Affinity, Trust, and Information*

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Abstract

Mutually beneficial trades often rely on both trust and trustworthiness. In exchanges where no prior history of behavior is observable, however, where does trust come from? Recent evidence suggests that the level of affinity felt between parties in an exchange positively affects trustworthiness and can, therefore, affect trust beliefs. We propose a simple model incorporating affinity which predicts a positive relationship between trust beliefs, affinity, and trustworthiness and a negative relationship between the dispersion of trust beliefs and affinity. Furthermore, trust beliefs are slower to update in light of a shock to trustworthiness when affinity is high. We show that the model's predictions are supported by data from a proprietary survey of Italian entrepreneurs and a large international survey (Eurobarometer).

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I Introduction

Pat meets Kelly for the first time. This meeting involves a potentially profitable exchange for both Pat and Kelly. Kelly can cheat Pat, however, so that the profitability of the exchange depends both on Pat's trust and Kelly's trustworthiness. But Pat knows nothing about Kelly. In particular, Pat has no information stemming from previous interactions with Kelly. How does Pat make inferences about Kelly's trustworthiness? If information about Kelly's reliability becomes available, how is Pat going to use it? And if this information is available at a cost, will Pat try to acquire it?

People face situations of this sort all the time: when taking a cab, when introduced to a new person, when renting an apartment from an agent or when meeting the owner of an apartment for sale. In all these cases, one has to figure out how reliable a stranger is before deciding whether to get in a cab, hire a particular agent, buy a house, etc. We rely on this inferential process so routinely that sometimes we are not even aware of it.

Past evidence has shown that in situations like these, people tend to trust more those who are (or appear to be) more similar to themselves along some dimension, i.e., those towards whom they feel more affinity. In a remarkable study, DeBruine (2002) shows that manipulating the facial resemblance of one's partner in a two-person trust game enhances trust. On the other hand, randomly matching control subjects with these same (fictitious) partners did not enhance trust. On a larger scale, using a general survey bilateral trust between nations, Guiso et al. (2009) find that trust in people from other countries is enhanced both when the genetic and cultural distance between the two populations is small. Interestingly, this study implies that the channels through which affinity enhances trust are not limited to phenotype matching—as in DeBruine (2002)—but may also apply to other dimensions of relatedness, in particular cultural affinity.[1]

But why does trust increase with affinity? And does affinity affect how people react to signals on the potential trading partner's reliability, either when those are freely observable or when they are observable at a cost? In this paper, we propose a simple model to address these questions and obtain a number of predictions that we confront with the data. In our model, when a person is matched and interacts with another person, predation can occur. Predation yields a benefit to the predator and inflicts a cost on the prey. However, the benefit from predation decreases with the affinity one feels towards the (potential) prey.

One way to think of this last feature is as the direct result of a genetically acquired behavior dictated by the instinct of species preservation. In nature, an animal of a given species rarely

[1] Similarly, researchers previously documented that it is trust-enhancing to match partners on race and nationality (Glaeser et al., 2000), ethnicity (Fershtman and Gneezy, 2001), and even city district (Falk and Zehnder, 2013) in the context of laboratory and field experiments.

preys upon an animal of the same species. Hence, threats to survival often come from other groups, rather than from members of the same group: dogs do not eat other dogs, although they do eat other animals and are, in turn, attacked by some. Hence, a dog should place less "trust" in other animals and more "trust" in other dogs. In humans the same principle may apply. Because a predator is less likely to prey someone similar to him, one tends to trust more—that is, attribute a lower probability of becoming prey—when one's opponent is similar to him. This is sensible if similarity weakens the opponent's incentive to do harm.

Alternatively, it can be rationalized in terms of Hamilton (1964) inclusive fitness hypothesis, according to which an organism may increase its evolutionary success by promoting the reproduction and survival of related or otherwise similar organisms. This leads individuals to behave in a manner that maximizes their inclusive fitness, rather than their individual fitness. Under the inclusive fitness hypothesis, an opponent's incentive to act selfishly may be tempered by similarity with one's opponent. When this incentive is anticipated by the partner, it increases the partner's willingness to trust.[2]

These arguments obviously give rise to a positive relationship between trust and affinity, like that documented in DeBruine (2002) and Guiso et al. (2009). On the other hand, they also generate a positive correlation between affinity and trustworthiness which has recently started to receive empirical support.[3] In our set-up, individuals observe the affinity their opponents feel toward them before they decide whether or not to trust. In addition, individuals also receive a signal about the reliability of their opponents. Reliability is an individual specific trait that captures heterogeneity in trustworthiness across individuals of the same level of affinity. This allows for variation in trust beliefs and behavior across individuals, holding affinity constant.

An important novel implication of this model is that the variability of trust beliefs decreases with affinity. That is, people paired with opponents who are deemed very similar tend not only to trust them *more* but to trust them *more surely* than do people paired with others who are perceived as less similar. Hence the model generates predictions concerning the relationship between the first *two* moments of trust beliefs and affinity levels, as well as between levels of affinity and average trustworthiness. The first implication rationalizes existing evidence; the second is new and is specific to this model. Additionally, the model implies different reactions to information about

[2]Behavior consistent with inclusive fitness hypothesis has been observed in animals. A classic example is Belding's squirrel which gives an alarm call to warn its group of the presence of a predator (see Sherman, 1981). By emitting the alarm, the squirrel puts itself into increased danger as it reveals its location; in this way, however, the squirrel protects its relatives that live within the population (along with the rest of the population).

[3]Fisman et al. (2017) find evidence that affinity affects trustees' behaviors. They randomly pair loan officers and borrowers and find that pairing officers and borrowers of the same ethnic/cultural group affects both lenders' and borrowers' behavior. Loan officers extend more credit, and borrowers are more likely to repay. This suggests that affinity affects both sides of the trust relationship, rationalizing the mechanism in our model.

the reliability of an opponent depending on affinity: a negative signal to reliability lowers trust more the lower is affinity; high-affinity individuals have less scope to revise their trust beliefs downwards when receiving negative information regarding the trustworthiness of the opponent.

Lastly, we extend our model to include endogenous costly information acquisition. We allow individuals to have perfect information about their partners' reliability at a fixed positive cost. We show that the value of (perfect) information is hump-shaped in affinity and that affinity eventually drives out information acquisition for any positive cost, no matter how low. With costly endogenous information acquisition, one key implication is that the cross-sectional dispersion in beliefs, besides decreasing in affinity, is also lower the higher the cost of information gathering. However, because affinity drives out information acquisition, the negative effect of the information cost is attenuated at higher levels of affinity.

To test these predictions of the model, we use two datasets: a proprietary survey of entrepreneurs and the Eurobarometer survey. The first dataset collects information on a sample of small Italian entrepreneurs which were interviewed in 2008–2009 following a CAPI procedure. An interesting feature of this dataset is that, as part of the survey, interviewers—which were randomly assigned to the entrepreneurs—were asked to express at the end of the interview their trust belief about the interviewed entrepreneurs, as well as the perceived degree of affinity between the interviewer and the entrepreneur being interviewed. Furthermore, the survey collects a number of phenotype characteristics such as eye and skin color and hair type, as well as information on place of birth, education, gender and age for both the entrepreneur and the interviewers that are used to construct measures of similarity between interviewers and entrepreneurs and validate the self-reported affinity measure. The Eurobarometer survey contains individual-level information on trust towards other people from one's own country and a list of other countries. We combine these data with Guiso et al. (2009) measures of the genetic and cultural distance across different nations.

In both surveys, we find evidence consistent with our model's implications. In the survey of entrepreneurs, we find that interviewers tend to trust entrepreneurs more when they report higher perceived affinity, and that, furthermore, the cross-sectional standard deviation of these trust beliefs is considerably lower for higher affinity levels. In the Eurobarometer sample, bilateral trust tends to be higher between genetically or culturally similar nations, as in Guiso et al. (2009). Most importantly, the standard deviation of trust beliefs of people in country i towards people in country j is smaller for countries that are closer either genetically or culturally.

To test the implication that affinity induces differential responses to information about opponents' trustworthiness, we exploit geographical variation in adverse economic shocks in both the entrepreneurs' survey and the Eurobarometer, leveraging on recent findings that economic crises

are detrimental for trust (e.g., Algan et al., 2017; Ananyev and Guriev, 2019; Graeber and Zimmermann, 2019). We document that a negative economic shock suffered by the respondent's community lowers people's trust, but less so when affinity is high. Put differently, high affinity attenuates the mistrust consequences of negative news about others' trustworthiness. To test some of the implications of the model when information entails an acquisition cost, we exploit cross-country variation in the cost of information gathering in the Eurobarometer data and find evidence consistent with the model predictions: dispersion of trust beliefs is smaller when information is more costly to gather, but this effect is contained at higher levels of affinity.

Effects are economically significant: a one standard deviation increase in affinity is associated with a 0.55 standard deviation increase in people's trust in the entrepreneur sample (0.24 standard deviation in the Eurobarometer sample), a 0.94 standard deviation decline in the cross-sectional dispersion of beliefs (0.16 in Eurobarometer) and a 12% attenuation of a negative news shock to people reliability (89% in Eurobarometer). A one standard deviation increase in the cost of gathering information is associated with a 0.16 standard deviation decline in beliefs' dispersion.

Our findings are of interest for several reasons. First, from a general economic perspective, if trust is driven by affinity, this is a natural force that tends to keep trade within close boundaries by acting as an impediment to geographically distant trade: it is simply easier to find similar people within a limited geographical radius. This helps explain why trade in goods and assets has a strong home bias. This tendency, in general, limits the amount of trade because it limits the number of potential participants in a trade, a feature related to Dixit (2003). However, while in Dixit (2003) distance is a given, here we try to provide a rationale for what generates the local bias. Our results also shed light on the patterns of exchanges over time. Because trust beliefs respond less to bad news about an opponent's reliability if affinity with him/her is high, when a pool of potential opponents is hit by negative news, trust towards low-affinity members drops more relative to high-affinity members. Hence, following shocks to aggregate trustworthiness, exchanges will be reallocated away from low to high-affinity partners. We find supportive evidence for this prediction. Using international trade data in our cross-country panel, we show that following the financial crisis and the resulting fall in trust, international trade growth falls overall but falls less vis-a-vis high-affinity partners, implying a flight in trade from low to high-affinity country-pairs.

Second, if affinity matters for trade because it fosters trust, then in some industries exchanges could be promoted by matching participants based on affinity. This suggests that there could be substantial gains to be reaped by improving matching. This issue is likely to be particularly important in industries where trades are trust-intensive, and where matching may not be driven entirely by self-selection (i.e., by endogenous matching). For instance, when assigning a portfolio man-

ager to an investor, a bank may do so randomly. There are margins for improvement by allocating portfolio managers based on some measure of affinity with the investor if this induces investors to rationally invest more and managers to behave in a more trustworthy manner. The evidence in Fisman et al. (2017) lends support to this implication. We also find evidence of a matching effect on behavior in our survey on entrepreneurs: interviewed entrepreneurs are more likely to disclose sensitive information when interviewed by high-affinity interviewers.

This is the "bright" side of matching on affinity. But there is also a dark side. When information about the opponent's reliability is costly to collect, high affinity drives out information gathering. Knowing this, people in a position of trustees have incentives to manipulate their targets' perceptions of their affinity for one another, through, e.g., a shared identity. Endogenous matching on affinity can then expose people to financial fraud, as documented by Guiso (2010), Gurun et al. (2018), and Deason et al. (2015). Additionally, because at times of generalized fall in trust, people tend to entrust high-affinity opponents, those in need of attracting people trust have a strong incentive to dissimulate high affinity. This can rationalize why populist parties—which emerge when skepticism towards mainstream parties is high—stress nationalism in their narratives and why, according to the recent evidence, they are more likely to match their supporters on observable characteristics (Dal Bó et al., 2018).

Our paper is naturally related to the literature on familiarity as a driver of trust (e.g., Gefen, 2000; Huberman, 2001; Luhmann, 2000). Familiarity—which arises when somebody is well known from long, close association—and affinity are obviously related: members of a family share a high degree of affinity and are familiar with each other. However, in this case, it is a blood affinity that presumably causes familiarity. Familiarity is about acquaintance with a person and may arise even among people that initially lack affinity. Furthermore, it may also be that the more acquainted one becomes with a person, the more one knows about his or her shortcomings, and the easier he/she dislikes that person. Thus, while affinity breeds trust, familiarity may also breed contempt and mistrust (see, e.g., Norton et al. (2007) for evidence). Insofar as familiarity is acquired through information, our model predicts that whenever information is costly to acquire, affinity may even lower familiarity: affinity acts as a substitute for information collection. Bernie Madoff clients were unfamiliar with finance and did not become more familiar with the financial management of their investments when they entrusted their lifetime savings to Madoff. They simply trusted Madoff because of the high affinity with him due to the common Jewish religion and ethnicity (Gurun et al., 2018).

Our paper is also related to Gambetta and Hamill (2005) "signaling" theory of trust. In their book "Streetwise: How Taxi Drivers Establish Customer's Trustworthiness", they argue that when

lacking prior knowledge, a trustor (the taxi driver) infers the trustworthiness of a trustee (the client) from some observable signals. The remaining issue is whether or when a trustor trusts those signals, particularly when the trustee sends them, as they may be intentionally distorted to extract the trustor trust. In our model, affinity is the relevant feature that leads the trustor to trust the signals he receives about the trustee's reliability. Insofar as affinity is based on traits that are hard to mimic, such as somatic similarity, it helps filter the signals. In our model, we obtain testable implications of this role of affinity and provide supporting evidence.

The rest of the paper is organized as follows. Section II sets up a simple model and derives several potentially testable implications about affinity and trust. Section III describes the survey data, while Section IV shows the results of the estimates of the model implications. Section V puts the results in perspective and Section VI concludes.

II Theory

To fix ideas, we construct a simple model. In our model, we assume there is a finite population of $2N$ individuals. The timing in our model is as follows. First, each individual in the population is randomly paired with another individual to form N pairs. Upon being paired, both members of each pair discover the level of affinity they feel towards one another. Next, each individual receives a signal about the reliability of their partner. Finally, there is an opportunity for mutually beneficial trade, the outcome of which depends on the actions of both parties.

The strategic situation faced within each pair will be represented by a sequential moves game in which one member of the pair moves first and can create surplus, while the other member of the pair observes the action of the first-mover and can decide whether or not to act in a predatory fashion. Call the first-mover player 1, second-mover player 2, and think of a predatory action as absconding with the entire created surplus. We assume a common prior about the reliability of one's partner. How both affinity and reliability affect the strategic situation will be made clear below. Before we can do this, let us first be more concrete about the purely pecuniary incentives.

Player 1 is endowed with a small, positive, surplus: $\varepsilon > 0$. Player 1's action set consists of two actions: $T(rust)$ or $\neg T(rust)$. If player 1 chooses $\neg T$, the game ends, zero additional surplus is created, and neither player earns or loses money. On the other hand, if player 1 chooses T, then positive surplus is created but player 2 controls how the surplus is distributed. Specifically, player 2's action set consists of two options: $P(redator)$ or $\neg P(redator)$. If player 2 chooses to act as a predator—i.e., chooses P—then player 2 absconds with the entire surplus. The payoffs for player 1 and player 2 in this case are 0 and $b_2(P) > 0$, respectively. On the other hand, if player 2 chooses $\neg P$, then both player 1 and player 2 receive a positive amount of money, $b_1(\neg P)$ and

	P	$\neg P$
T	(0,$b_2(P)$)	($b_1(\neg P)$, $b_2(\neg P)$)
$\neg T$	(ε,0)	(ε,0)

Table 1: Monetary Payoffs

$b_2(\neg P)$, respectively.

There are four possible outcomes. The strategic form of this game in terms of monetary payoffs is given in Table 1, where player 2 is the column player. To turn this into a situation that involves trust, we assume that $b_1(\neg P) > \varepsilon$ and that $b_2(P) > b_2(\neg P)$.

Now that we have the game in monetary terms, we must next translate monetary earnings into utility in a way that incorporates affinity. To do this in a straightforward manner, we assume that player 2's utility depends on two additional factors. First, preying on those with whom one feels more affinity is more odious: *canis canem non est*. Secondly, we allow for individual-specific heterogeneity in reliability. Being more reliable makes money earned from being a predator less satisfying. We can think of differences in reliability as stemming from individual specific differences in adherence to shared cultural norms across individuals or in opportunities to take advantage of others.

First, we introduce a role for affinity. Denote by A_{21} the affinity level that player 2 feels toward player 1. We assume that A_{21} lies within the unit interval, $[0,1]$, for every pair of players. Higher values of A_{21} denote more affinity: a value of 0 denotes minimum affinity, while an affinity level of 1 denotes maximum affinity. Think of affinity as measuring genetic or cultural distance. Consistent with this interpretation, we assume that preying on individuals with whom you feel more affinity entails higher psychic costs than preying on an individual with whom you feel less affinity. Specifically, to get player 2's utility from choosing to be a predator, we scale down monetary earnings conditional on choosing P by a factor of $1-A_{21}$. The marginal contribution of money to player 2's utility from acting in a predatory fashion is $1-A_{21} \leq 1$.

To capture the role of reliability, we assume that each person in the role of player 2 has an idiosyncratic level of reliability, R_2, which is a realization from some commonly-known distribution, $F(.)$. To put reliability and affinity on the same scale, we assume that the range of $F(.)$ is the unit interval, $[0,1]$. We model the impact of reliability on utility by subtracting R_2 from player 2's utility whenever he or she chooses to act as a predator. Incorporating these modifications yields the strategic form representation of the situation in terms of utility given in Table 2.

	P	$\neg P$
T	$(0,(1-A_{21})b_2(P)-R_2)$	$(b_1(\neg P), b_2(\neg P))$
$\neg T$	$(\varepsilon,0)$	$(\varepsilon,0)$

Table 2: The Game in Utility Terms.

Player 2 strictly prefers to prey on player 1 whenever:

$$(1-A_{21})b_2(P)-R_2 > b_2(\neg P)$$

To allow for reliability and affinity to play a part in player 2's decision, we assume that $b_2(\neg P) < (1-A_{21})b_2(P)$. In the absence of this assumption, player 2 always prefers to not be a predator. Rearranging terms, we can express the conditions under which player 2 prefers acting as a predator in terms of an upper bound on reliability. In the equation below, the left-hand side is the utility cost of acting as a predator, while the right-hand side can be thought of as the utility benefit from acting in a predatory manner:

$$R_2 \leq (1-A_{21})b_2(P)-b_2(\neg P)$$

II.1 Trust in the Population

In our model, we define trust in a natural way. Trust is player 1's belief about the probability that player 2 will act in a predatory fashion. Thus, trust is defined in terms of beliefs rather than observed actions. The latter definition is more common but is not the focus of this paper. The definition we use has the advantage that it provides an obvious measure of trust intensity on a scale of zero to one.

Heterogeneity in trust beliefs is introduced by giving each player 1 an informative signal about their partner's reliability. In particular, the true distribution of reliability in the population is commonly known and each player 1 receives a partially informative signal from this distribution before making their decision. To fix notation, we denote by τ_{12} player 1's belief about how likely player 2 is to choose to *not* be a predator. That is to say, τ_{12} is player 1's trust in player 2.

Since our interest is in comparing the distribution of trust across affinity levels, we make the following simplifying assumptions. First, to rule out trust heterogeneity coming from the relative prevalence of some affinity levels in the population, we suppose that there are M realized affinity classes, each containing the same number of pairings. Secondly, to rule out trust heterogeneity across affinity classes coming strictly from differences in information, we assume that the realized set of reliability levels is identical across affinity classes, as is the realized set of signals about

partner reliability. Denote this common set of signals by $S = \{s_1, s_2, \ldots, s_k\}$.[4]

We are now in a position to examine how both the average level of trust and the dispersion of trust in such a population of players varies with affinity: the two relationships of interest to the current inquiry. First, it can be shown that the average level of trust increases with affinity. Second, under mild restrictions on the set S of realized signals and using the range of realized trust beliefs as our measure of dispersion, we show that the dispersion of trust beliefs in the population decreases with affinity.

Proposition 1. *The average level of trust in a cross section of the population with affinity level A_{21} is greater than the average level of trust in a cross section of the population with affinity level A'_{21} whenever $A_{21} > A'_{21}$.*

Proof. In the Appendix. □

Proposition 2. *The dispersion of trust in a cross section of the population with affinity level A_{21} is less than the dispersion of trust in a cross section of the population with affinity level A'_{21} whenever $A_{21} > A'_{21}$, where dispersion is measured by the range.*

Proof. In the Appendix. □

The proofs are simple and appear in the appendix. To prove the second proposition, the condition needed on the distribution of signals can be thought of as a bound on either the impact of affinity, or as a bound on the stakes involved. Specifically, we make use of the assumption that for the lowest affinity level, $A_{21} = 0$, there is at least one signal in the set S of realized signals about R_2 that creates full trust: $\tau_{12} = 1$. Given this assumption, the mapping from affinity levels to trust levels is essentially a contraction mapping which immediately yields both propositions. The first proposition can be proved without this assumption and relies simply on the fact that cumulative distribution functions are increasing.

An important corollary that follows from Proposition 2 is:

Corollary 1. *A negative signal on reliability lowers trust, the less so the higher is affinity.*

The corollary implies that trustors with high levels of affinity will play down relevant information about trustees trustworthiness. One important consequence is that relative trust towards high affinity opponents increases when the average reliability of a pool of people is hit by a negative shock. Thus, when aggregate trust falls, exchanges tend to fly away from low to high affinity partners.

[4]These will be sufficient conditions to prove two features about trust in this setup. They are not strictly necessary, as will be seen in the proofs, but they make the proofs straightforward.

II.2 Endogenous Information

An obvious extension of the setup above is to, within each pairing, allow player 1 to decide whether or not to collect information about player 2's reliability. Specifically, we keep the setup and timing above but make observing the signal about player 2's reliability costly. We now let player 1 decide whether or not to observe the signal and introduce an associated fee, $c > 0$.

Information only has positive value when it changes actions. Consequently, without making any restrictions on the prior or posterior distribution functions, introducing a cost of information acquisition into our model immediately implies affinity eventually drives out information acquisition. That is to say, there is always a level of affinity above which player 1 never acquires costly information about player 2.

Proposition 3. *Let F be the common prior distribution function of reliability levels, R, in the population. Let $S = \{s_1, \ldots, s_K\}$ be any (finite) set of informative signals about player 2's reliability, R_2, each one of which induces some posterior distribution function over R_2, $G(.|s_k)$. Fix a signal observation cost, $c > 0$. Then there exists a level of affinity, A_{21}^*, such that whenever $A_{21} \geq A_{21}^*$ player 1 never chooses to buy a signal. If affinity is below A_{21}^*, player 1 choice to buy a signal will depend on the cost $c > 0$. Let $\bar{A(c)} < A_{21}^*$ be the affinity threshold decreasing in the cost c. If affinity is below $\bar{A(c)}$ player 1 acquires the costly signal, otherwise no signal is obtained.*

Proof. Appendix. □

The proposition is very general. It implies that in a model with endogenous information acquisition dispersion in trust beliefs eventually vanishes at a level of affinity strictly below unity. In fact, one can show a bit more. Consider a benchmark case in which perfect information is available at a fixed cost, $c > 0$. Then it is straightforward to show that the value of information is hump-shaped in affinity.

Proposition 4. *Suppose individuals in the role of player 1 can attain perfect information about their partners' reliability level, R_2. Then the value of this signal is increasing in affinity for affinity levels below a threshold level of affinity, A^*. Above this threshold, the value of the signal always decreases with affinity. Furthermore, the threshold level of affinity, A^*, is the level of affinity for which an uninformed player 1 is indifferent between his two actions, T and $\neg P$.*

Proof. Appendix. □

This last proposition implies that with the possibility of endogenous costly perfect information, we would expect dispersion in trust beliefs to eventually vanish. This is the case because information is less valuable as affinity increases whenever affinity is so high as to make trust optimal, so the

likelihood that the value of information exceeds a fixed cost of acquisition also decreases in affinity for sufficiently high levels of affinity. It also implies that the dispersion of trust beliefs decreases with the cost of information gathering. But because high affinity drives out information, the sensitivity of the dispersion in beliefs to the cost of information gathering is attenuated at high affinity levels. If individuals receives some signals exogenously and can also collect information at a cost, putting Propositions 2, 3, and 4 together suggests that dispersion in trust beliefs declines with affinity and information gathering costs, and that when affinity is high even a small cost induces people to avoid acquiring information about the opponent reliability.[5]

In order to prove more specific results about costly information acquisition, it would be necessary to impose much more structure on the model, on the common prior and on the set of possible posterior distributions. This is beyond the scope of the current paper.

III Data

To test some of the model predictions, we use two data sources which contain information on trust and measures of affinity with the person receiving trust. The first one is the ANIA Survey on Firms Insurance, SFI, and the second one is Eurobarometer. In the following paragraphs we briefly describe the two datasets.

III.1 The SFI Data

The SFI is a dataset that has been collected in 2008/2009 under the sponsorship of Ania, the Italian association of insurance firms. It surveys 2,295 private Italian firms randomly drawn from the population of firms with up to 250 employees. The unique feature of the survey is that besides collecting various pieces of information on the firm, it also gathered information on the entrepreneurs managing the firms. More specifically, the person in change of the firm, either its owner or CEO was contacted and interviewed in a face-to-face CAPI assisted interview by a professional interviewer, during which information on a broad set of characteristics of the entrepreneurs and their families were collected. This include data on risk preferences, beliefs, financial and insurance choices, as well as demographic characteristics. Table 1A in the appendix reports summary statistics on the sample of entrepreneurs interviewed. The survey was administered through a set of interviewers that work repeatedly for the survey company; interviewers located in a region were randomly matched to the firms to be interviewed. Overall, 248 interviewers were involved in the

[5] The relation between the dispersion of trust beliefs, $\sigma(c,A)$, and affinity A implied by the above propositions can be represented as $\sigma(c,A) = \alpha - \beta A$ if $A < A(c)$ and $\sigma(c,A) = 0$ otherwise. Let $\pi(c)$ be the probability that $A < A(c)$, which is decreasing in c. Then the population relation is $\sigma(c,A) = \pi(c)(\alpha - \beta A)$. It follows that $\sigma_c(c,A) = \pi_c(\alpha - \beta A) < 0$; $\sigma_A(c,A) = -\beta\pi(c) < 0$; $\sigma_{cA}(c,A) = -\beta\pi_c > 0$.

field. At the end of the interview they were instructed to report two pieces of information on the entrepreneurs by answering the following two questions:

"On the basis of your perception can you tell how much do you think the person interviewed is trustworthy? Report your answer on a scale 0-10 where lower values mean lower trustworthiness"

"Can you tell how much affinity do you have with the person interviewed? Report your answer on a scale 0-10 where lower values mean lower affinity"

The answers to the first question provide a measure of trust beliefs of the interviewer towards the entrepreneur; the answers to the second provide an index of affinity. In addition, the survey collects information on a number of traits for both the entrepreneur and the interviewers: the color of their eyes, hair color and type, skin color, gender, education, height, and age. We have used these measures to obtain indicators of affinity based on observables by constructing indicator variables of whether entrepreneur and interviewer have the same eye color, same hair color, same hair type, same skin color, same gender, same education and a measure of age distance (in years) and height distance (in centimeters), respectively. To get a summary measure of "sameness" we have summarized these measures of affinity by extracting their first principal component.

To validate the measure of self-reported affinity, Table A1 in the Appendix reports regressions of affinity on various measures of sameness. Having the same eye color has no statistically significant effect while having the same hair color and the same hair type has a positive effect but the coefficients carry high standard errors. Being of the same sex and of the same region has a positive and significant effect on affinity; if the interviewer is matched with an entrepreneur of the same sex or region, his/her perceived affinity with the entrepreneur is about 0.3 of a point higher. Sharing the same education level does not affect affinity while instead being not too different in terms of age and height increases affinity significantly. For instance, having the same age compared with having a 20 years difference in age increases affinity score by 1/5 of a point and lowering height differences from 20 centimeters to zero by 1/3 of a point. These one-by-one effects, while not very important economically, validate the relationship between the self-reported and the objective measures of affinity. However, just sharing one trait may not contribute much if the other traits mark a large distance. To account for all traits simultaneously, we have extracted their first principal component obtaining a summary index of similarity. When we regress the principal component on the self-reported affinity index, we find that it is positive and statistically significant. The effect is also economically meaningful: a one standard deviation increase in the principal component of the observable common traits raises affinity by 7.6% of its standard deviation.

III.2 The Eurobarometer survey

The second source is the trust data assembled by Guiso et al. (2009) and based on Eurobarometer, a survey sponsored by the European Commission and designed to measure public attitudes toward the European Community institutions. Eurobarometer interviews representative samples of the adult population in each of the countries of the European Union and has been run since 1970.[6] Respondents were asked to report how much they trust their fellow citizens and how much they trust the citizens of each of the countries in the European Union. More specifically, they were asked the following: *"I would like to ask you a question about how much trust you have in people from various countries. For each, please tell me whether you have a lot of trust, some trust, not very much trust or no trust at all."* In some of the surveys, this same question was also asked with reference to citizens of a number of non-European Union countries, including the United States, Russia, Switzerland, China, Japan, Turkey, and some Eastern and Central European countries (Bulgaria, Slovakia, Romania, Hungary, Poland, Slovenia, and Czech Republic). From these individual level data we have computed country means of trust from a given country (country of origin) towards each of the other countries in the sample (the country of destination) as well as the standard deviation of these trust beliefs toward countries of destination. Guiso et al. (2009) complement these data with standard measures of geographical and linguistic distance used in the trade literature; they also calculate measures of genetic and cultural similarity between the populations of two countries which we use as measures of affinity. Specifically, we use a a measure of genetic similarity using the genetic distance measures developed by Cavalli-Sforza et al. (1994)[7] and an index of religious similarity, measuring the probability that two random citizens of a country pair share the same religion. Common ethnicity, captured by genetic similarity, and common religion are natural measures of affinity.[8] We refer the reader to Guiso et al. (2009) for more details about these data. To make the interpretation easier, we standardize all the indices of genetic and cultural similarity to have zero mean and a standard deviation of one and use their principal component as a summary measure of affinity.

[6] The set of countries sampled increases with the enlargement of European Union expands. In the final year of the sample used here (1995) it has 17 countries.

[7] This measure is based on the existence of genetic or DNA polymorphism, a situation in which a gene or a DNA sequence exists in at least two different forms (alleles).

[8] The importance of religion as a measure of affinity is shown by the fact that perpetrators of Ponzi schemes often leverage on common religion when targeting their victims. In a study of 367 Ponzi schemes, Deason et al. (2015) find that common religion is one of the most frequent affinity links cited by the SEC.

IV Results

IV.1 The association between average trust and affinity

We start reporting results on the relation between trust level and affinity, as implied by Proposition 1. Columns 1–2 of Table 3 display the results using the SFI data. The first column reports an OLS regression, with standard errors adjusted for interviewer clustering. Affinity between the interviewer and the entrepreneur is highly significantly associated with higher levels of trust of the interviewer towards the entrepreneur. Roughly, a one point increase in the affinity score is associated with an increase of half a point in the trust score. Re-matching an interviewer that has a low affinity with a given entrepreneurs (affinity equal to the 5th percentile of the sample distribution) with one with who his has a high affinity (at the 95th percentile) would increase the trust score by about 3.5 points. The second column adds the interviewer fixed effects to account for any systematic differences in interviewers' propensity to feel affinity with others and to trust people in general. The association between affinity and trust is only slightly smaller. Figures 1 and 2 illustrate this relationship graphically.

Columns 1–2 of Table 4 display the regressions based on the Eurobarometer sample. All specifications include fixed effects of the country expressing trust and the country receiving trust, as well as a measure of geographic distance, commonality of borders and linguistic distance. The estimates in Column 1 are essentially the same as those reported by Guiso et al. (2009): trust is higher when people are genetically close or when they are culturally close, as measured by the chances that the two populations share the same religion. The second column captures affinity with the principal component of genetic and religious similarity. A one standard deviation increase in this measure is associated with an increase in trust of 24% of its sample standard deviation.

IV.2 Affinity and the dispersion of trust beliefs

We now test the second and novel implication of the simple model of Section II, i.e., the negative relation between the cross-sectional dispersion of trust beliefs and affinity (Proposition 2). Columns 3–4 of Table 3 report the results for the SFI data. The third column regresses the standard deviation of the interviewers' beliefs on affinity. It shows a clear negative correlation consistent with the model predictions. Since at affinity equal to 0 the standard deviation of trust is 2.87, implied by the value of the constant in the regression, if one raises affinity to 10 the standard deviation of trust drops to only 0.4. The fourth column presents the estimates of a interquartile regression which investigates how an interquartile range of trust evolves conditional on affinity. Using this measure of dispersion, which is closer to the one in Proposition 2, leaves the conclusion

unchanged: at higher levels of affinity, people beliefs tend to be more concentrated around a higher level of trust. Figure 1 shows the scatter plot of the trust and affinity in the SFI sample and documents graphically both the relation between mean trust and affinity and that between dispersion of trust and affinity. At zero affinity, average trust is around 5 with high dispersion, consistent with the idea that when affinity is low, people tend to rely more on available signals and disregard them when affinity is high. Figure 2 shows even more clearly that, in addition to the strong positive association between affinity and average trust, there is a remarkable negative relationship between the cross sectional standard deviation of trust and affinity.

Columns 3–4 of Table 4 report the estimates of the relation between the standard deviation of trust and the measures of affinity in the Eurobarometer sample. All regressions include fixed effects for the country of origin and the country of destination to capture systematic differences across countries in the average dispersion of trust. Holding these differences constant, trust beliefs are less dispersed when they refer to people that are genetically closer or to people that are culturally more similar because share the same religion (the third column). Simultaneously increasing genetic and religious similarity by one standard deviation lowers the standard deviation of trust beliefs by 40% of the sample standard deviation. The fourth column replaces the two measures of similarity with their principal component. The effect is negative and very precisely estimated; repeating the previous exercise, increasing the summary measure of affinity by one standard deviation lowers the dispersion of trust by 16% of its dispersion in the sample, validating the prediction of the model.

IV.3 Affinity, trust, and information

Our model has distinct implications for: *i*) how affinity affects the update of trust beliefs when new trust-relevant information becomes available; *ii*) how affinity affects information collection when signals are costly to obtain. On the first, higher levels of affinity lead to softer updating of trust beliefs to new information (Corollary 1). Regarding the second, if information can only be collected at some cost, high affinity entails lower benefits from information acquisition and thus a decreasing cross sectional variance of beliefs as the cost of information increases and affinity increases (Propositions 3 and 4). Furthermore, the cross sectional dispersion of trust beliefs decreases less fast with affinity when the cost of information gathering is higher. To test the first prediction we use sudden economic crises as events detrimental to trustworthiness and, ultimately, to trust. Economic crises present a shock to trustworthiness because, during these periods, people are more likely to undertake selfish actions that may hurt others. In using economic crises as shocks to reliability, we rely on the recent empirical evidence showing that recessions cause distrust (e.g.,

Algan et al., 2017; Ananyev and Guriev, 2019; Graeber and Zimmermann, 2019).[9] In both of our datasets, the SFI and Eurobarometer, we find evidence of differential updating of trust beliefs by the initial levels of affinity in response to economic hardship. To test the second implication we rely on variation in the cost that a trustor has to pay to acquire information about a trustee, using data on press coverage about a given country in the country that expresses the trust. This variation is only available in the Eurobarometer. The evidence below lends support also to this prediction of the model. We start showing evidence on the first prediction and then on the second.

IV.3.1 Affinity and the trust response to information accrual

Enterpreneur Survey

Here, we test for the differential updating of trust by affinity using the SFI survey of entrepreneurs. This survey is ideal for testing this particular hypothesis. First, accidentally, the survey took place precisely during the financial crisis and lasted from October 2008 when the effects of the crisis were mild through June 2009 when they were fully felt. Second, it spans multiple Italian regions, which allows us to exploit regional variation in exposure to the financial crisis. Finally, by design, the survey elicits trust toward businessmen, a group for which the perceived trustworthiness likely fell especially hard during the crisis.

We start documenting the basic dynamics of trust during the financial crisis. Figure 3 illustrates that, consistent with the existing evidence that economic crises hurt trust (Ananyev and Guriev, 2019; Graeber and Zimmermann, 2019), average trust toward entrepreneurs fell over time as the crisis unfolded and deepened. The magnitude of the decline is meaningful—average trust dropped by 0.35 points or 0.23 standard deviation over the course of three quarters. However, as shown in Figure 4, this decline was driven primarily by the interviewer-entrepreneur pairs with the lowest affinity.[10] These findings are suggestive of the hypothesis that high-affinity pairs are less inclined to update their trust beliefs based on the new information.

To obtain more rigorous estimates, we exploit variation in the exposure of different Italian regions to the financial crisis. Using a quarterly panel of regional employment rates from 2004 through 2010, we calculate the region-specific drop in employment after the third quarter of 2008 relative to their pre-crisis deseasoned levels.[11] Figure 5 displays the drop in employment on a map

[9] Alternatively, crisis cause information revelation about wrongdoing that was started already in normal times. The Madoff Ponzi scheme only came to light after the collapse of Lehman Brothers, representing a shock to people trustworthiness, particularly in financial markets (Guiso, 2010).

[10] One may wonder whether affinity also declined with the unfolding of the financial crisis, and this explains the heterogeneous response. However, as shown in Table A2, affinity stayed relatively stable over the three quarters.

[11] To be specific, we estimate the decline magnitudes as coefficients on the interaction between region FE and post-2008Q3 indicator in a regression of regional quarterly employment from 2004Q1 through 2009Q4, controlling for the region and quarterly fixed effects. We use employment figures rather than GDP becasue regional GDP is only available

of Italian regions, suggesting that the variation captured by this variable goes beyond the traditional North-South divide. We then estimate a difference-in-differences specification of trust on the drop in employment in a region where an interview took place and the interaction between the drop in employment and the reported affinity.[12] To account for common time-specific shocks and interviewer-specific heterogeneity, we include the interviewer and quarter fixed effects. Specifically, we estimate the following equation:

$$\text{Trust}_{ijrt} = \alpha_i + \gamma_t + \beta(\Delta\text{empl}_{rt} \times \text{Affinity}_{ij}) + \theta\Delta\text{empl}_{rt} + \delta\text{Affinity}_{ij} + \varepsilon_{ijrt}$$

where we regress interviewer i's trust toward an entrepreneur j after an interview conducted in region r at quarter t on a set of interviewer fixed effects, α_i, quarter fixed effects, γ_t, interviewer i's affinity toward an entrepreneur j, a drop in employment in region r by quarter t, and the interaction of the two latter variables. The key coefficient of interest for us in this specification is β, which would tell us by how much the effect of the financial crisis on trust varies based on affinity. The identifying assumption in this specification is that, conditional on the fixed effects and the two variables individually, the interaction between the economic shock and affinity is orthogonal to other unobserved determinants of trust between i and j.

Columns 1–2 of Table 5 present the baseline results. First, trust indeed fell more in regions with a larger drop in regional employment. According to the most controlled specification in Column 2, a one percentage point bigger decline in regional employment rate would lead to a 0.9 point decline in average trust, 10.8% of the sample mean. However, this effect depends on affinity: raising affinity from zero to 10 mitigates the effect of a one percentage point drop in regional employment by more than 60%. Columns 3–4 of Table 5 run the regression splitting the sample between high and low-affinity pairs (i.e., above and below the median affinity value of seven). As these results illustrate, most of trust updating is taking place at the bottom of the affinity distribution.

Overall, the results presented in this subsection are highly supportive of the model's prediction. That is, when faced with a negative public signal regarding trustworthiness, high-affinity pairs tend to be less responsive in updating their trust beliefs relative to their low-affinity counterparts.

Eurobarometer

To be sure that the results obtained from the entrepreneur survey are not specific to one particular dataset or a crisis episode, we run analogous estimates using the Eurobarometer survey. To obtain significant variation in trustworthiness, we focus on the biggest recession in Europe during

at annual frequency.

[12] To account for variation in the interview dates, for each interview, we used the drop in employment from the third quarter of 2008 until the quarter of that specific interview.

the period covered by the Eurobarometer survey (1976–1996): the 1993 economic recession.

We then estimate the following difference-in-differences specification:

$$\begin{aligned}\text{Trust}_{ijt} = \alpha_{ij} + \gamma_t + \beta\,\mathbb{1}[\text{Post} \geq 1993] \times \Delta\text{GDP}_{i,1992-93} \times \text{Affinity}_{ij} \\ + \delta\,\mathbb{1}[\text{Post} \geq 1993] \times \Delta\text{GDP}_{i,1992-93} + \varepsilon_{ijt}\end{aligned}$$

that regresses trust of citizens of country i towards citizens of country j in year t on the 1993 GDP percent decline in country i and the interaction between the measure of affinity between i and j and the drop in GDP in i's country. To allow for medium-run effects of economic shocks on trust, we interact the 1993 GDP decline with a post-1993 indicator. This specification choice is motivated by a stylized fact that trust typically recovers slowly in the aftermath of a recession. Importantly, we include a full set of country-pair fixed effects, α_{ij}, to account for any variable that is fixed at the country-pair level, such as physical or linguistic distance between countries. Finally, we also include yearly fixed effects, γ_t, to account for any time-specific shocks that affect all countries in similar manner. To account for serial correlation in country-pair shocks, standard errors are clustered at the country-pair level. The identifying assumption in this specification is that absent the 1993 recession, trust of nation i toward nation j would evolved along parallel trends independent of the interaction between a decline in GDP in nation i and i's affinity toward j.

The estimation results are displayed in Table 6. Column 1 suggests that a one standard deviation larger decline in 1993 GDP in the country expressing trust would lead to a 12.6% standard deviation decline in their trust toward people in other countries. However, as suggested in Columns 2–3, this effect varies depending on genetic and cultural similarity. A one standard deviation increase in genetic or religious similarity would dampen 65–85% of the negative effect of the recession on trust beliefs. To succinctly present our results, in the last column, we measure affinity between county pairs using the principal component of genetic and religious similarity. A one standard deviation increase in the principal component of affinity fully negates the negative effect of the 1993 recession on trust.

Figure 6 displays the results of estimating a year-by-year specification in which the GDP decline and affinity are interacted with year fixed effects, normalizing the coefficient for the wave just before the recession to zero. Consistent with the idea of a persistent differential effect, the coefficients start to become positive and statistically significant in 1993, remain stable in 1994, and only start fading in 1996. At the same time, absence of clear pre-trends lends credence to the identifying assumption of the difference-in-differences strategy.

Overall, across two completely different datasets, we obtain support for the model's prediction

on how affinity affects people revision of trust beliefs in response to news. In response to sizable shocks to trustworthiness, trust adjusts much more dramatically when affinity is low. One important consequence is that relative trust towards high affinity partners increases when people average trustworthiness is compromised.

IV.3.2 Costly information, affinity and dispersion of trust beliefs

We test the final implication of the model using the Eurobarometer data complemented with Portes and Rey (2005) measure of press coverage, which we use as a proxy for information gathering costs. Higher coverage of country j on the front pages of newspapers in country i should be higher when the the cost of information collections about country j is lower. Recall from Section 3 that Proposition 3 and 4 imply the following relation between the cross-sectional dispersion of trust beliefs in country i toward people in country j: $\sigma_{ij}(c_{ij},A_{ij}) = \pi(c_{ij})(\alpha - \beta A_{ij})$, where c_{ij} and A_{ij} are the cost in i of information gathering about j and the affinity between the two countries respectively, and $\pi(c_{ij})$ is the probability that the level of affinity is below the threshold that makes it not worthwhile to acquire information, that is decreasing in c_{ij}. Taking a first order approximation to $\pi(c_{ij})$, we estimate the following model:

$$\sigma_{ij}(c_{ij},A_{ij}) = \gamma_0 + \gamma_1 A_{ij} + \gamma_2 c_{ij} + \gamma_3 A_{ij} \times c_{ij}$$

We should find $\gamma_1 < 0$, $\gamma_2 < 0$ and $\gamma_3 > 0$; that is, trust dispersion should decrease with affinity and the cost of information, at a slower pace the higher is affinity.

We report estimates of this model in the last column of Table 4. To ease the interpretation, we recode press coverage so that it is increasing with the cost of information gathering. Interestingly, trust dispersion falls with both the cost of information and affinity, measured with the principal component of genetic and religious similarity (results are the same if we use each of these measures separately). Furthermore, the interaction between affinity and information cost is positive and statistically significant. Overall, these results lend support to the model predictions, suggesting that indeed the existence of an investigation cost about the others trustworthiness tends to amplify the role of affinity as a driver of trust beliefs.

V Evidence on trading implications of the affinity-trust relationship.

The affinity-trust relation rooted in our information framework has two important behavioral implications on trade. First, matching on affinity should, ceteris paribus, foster trade. Second, following an aggregate shock to trust, people should trade less overall, but at the same time should

reallocate trade away from low to high-affinity partners. This is a direct consequence of the fact that negative news about counterparts' trustworthiness increases relative trust beliefs towards high-affinity partners. We next offer evidence in favor of these two implications.

V.1 Gains from matching on affinity

To test the first implication that there may be gains from matching people on affinity, especially in trust-intensive exchanges, we use our survey of entrepreneurs. Face-to-face interviews require an interviewee to trust that the interviewer makes a confidential use of the information collected, particularly when the latter is sensitive. In the last part of the survey, interviewers asked the entrepreneurs to participate in the measurement of their second and fourth digits (i.e., the length of their index and ring fingers) in order to obtain a measure of the entrepreneurs' digit ratio. Despite receiving a detailed explanation that this measurement was conducted exclusively for scientific purposes, about 40% of entrepreneurs refused to participate. This was presumably due to entrepreneurs' skepticism regarding how this information could have been used. Our model predicts that affinity (as reported by the interviewer) should foster trust and contain skepticism, hence raising the entrepreneurs' willingness to let interviewers collect that piece of information.

The results in Table 7 are indeed consistent with this implication, suggesting that one could have potentially increased the success of the survey by matching interviewers and entrepreneurs based on affinity. Across various specifications in Columns 1–3, a one point increase in reported affinity is associated with a four percentage point increase in participation rates.[13] Furthermore, Columns 2 and 3 suggest that a sizeable share of this survey failure could have been avoided if interviewers and entrepreneurs were just matched based on gender, which differently from the self-reported affinity was observed by the survey designer.

V.2 Reallocation of trade during trust crises

We test the second implication—that trust crises should induce a reallocation of trade toward pairs with high mutual affinity—in the context of the 2008 financial crisis, which entailed a substantial shock to people trust (e.g., Guiso (2010); Gurun et al. (2018); Ananyev and Guriev (2019); Graeber and Zimmermann (2019)). Using data on inter-country trade flows from 2001 through 2014 coming from Fouquin et al. (2016), Figure 7 shows that trade flows exhibit a strong upward time trend and then stopped growing after the financial crisis. The hypothesis that we want to test is whether the break in the trend of trade flows was milder for country-pairs with stronger affinity, which would imply a re-balance of trade patterns from low to high affinity countries. To provide

[13] Note that this is affinity reported by an interviewer, confirming one of our modeling assumptions that affinity tends to be symmetric.

evidence for this, we estimate the following specification:

$$Trade_{ijt} = \alpha_{ij} + \beta \mathbb{1}[\text{Post} \geq 2009] \times T \times \text{Affinity}_{ij} + \delta \mathbb{1}[\text{Post} \geq 2009] \times T + \gamma T + \varepsilon_{ijt}$$

where Trade_{ijt} is the logarithm of trade flows from country i to country j in year t, T is the time trend, Affinity_{ij} is the level of affinity between i and j, and α_{ij} are the country-pair fixed effects.[14] In this specification, coefficient γ documents how much trade flows grow over time, on average; δ measures the change in this average time trend; and our main coefficient of interest β would tell us by how much a change in time trend differs depending on the pre-existing affinity between countries. The key identifying assumption we make is that economic shocks to individual countries following the global financial crisis were not correlated in such a way that pairs of countries with higher affinity were *less* affected economically relative to pairs of countries with lower affinity. While we cannot fully test this assumption as country-pair-year fixed effects would be collinear with our treatment, our results survive the inclusion of the origin-country-year and the destination-country-year fixed effects which account for any destination-country and origin-country shocks in a given year.

Table 8 presents the estimation results. In line with the visual evidence in Figure 7, the financial crisis presents a structural break in the trade flows time trend. Trade flows were growing roughly 8% a year before the crisis and only roughly 1% a year afterward. However, depending on the measure, a one standard deviation increase in country-pairs affinity mitigates this change in the time trend by about 12–20%. Thus, consistent with our theory, there indeed seems to be evidence of relative reallocation of trade during the crises toward pairs with higher affinity.[15]

VI Conclusion

This paper provides a rationale for the link between trust and affinity. Furthermore, it explores how affinity affects individual updating of trust beliefs when trust relevant information becomes available, either freely or at a cost. Affinity mediates how people react to the news about counterparts' trustworthiness. High affinity induces people to attach less weight to information about partners' trustworthiness that becomes available and to collect less when it is costly to do so. This has two important consequences. First, the cross-sectional dispersion of trust beliefs decreases with affinity, implying that high-affinity partners not only trust but trust for sure. Second, the revision of

[14] We do not include year fixed effects for illustration purposes, so that the coefficients δ and γ are not omitted. Our estimates of β are practically identical if we include year fixed effects.

[15] This results is related to Nunn et al. (2018) who find that economic shocks lead to political turnover in countries with lower levels of trust. However, a closer test of our theory would be to test whether politicians who come to power as a result of this turnover tend to be of higher affinity to the median voter.

trust beliefs is stronger at low-affinity levels than at high levels of affinity. Hence, when a trust crisis hits, relative trust towards high-affinity partners increases, causing a reallocation of trade from low to high-affinity partners. We draw on firm-level and cross country data to provide evidence on all these implications. We document that: i) trust increases with affinity; ii) the dispersion of trust beliefs decreases with affinity; iii) costly information gathering lowers trust beliefs dispersion, particularly at high levels of affinity; iv) matching on affinity fosters trade; and that v) trust crises induce an intensification of exchanges between high-affinity partners and a dilution of trade with low-affinity ones.

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ONLINE APPENDIX

A Proofs

For both proofs that follow, the following fact will be essential. Since the prior distribution function over reliability levels, $F(.)$, is the same across individuals, the posterior distribution function generated by any particular signal, $G(.|s_k)$, will be identical across individuals as well. Furthermore, for a given signal, s_k, trust is defined as $1-G[(1-A_{21})b_2(P)-b_2(\neg P)|s_k]$.

A.1 Proposition 1

The average level of trust in a cross section of the population with affinity level A_{21} is greater than the average level of trust in a cross section of the population with affinity level A'_{21} whenever $A_{21} > A'_{21}$.

Proof. Each signal $s_j \in S$ generates a particular level of trust in each affinity class. Abusing notation slightly, denote these trust levels by $\tau(s_j|A), \tau(s_j|A')$. Since there are finitely-many realized trust levels, we can choose the lowest trust level within affinity class A'_{21}, and choose a signal s_j that yielded this trust level. Since distribution functions are weakly increasing, the image of the signal s_j will be a higher trust level in affinity class A_{21}: $\tau(s_j|A) = 1-G[(1-A_{21})b2(P)-b2(\neg P)|s_j] > 1-G[(1-A'_{21})b2(P)-b2(\neg P)|s_j] = \tau(s_j|A')$.

Since this is true for the second-lowest trust level in A'_{21}, as well as the third-lowest trust level, etc., we have that every trust level in affinity class A'_{21} can be paired with a higher and equally-probable trust-level in affinity class A'_{21}. Since can write the average level of trust in affinity class $A_{21} = \frac{1}{|S|}*\tau(s_1|A)+\ldots+\frac{1}{|S|}*\tau(s_k|A)$ and $A'_{21} = \frac{1}{|S|}*\tau(s_1|A')+\ldots+\frac{1}{|S|}*\tau(s_k|A')$ with every $\tau(s_j|A) \geq \tau(s_j|A')$ for every $s_j \in S$, the result follows. Furthermore, clearly the result holds for any probability distribution over the set of signals S that is identical for both affinity levels. □

A.2 Proposition 2

The dispersion of trust in a cross section of the population with affinity level A_{21} is less than the dispersion of trust in a cross section of the population with affinity level A'_{21} whenever $A_{21}>A'_{21}$, where dispersion is measured by the range.

Proof. Assume that for affinity class A'_{21} there is a signal, s^* in the set of realized signals S such that $\tau_{21} = 1$. Then, using the same logic as in the previous proof—in particular the fact that distribution functions are increasing—this signal is associated with $\tau_{21} = 1$ in affinity class A_{21} as well. So maximum trust is obtained in both affinity levels. Comparing the range of trust levels is therefore

equivalent to comparing the minimum levels of trust in the two affinity classes. Since there are finitely-many realized trust levels, these minima are well-defined.

Select the minimum level of trust in affinity class A_{21}. Call this level of trust τ_*. This level of trust is the image of some signal $s_k \in S$. Now, the image of s_k in affinity class A'_{21}—call this level of trust τ' must be (weakly) less than τ_* because distribution functions are increasing. Clearly the minimal level of trust in A'_{21} is (weakly) less than τ' since τ' is a trust level in this affinity class. Since $\tau' \leq \tau_*$, the proposition is established. □

The proof of Corollary 1 follows from immediately from the proof of Proposition 2.

A.3 Proposition 3

Let F be the common prior distribution function of reliability levels, R, in the population. Let $S = \{s_1, \ldots, s_k, \ldots\}$ be any set of informative signals about player 2's reliability, R_2, each one of which induces some posterior distribution function over R_2, $G(.|s_k)$. Fix a signal observation cost, $c > 0$. Then there exists a level of affinity, A^*_{21}, such that whenever $A_{21} \geq A^*_{21}$ player 1 never chooses to buy a signal. If affinity is below A^*_{21}, player 1 choice to buy a signal will depend on the cost $c > 0$. Let $\bar{A(c)} < A^*_{21}$ be the affinity threshold decreasing in the cost c. If affinity is below $\bar{A(c)}$ player 1 acquires the costly signal, otherwise no signal is obtained.

Proof. Notice that at affinity level 1, player 1 strictly prefers the action T. This is true because we assumed $\varepsilon < b_1(\neg P)$, and when $A_{21} = 1$, player 2 always prefers action $\neg P$ in this case because relevant inequality is always satisfied: $R_2 > (1 - A_{21})b_2(P) - b_2(\neg P) = -b_2(\neg P)$. Since this is true for any level of R_2, no matter how informative a costly signal is, it will never change player 1's preferred action and is hence worthless to player 1. Therefore, player 1 never buys a signal when affinity is maximal.

Next, choose an affinity level, $1 - \frac{b_2(\neg P)}{b_2(P)} \leq A'_{21} < 1$. This still satisfies $(1 - A_{21})b_2(P) - b_2(\neg P) \leq 0$. Conditional on affinity level A'_{21}, player 1 is in the same situation as above: player 1 knows that for any possible partner reliability level, R_2, player 2 strictly prefers the action $\neg P$. Again, there is no signal about R_2 that can change player 1's beliefs about the probability player 2 acts as a predator. So, again, signals are worthless.

Obviously, setting $A^*_{21} = A'_{21}$, the proposition follows. Whenever affinity lies in the interval $[A^*_{21}, 1]$ player 1 never buys a costly signal. □

A.4 Proposition 4

Suppose individuals in the role of player 1 can attain perfect information about their partners' reliability level, R_2, for some fixed cost, $c > 0$. Then the value of this signal is increasing in affinity

for affinity levels below a threshold level of affinity, A^*. Above this threshold, the value of the signal always decreases with affinity. Furthermore, the threshold level of affinity, A^*, is the level of affinity for which an uninformed player 1 is indifferent between his two actions, T and $\neg T$.

Proof. Case 1: Suppose that without a signal player 1 prefers action T.

The expected earnings from playing T with no information are:

$$b_1(\neg P) * Prob[R_2 > (1 - A_{21})b_2(P) - b_2(\neg P)]$$

Expected earnings when player 1 has perfect information are: $b_1(\neg P)Prob[R_2 > (1-A_{21})b_2(P) - b_2(\neg P)] + \varepsilon \times Prob[R_2 \leq (1-A_{21})b_2(P) - b_2(\neg P)]$

The value of information for player 1 is the expected earnings with perfect information minus the expected earnings without perfect information. The value of the signal to player 1 is therefore: $\varepsilon \times Prob[R_2 \leq (1-A_{21})b_2(P) - b_2(\neg P)]$. Clearly this equation is decreasing in affinity. As affinity increases, $1 - A_{21}$ decreases, reducing the probability that reliability is less than this threshold. Therefore, for those levels of affinity where an uninformed player 1 strictly prefers to play T, the value of perfect information is decreasing in affinity.

Case 2: Now, suppose that without a signal player 1 prefers action $\neg T$.

The expected earnings from playing $\neg T$ are always ε. Expected earning when player 1 has perfect information are the same as noted above. The value of information for player 1 is the expected earnings with perfect information minus the expected earnings without perfect information:

$$b_1(\neg P)Prob[R_2 > (1 - A_{21})b_2(P) - b_2(\neg P)] + \varepsilon \times Prob[R_2 \leq (1 - A_{21})b_2(P) - b_2(\neg P)] - \varepsilon$$

Rearranging terms and simplifying yields the value of information:

$$Prob[R_2 \leq (1 - A_{21})b_2(P) - b_2(\neg P)] \times (b_1(\neg P) - \varepsilon)$$

Since $\varepsilon < b_1(\neg P)$ by assumption, this expression is increasing in affinity. As affinity increases, $1 - A_{21}$ decreases, which makes the probability that reliability exceeds this value increase. Thus, for those levels of affinity where player 1 strictly prefers to play $\neg T$, the value of perfect information is increasing in affinity.

Case 3: Now, suppose that without a signal player 1 is indifferent between $\neg T$ and T. In this

case, the value of information if an uninformed individual plays T is:

$$b_1(\neg P)Prob[R_2 > (1-A_{21})b_2(P) - b_2(\neg P)] + \varepsilon \times Prob[R_2 \leq (1-A_{21})b_2(P) - b_2(\neg P)] - \\ - b_1(\neg P)Prob[R_2 > (1-A_{21})b_2(P) - b_2(\neg P)]$$

On the other hand, if an uninformed player 1 plays $\neg T$ the value of the signal is:

$$b_1(\neg P)Prob[R_2 > (1-A_{21})b_2(P) - b_2(\neg P)] + \varepsilon \times Prob[R_2 \leq (1-A_{21})b_2(P) - b_2(\neg P)] - \varepsilon$$

Since player 1 is indifferent between his actions, it must be that the expected earnings from these two actions are the same: $\varepsilon = b_1(\neg P)Prob[R_2 > (1-A_{21})b_2(P) - b_2(\neg P)]$.

Consequently, whenever an uninformed player 1 is indifferent between his or her two available actions, the value of perfect information does not depend on the action the uninformed player plans to implement. Wrapping up, the value of perfect information increases with affinity below the specific level of affinity (if any) for which an uninformed player 1 prefers to play $\neg T$, decreases above this threshold level of affinity, and the values of perfect information conditional on player 1's actions coincide at this threshold level of affinity. Therefore, the value of information follows a hump-shaped pattern in affinity whenever there exists a level of affinity that makes player 1 indifferent between his or her two actions. □

Figure 1: Trust vs. Affinity.

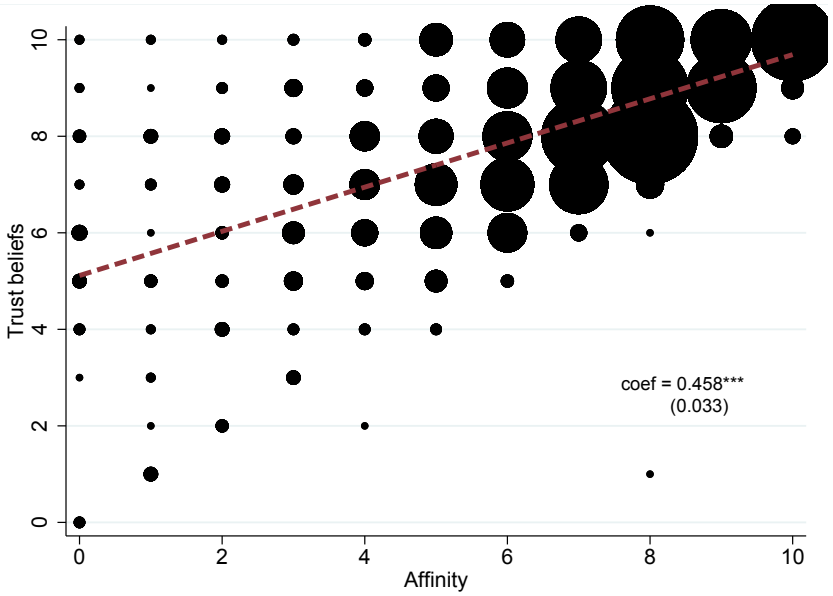


Figure 2: Trust vs. Affinity. Mean and SD.

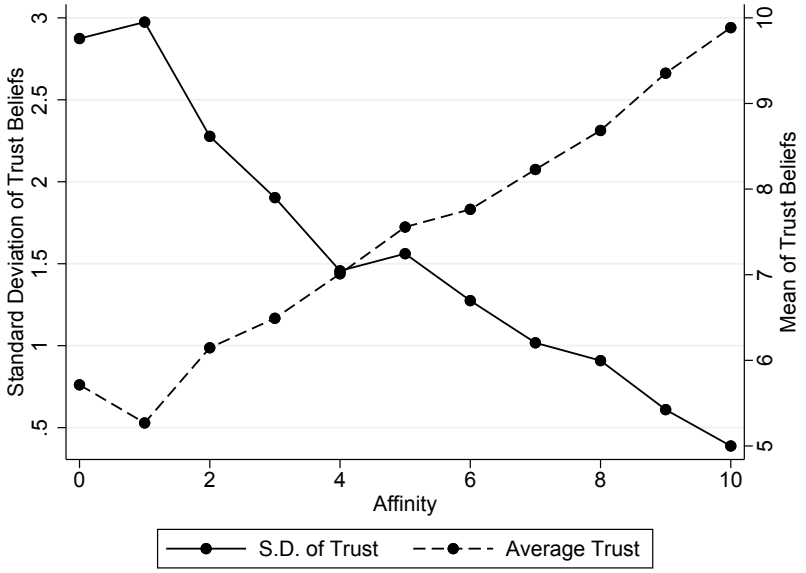


Figure 3: Financial Crisis: Decline in Trust in the Entrepreneur Survey.

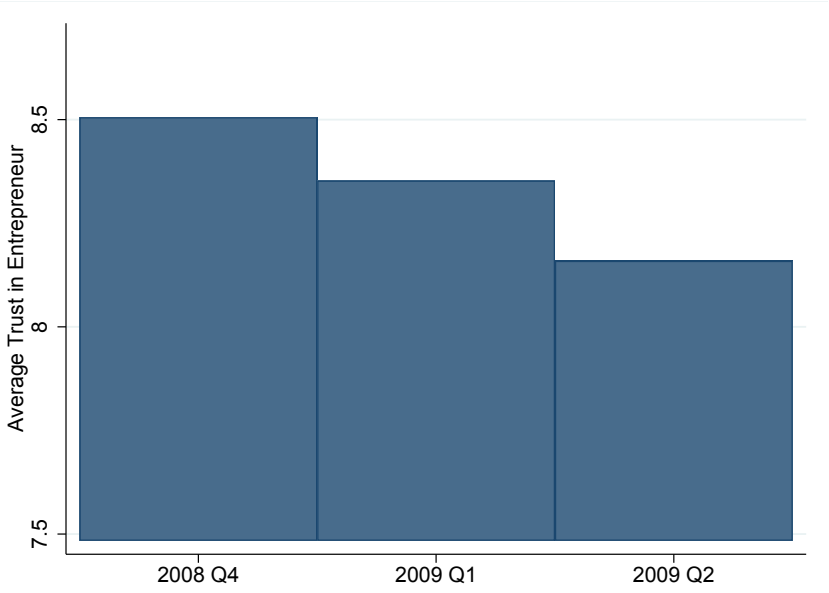


Figure 4: Decline in Trust in the Entrepreneur Survey by Affinity.

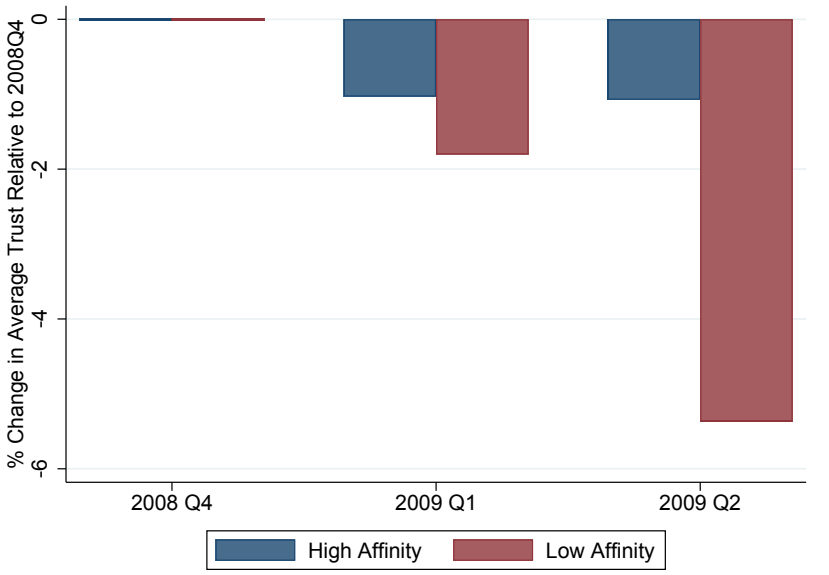
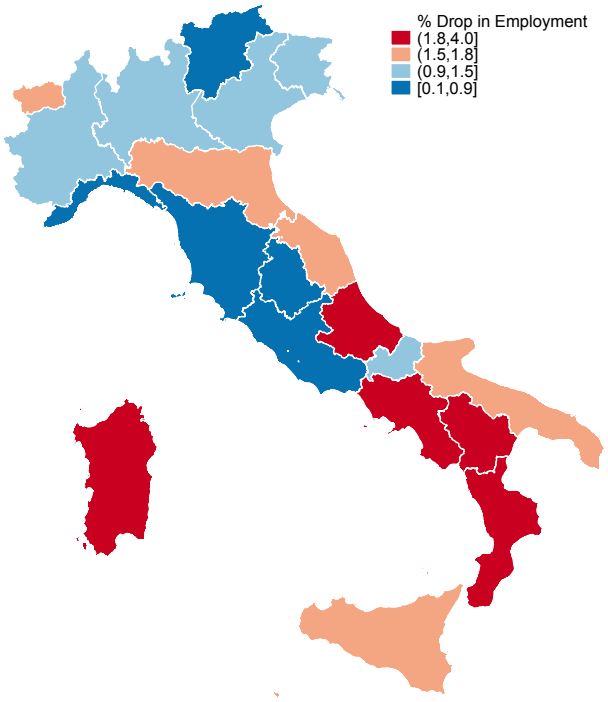
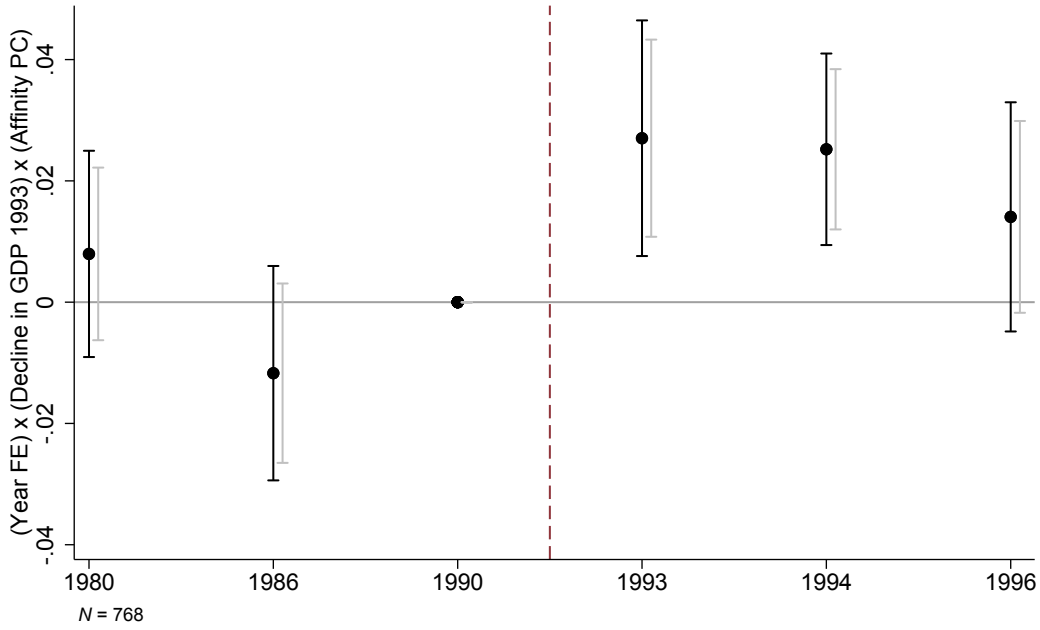


Figure 5: Drop in Employment Across Italian Regions.



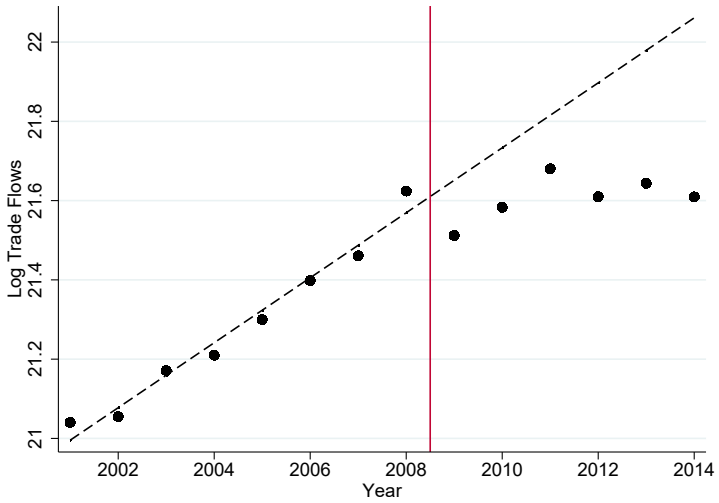
Notes: The estimates are obtained as coefficients on the interaction between the region fixed effects and a post-2008Q3 indicator in a regression of regional quarterly employment from 2004Q1 through 2009Q4, controlling for the region and quarter fixed effects.

Figure 6: Differential Effect of the 1993 Recession on Trust by Affinity Levels. Year-to-Year Specification. Eurobarometer.



Notes: The outcome variable is the average trust from the country of the respondents toward the country-counterpart. GDP decline in 1993 is measured as a negative value of a country's economic growth between 1992 and 1993 in the country of the respondents. The principal component of affinity is based on genetic and religious similarity indices and is standardized to have mean zero and standard deviation of one. Black bars represent the 95% confidence intervals; grey bars represent the 90% confidence intervals. Standard errors are clustered at the country-pair level.

Figure 7: Evolution of Average Inter-Country Log Trade Flows, 2001–2014.



Notes: Dashed line represents a linear projection based on trade flows before the financial crisis.

Table 3: Association Between Trust and Affinity. Entrepreneur Survey.

	Trust		S.D. of Trust	Interquartile regression
	(1)	(2)	(3)	(4)
Interviewer perceived affinity	0.458***	0.413***	-0.228***	-0.267***
	(0.033)	(0.028)	(0.015)	(0.059)
Interviewer FE	NO	YES	NO	NO
Observations	2,191	2,191	2,191	2,191
R-squared	0.400	0.653	0.959	

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the interviewer level in (1)-(2) and at the affinity level in (3).

Table 4: Association Between Trust and Affinity. Eurobarometer Survey.

	Trust		S.D. of Trust		
	(1)	(2)	(3)	(4)	(5)
Genetic similarity	0.257***		-0.055**		
	(0.060)		(0.022)		
Religious similarity	0.048***		-0.017***		
	(0.012)		(0.004)		
Principal component		0.092***		-0.029***	-0.033***
		(0.018)		(0.006)	(0.006)
Lack of Press Coverage					-0.029***
					(0.007)
Principal component X Lack of Press Coverage					0.018*
					(0.011)
Country-Respondent FE	YES	YES	YES	YES	YES
Country-Counterpart FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	961	961	978	978	731
R-squared	0.682	0.672	0.594	0.592	0.588

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the country of the respondent. All similarity indices are standardized to have zero mean and a standard deviation of one.

Table 5: Heterogeneous Effect of Economic Crisis on Trust by Affinity. Entrepreneur Survey.

	Trust			
	(1)	(2)	(3)	(4)
SUBSAMPLE	All	All	High Affinity	Low Affinity
Drop in regional employment	-0.579*	-0.897***	-0.360	-1.763***
	(0.301)	(0.332)	(0.292)	(0.487)
Affinity X Drop in regional employment	0.055*	0.056*	0.010	0.119**
	(0.033)	(0.032)	(0.030)	(0.052)
Affinity	0.351***	0.351***	0.413***	0.256**
	(0.049)	(0.048)	(0.049)	(0.100)
Interviewer FE	YES	YES	YES	YES
Quarter FE	NO	YES	YES	YES
Observations	2,031	2,031	1,377	592
R-squared	0.633	0.637	0.588	0.598

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the interviewer level.

Table 6: Heterogeneous Effect of Economic Crisis on Trust by Affinity. Eurobarometer.

	Trust				
	(1)	(2)	(3)	(4)	(5)
Post-1993 X GDP decline in 1993	-0.026***	-0.020**	-0.022***	-0.022**	-0.020**
	(0.004)	(0.009)	(0.008)	(0.009)	(0.009)
Genetic similarity X Post-1993 X GDP decline in 1993		0.013**		0.009*	
		(0.006)		(0.005)	
Religious similarity X Post-1993 X GDP decline in 1993			0.021***	0.020**	
			(0.008)	(0.008)	
Principal component X Post-1993 X GDP decline in 1993					0.023***
					(0.008)
Country-Pair FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	1,380	854	964	854	854
R-squared	0.886	0.835	0.837	0.838	0.837

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the country-pair level. The analysis is at the country-pair-year. Trust is an average trust from the country of the respondents toward the country-counterpart. GDP decline in 1993 is measured as a negative value of a country's economic growth between 1992 and 1993 in the country of the respondents. All similarity indices (genetic, religious, and somatic) and standardized to have mean zero and standard deviation of one. The principal component analysis is based on genetic and religious similarity indices.

Table 7: Implications of Mismatch on Affinity. Entrepreneur Survey.

	1 = Entrepreneur Agreed to Participate in Finger Measurement		
	(1)	(2)	(3)
Interviewer perceived affinity	0.040***	0.039***	0.041***
	(0.007)	(0.006)	(0.006)
Male		-0.054**	
		(0.027)	
Same sex			0.053**
			(0.023)
Age		-0.000	-0.000
		(0.001)	(0.001)
Years of education		0.005	0.006
		(0.003)	(0.003)
Height		0.002	0.002*
		(0.001)	(0.001)
First born		0.025	0.021
		(0.020)	(0.020)
Firm size (log employment)		-0.007	-0.006
		(0.010)	(0.010)
Interviewer FE	YES	YES	YES
Region FE	NO	YES	YES
Observations	2,191	2,159	2,057
R-squared	0.464	0.463	0.469

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the interviewer level.

Table 8: Implications. Relocation of Global Trade After the Financial Crisis.

	Log Trade Flows			
	(1)	(2)	(3)	(4)
Time Trend	0.084***	0.080***	0.084***	
	(0.003)	(0.003)	(0.003)	
Post-2008 X Time Trend	-0.075***	-0.067***	-0.075***	
	(0.005)	(0.005)	(0.005)	
Genetic similarity X Post-2008 X Time Trend	0.009**			
	(0.004)			
Religious similarity X Post-2008 X Time Trend		0.012***		
		(0.004)		
Principal component X Post-2008 X Time Trend			0.015***	0.019***
			(0.005)	(0.005)
Country-Pair FE	YES	YES	YES	YES
Year FE	NO	NO	NO	YES
Origin-Country-Year FE	NO	NO	NO	YES
Destination-Country-Year FE	NO	NO	NO	YES
Observations	3,738	4,074	3,710	3,975
R-squared	0.986	0.986	0.986	0.993

Notes: *** p<0.01, ** p<0.05, * p<0.1. The sample of countries is restricted to the same countries as in our Eurobarometer results. Standard errors are clustered at the country-pair level.

Table A1: Determinants of Reported Affinity. Entrepreneur Survey.

	Affinity									
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Same eye color	-0.055								-0.058	
	(0.096)								(0.100)	
Same hair color		0.130							0.144	
		(0.107)							(0.108)	
Same hair type			0.155						0.151	
			(0.100)						(0.099)	
Same sex				0.316***					0.262**	
				(0.098)					(0.112)	
Same education level					-0.057				-0.068	
					(0.109)				(0.113)	
Same region						0.296**			0.291**	
						(0.118)			(0.121)	
Age distance							-0.011*		-0.010	
							(0.006)		(0.006)	
Height distance								-0.015**	-0.004	
								(0.007)	(0.008)	
Principal component										0.239***
										(0.079)
Interview FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,086	2,086	2,013	2,086	2,086	2,191	2,086	2,086	2,013	2,013
R-squared	0.415	0.416	0.422	0.420	0.415	0.424	0.417	0.417	0.431	0.425

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the interviewer level.

Table A2: Dynamics of Trust and Affinity During the Financial Crisis. Entrepreneur Survey.

	Trust	Affinity
	(1)	(2)
Quarter (1 = 2008Q3, 3 = 2009Q2)	-0.111**	-0.011
	(0.044)	(0.061)
Interviewer FE	YES	YES
Observations	2,160	2,160
R-squared	0.447	0.415

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the interviewer level.