a detailed description, source, and descriptive statistics for all of the variables included in the analysis. *SI Appendix*, Fig. S1 plots the distributions and correlation coefficients for all of the variables of interest, outcomes, and major controls.

Which factors may explain intracultural variation? According to the generalized altruism hypothesis, market integration is a macrostructural feature that "forces" people into interactions with unknown others, from which they emerge with greater prosociality. Previously used measures of market integration, such as the average percentage of total household calories that are purchased in the market (9), are viable options for cross-cultural comparisons, but they are obviously not applicable to the study of within-cultural variation in a developed country. To capture the overall reliance on market exchange, I consider both historical measures and variables that identify current employment conditions.

First, I consider a historical measure of economic growth: the rate of gross domestic product (GDP) growth during the industrialization period in Italy (1871–1951) (44).* Second, I consider the presence of industrial districts in the province. Industrial districts, a diffused mode of production in Italy, are characterized by highly specialized, territorially clustered, small- and medium-size firms: They represent about 1/4 of the Italian economy and are the major driver of Italian global exports (45). Despite their small size, they have remained competitive on international markets thanks to strong interdependence and interfirm cooperation (22, 46). Namely, I consider whether the province has at least 1 industrial district. Finally, I adopt 3 contemporary measures of labor-force integration in market exchanges: the proportion of people that are active in the workforce; the proportion of the labor force that is female; and the ratio of people employed in the private versus the public sector. Large-scale participation in the labor force is a conditio sine qua non for exposure to market exchange, while public-sector employment represents the quintessential stable job that de facto shields workers from market dynamics, at least compared to the demands of the private sector. Taken together, these 5 measures should cover different dimensions of market integration in the Italian case. In a comparative perspective, economic growth and employment rates should be regarded as the most easily applicable across contexts. While an extensive interpretation of the generalized altruism hypothesis could include some structural or cultural factors, such as level of urbanization, I here intend to 1st establish the relevance of economic exchange dynamics and include other factors as controls.

Control variables include population size, proportion of foreigners in the municipality, weather conditions, the presence of a postal box, whether there were signs of social disorder in the neighborhood, perceptions of safety, whether there were foreigners on the street, and the presence of ethnic businesses. Regional controls to account for geographic differences were added to

*Italy was a latecomer to industrialization: At the beginning of the 20th century, most people were still employed in agriculture. Since the real turning point was the 2 World Wars, I consider the growth in GDP between 1871 (unification) and 1951 (after World War II).

all models. Finally, I controlled for social capital both using associational density and an established index of social capital at the provincial level (47). Conceptually, social capital controls are redundant, because both return rates and some social capital measures—e.g., blood donation—can be viewed as indicators of prosociality at the community level (48). Including these controls, however, strengthens the argument in favor of an explanation based on market integration over alternative explanations based on cultural differences (35, 36).

All letter recipients lived in Italy. In each of the communities, half of the recipients had distinctively Italian names, while the remaining half of the letters were addressed to either Mohamed Hassan, a common name among Magrebi immigrants of Muslim origin; a university professor; or a member of Parliament (MP). Detailed information about the sampling of communities, randomization of the letter recipients, and practical instructions are available in *SI Appendix*, sections 1B–1D. By randomly varying recipients' identities, I captured whether passersby's behavior is affected by the identity of the likely beneficiary of their altruistic act. In particular, the analyses focused on the comparison between return rates for Italian and immigrant recipients, capturing the most prominent ingroup/outgroup division in Italian society.[†] Whether return rates differ for outgroup members and, most importantly, follow divergent versus similar patterns will provide a test for the parochial versus generalized altruism hypotheses.

Data Availability. Data, protocols, and code for replication have been made publicly available through Dataverse (50).

Results

As expected, there were significant differences in the rates of return across regions (Fig. 2), ranging from the 54% of Marche to the 10% of Calabria. Overall, average return rates were 37.8% in the north, 31.5% in the center, and 18% in the south of Italy (see Fig. 4; all of the differences were statistically significant at the $P < 0.005$ level or lower). These results are in line with a long line of scholarship documenting marked differences along the north–south divide. What accounts for these regional differences? According to the generalized altruism hypothesis, market integration should bring about greater prosocial behavior. Indeed, there was a strong correlation between letter-return rates and all our measures of market integration: Return rates for Italian recipients strongly increased as a function of past economic growth, the presence of an industrial district, and the share of people and women active in the labor force, as well as with greater employment in the private versus the public sector (Fig. 3, *Upper*).

A more appropriate test of this relationship, however, requires a set of controls. *SI Appendix*, Tables S2–S4 report results from models predicting the likelihood of a letter being returned as a function of our 5 predictors of market integration. Given the strong macroregional variation in return rates, and the fact that several predictors have a similar geographic variation, all models reported control for macroregional differences by estimating 2-level random intercept models, in which observations were nested in municipalities and macroregions. Models in *SI Appendix*, Tables S3 and S4 also included a host of contextual, social, and geographic controls and different measures of social capital. The major takeaway is that there was a positive and statistically significant association between our measure of

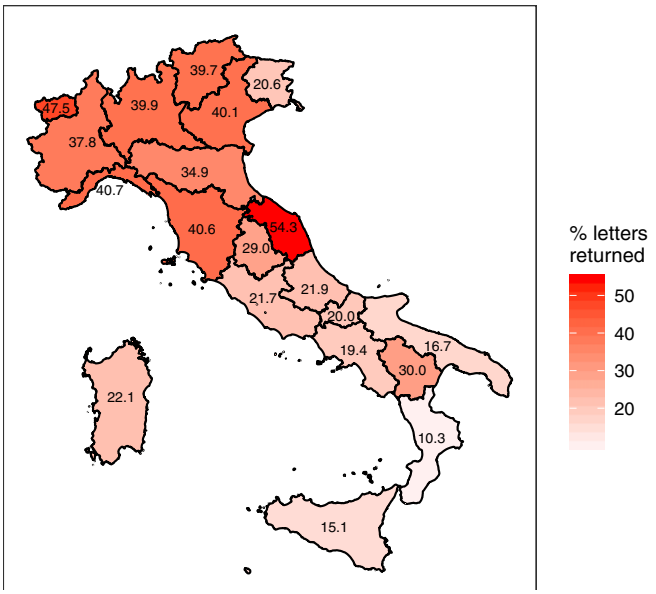

Fig. 2. Proportion of letters returned to an Italian recipient aggregated by region.

prosociality and 4 measures of market integration—namely, past economic growth, industrial district mode of production, general labor-force participation, and private over public employment ratio. The statistical significance for some of these measures, especially those measured at the regional or provincial level, was somehow reduced when introducing an extensive set of controls (*SI Appendix*, Tables S3 and S4), but, overall, their effect remained substantial and generally above conventional levels. Women's share of the labor force was, instead, nonsignificant when controlling for the macroregion. Conceptually, the benefits of women's participation should increase as a function of the overall labor participation. And, indeed, when considering its interaction with the overall share of population in the labor force (model 5 in *SI Appendix*, Table S2, model 11 in *SI Appendix*, Table S3, and model 18 in *SI Appendix*, Table S4), we find a positive and statistically significant association: Namely, women's share of the labor force was positively associated with rates of return in contexts with high overall labor-force participation, while the association was not present in places where unemployment was high (*SI Appendix*, Fig. S2).

Only a few contextual factors—most importantly, the presence of a mailbox in the area—were related to return rates. More interestingly, both of our social-capital indicators, associational density and the social-capital index, were nonsignificant in models that controlled for macroregions (model 13 and model 20 in *SI Appendix*, Tables S3 and S4). Although the research design does not allow one to draw causal conclusions, this analysis provides strong correlational evidence in support of the positive effect of market integration on levels of prosocial behavior. Importantly, the impact of market integration remained essentially intact, even controlling for preexisting levels of social capital and keeping cultural-geographic "traits" constant. Thus, market integration cannot be dismissed as a by-product of long-standing social or cultural differences. If anything, the other way around is more plausible.

Consider, now, differences in the treatment of ingroup and outgroup members. I exploited the randomization of the identity of the letter recipient to assess whether behavior toward the ingroup goes hand in hand with outgroup prosociality, as implied by the generalized altruism hypothesis or whether, instead, we should not expect ingroup prosociality to extend to members of the outgroup, as suggested by the parochial altruism hypothesis.

[†]Although it has now reached levels comparable to most other European countries, immigration is a relatively recent phenomenon in Italy. Most adult immigrants are first generation; their integration in Italian society is partial at best; and antiimmigrant sentiment is quite diffused, and fomented, in recent years, by right-wing parties. In addition, of all immigrant groups, Muslim males from North Africa are likely to be among the least welcomed (49).

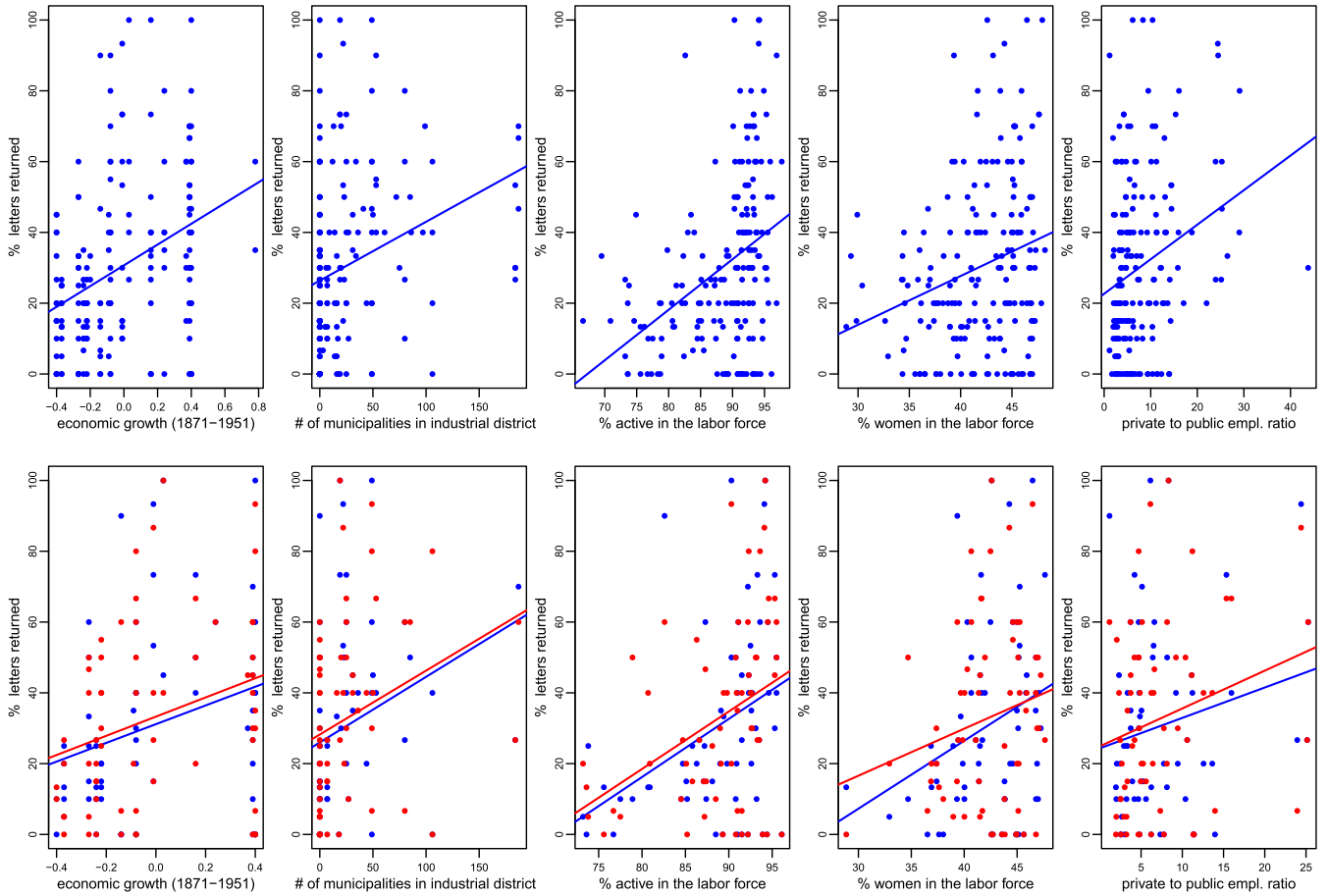

Fig. 3. Letter-return rates increase as a function of market integration. *Upper* shows the relationships between return rates for Italian recipients and 5 measures of market integration: economic growth (region), number of municipalities in an industrial district (province), rate of employment (municipality), rate of female employment (municipality), and private-to-public employment ratio (municipality) (n = 188). *Lower* shows the relationship for Italian (blue dots and lines) and immigrant (red dots and lines) recipients (n = 63, because letters for both Italians and immigrants were dropped in only 63 municipalities). Plots are from linear regression models.

First of all, findings show that passersby do distinguish between recipients, but in a surprising way. Contrary to some expectations, passersby were equally likely to mail letters to recipients with distinctively Italian (29.6%) and immigrant names (30.4%, −0.8, $P = 0.611$); they were slightly more likely to return letters to university professors (33.8%) than to regular citizens (+4.2, $P = 0.008$); and they were least likely to return letters to MPs (5.8%, $P < 0.001$ for all of the comparisons) (Fig. 4). Thus, levels of prosociality were the same toward ingroup and outgroup members.

According to the generalized altruism hypothesis, we should expect changes in ingroup and outgroup altruism to move hand in hand, and this is exactly what we observe in Fig. 3, *Lower*, where rates of return for both Italian and immigrant recipients increased as a function of the level of market integration of the community. As further evidence that ingroup and outgroup prosociality are positively related, I ran multilevel models predicting letter returns for immigrants as a function of the rate of return for Italians in the community, controlling for market integration, social capital, geographic area, and all of the other predictors used before. Results clearly show that the return rate for Italians is positively and highly correlated with return rates for immigrants (*SI Appendix*, Table S5).

Conclusions

This study of within-cultural variation in prosocial behavior provides an ideal setting to test the generalized altruism hypothesis, while also offering some insights into the relationship between ingroup and outgroup altruism. The study confirms the primacy of market integration in accounting for differences in levels of prosociality: In areas where market exchange is dominant, return

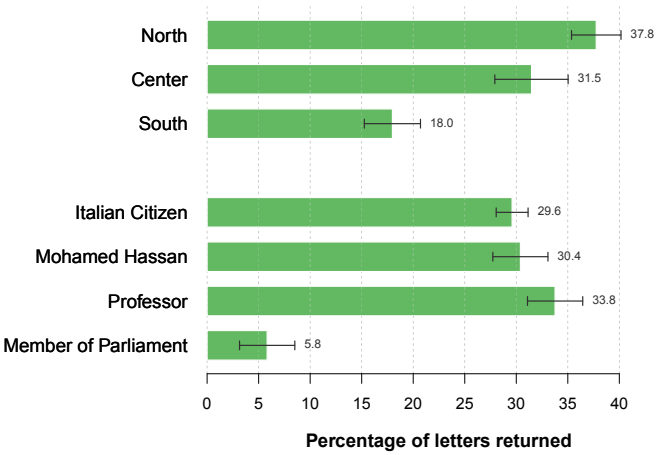

Fig. 4. Rates of return for a nationwide lost-letter experiment conducted in Italy: 188 communities and 5,980 letters dispersed. Whiskers in plots report the standard errors of estimates from linear regression models.

rates are high, and, in general, prosocial behavior toward both Italian and immigrant recipients is the same. The generalized altruism approach is thus supported.

In the generalized altruism perspective, the crucial importance of market integration and related social processes is due to the fact that they force individuals to interact with unknown others, thus creating the premises for the extension of prosocial behavior beyond close-knit circles. This view calls into question established social-science accounts of regional differences in prosociality based on cultural explanations, according to which the scarce collective performance of certain geographic areas is due to their low levels of social capital and civic engagement (35, 36, 47). Here, I advance a complementary argument, bringing to the table considerations concerning the role of market integration in triggering virtuous circles of prosociality that increase and expand it beyond close-knit circles of family and personal acquaintances to include outgroup members and strangers. Moreover, while there is no doubt that preexisting levels of prosocial behavior are highly predictive of contemporary levels of prosociality, explanations based exclusively on cultural aspects run into the risk of being tautological (48). In contrast, greater attention to economic factors, some of which could plausibly be exogeneous, may, in fact, contribute to our understanding of variability in prosocial behavior across social contexts, above and beyond the long-term cultural features of a society.

Along this line of inquiry, my findings relate to other lost-letter experiments highlighting the role of economic well-being in affecting prosociality at the neighborhood level (2, 40, 41). Similarly, a cross-national lost-wallet experiment found higher return rates in wealthier countries (51). The jury is still out, however, concerning whether ingroup and outgroup prosociality systematically differ: In line with other field-experimental evidence from Germany and the Netherlands (41, 43), I found similar return rates for natives and immigrants. However, this contrasts with results from Northern Ireland and Sweden (33, 42). Thus, whether return rates vary according to the ethnicity or religiosity of the recipient is highly context dependent. A working hypothesis is that outgroup discrimination may arise from previous experiences of conflict, like in the Northern Ireland case, or similar evidence from Bosnia (52) and Georgia (32). Further investigations should test dynamically the parochial altruism hypothesis and help to better understand its relationship with the theory of generalized altruism.

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