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"Railways and Roadways to Trust"

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Abstract

This paper explores the interplay between the extent of transportation infrastructure and various aspects of trust (interpersonal and political trust). We test our hypothesis by exploiting cross regional variation during the period 2002-2019. We focus on two measures of infrastructure, i.e., the length of railroads and railways in European regions. Interpersonal and political trust variables are derived from individual level data available in nine consecutive rounds of the European Social Survey. We document that individuals who live in regions with extended infrastructure network manifest higher trust both in people and political institutions. To mitigate endogeneity concerns, we extend our analysis to a sample of international and inter-regional immigrants. We further adopt an IV approach, where we use as an instrument the pre-existing Roman roads networks. The results from all three specifications are aligned to those of the benchmark analysis. We explore access to differential levels of trust as one of the underlying mechanisms behind our results. Relying on an expanding literature we hypothesize that the effect of infrastructure on trust operates directly via the degree of exposure to new people and ideas, as well as indirectly, via the effect of infrastructure on the structure of the economy.

JEL Classification: Z10, P48, R10, R40.

Keywords: Motorways, Railroads, Political trust, Interpersonal trust.

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1 Introduction

As early as in 1972, the Nobel laureate Kenneth Arrow pointed out that "...virtually every commercial transaction has within itself an element of trust... it can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence." Since then, an ever expanding literature emerged studying several aspects of political and interpersonal trust, with a special focus on its determinants. Several historical and contemporary determinants of trust have been advanced in the literature, yet the role of infrastructure is not well explored. Our paper contributes to this literature by arguing that infrastructure can lead to higher levels of trust (interpersonal and political trust).

The emergence of various forms of infrastructure has drastically shaped the world in many different ways as the infrastructure has long lasting economic effects; it facilitates the transfer of goods and people within a country and across countries and the exchange of ideas, promoting innovation and new types of economic activity such as tourism or commuting (Du et al., 2022). Moreover, it is an ever evolving investment that entails the development of new types of infrastructure, e.g., the transition from railways to airports and the construction of metropolitan stations, or the continuous improvement of the existing infrastructure, such as the transition from railways to electrified railways and recently to high-speed trains.

Our research aims to empirically explore the interplay between infrastructure i.e., railways and railroads and contemporary cultural traits such as interpersonal and political trust. Analytically, we use data from the nine consecutive rounds of the European Social Survey (ESS) from 2002 to 2019 and we associate each individual to the length of railways and railroads network in Nuts 1 European regions where he/she is born and lives in. The length of railways and railroads network is derived from the Eurostat during the years 2000-2019. and it is considered as a proxy for the regions' connectivity. We further include individual controls that affect trust such as age, age squared, a gender indicator, place of residence and educational level fixed effects) as well as for an individuals' interest to have an active role in politics (as a potential determinant of political trust), At the regional level we control for the GDP per capita in PPP at the Nuts 1 level as a proxy for regional economic development. Last, we use country fixed effects that take care for unobserved heterogeneity at the country level and ESS round fixed effects that account for common shocks across regions. Overall, in our main specification we exploit within- country variation during the years 2002-2019 as we end up with 113 NUTS 1 level European regions spread over 32 European countries.

Two remarks are important to be made at this point. First, as discussed we consider cross-regional variation and not a panel of regions. The reason is that both our explanatory and dependent variable (i.e., trust and infrastructure) require years to materialize and evolve

slowly. As a result, exploiting biannual variation (which is the case for the ESS) would imply limited variation in both variables. Interregional variations could better capture the argument at stake. The second point is related to the choice of the explanatory variable. We use the actual stock of infrastructure as opposed to the the density of infrastructure. There are two strand in the literature supporting one approach over the other. In our benchmark specification we follow Duranton and Turner (2011) who use the total length of infrastructure. As our argument is primarily related to the connectivity associated with the development of infrastructure we view both measures as relevant. As the literature uses both specifications, we replicated our benchmark results using a measure of density instead and reassuringly our findings remain robust throughout.

Our results suggest that the stock of each network has a positive and statistically significant effect on both interpersonal and political trust. An 1 standard deviation increase in the stock of railways (approx.70 km of railways for some specifications) is associated with approximately is associated with approximately an 0.08 rise in the index of trust, whereas an approximately 70 km expansion of motorways is associated with 0.01 rise in the index of trust. The magnitude of the effect is not enormous yet not trivial either given the regional nature of the analysis.

Despite the fact that we attempt to account for unobserved heterogeneity via a number of individual and aggregate controls as well as various fixed effects, we try to further mitigate endogeneity via implementing an IV strategy. In particular we instrument for the current level of road and railway infrastructure using as an instrument the stock of Roman roads. Roman roads are considered by the literature as strong predictors of modern day transportation infrastructure density (stocks of infrastructure) (Dalgaard et al., 2018; Àngel Garcia-López, 2012; Percoco, 2016; Àngel Garcia-López, 2019; Bottasso et al., 2022). Secondly, we adopt both an international and inter-regional immigrant analysis. As far as the international immigrant analysis is concerned, we try to capture the level of infrastructure only at the point around the departure of an immigrant. More specifically, we isolate the role of infrastructure in shaping individual attitudes from other socio-economic determinants of trust attitudes prevalent at the origin country, following (Fernández, 2011).

Second, we adopt an inter-regional immigrant analysis following Beugelsdijk et al. (2019). Analytically, we employ data from four waves of the European Values Survey (1981-2010) tracing the individuals who moved to other regions after their 14 years of age. The rational behind this approach is similar to that of the epidemiological approach, i.e., we want to create an "experimental setup" where individuals are cutoff from the condition in which they lived when aged 14 so as to mitigate the effect of unobservables. Our results preserve similar effect across all our empirical specifications.

Last, we try to understand what drives our results, i.e., to figure out the associated mechanism. We hypothesize that one potential mechanism is the exposure of individuals to new people and new ideas via a higher network connectivity. We resort to an expanding strand of the literature that emphasizes how infrastructure facilitates information flow (Perlman, 2017) as well as the flow of ideas (Agrawal et al., 2017; Bottasso et al., 2022; Tsiachtsiras, 2020) and the emergence of social movements (Melander, 2020). We modify the market access framework introduced by (Donaldson and Hornbeck, 2016) to study how the level of trust of a given region is affected by less costly connections, due to improvements to transportation networks, to other regions. Faster access to those regions operates both directly in cultural attitudes, i.e., via the direct interactions and spillover effects, as well as indirectly.[1]

The paper is organized as follows. Section 2 presents the existing literature. Section 3 illustrates the data and the various layers of empirical strategy while section 4 presents the main results. Section 5 discusses the mechanism. Finally, the last part concludes.

1.1 Anecdotal Evidence

Even though we live in the era of the 4.0 industrial revolution and the rapid expansion of ICT technologies, the governments and organisations have not slowed down the investments to transportation infrastructures. More than a trillion dollars is spent on transportation infrastructure across the world each year (Lefevre et al., 2014; Allen and Arkolakis, 2022). The World Bank alone has already spent approximately $105 billion on transport-related projects (World Bank, 2007, 2013, 2017). Large amount of money is being invested on the expansion of transportation networks in the development countries (Asturias et al., 2019).

Evidence from railroads in Europe lends credence to the hypothesis that the extension of railways and railroads network has played a vital role both on the economic development of the countries and also enhanced the social ties between people and political institutions. The implementation of railroads made the distance between countries to shrink, thereby eliminating the isolation of regions. Railroads not only eliminated physical barriers to travel; they also led the dissolution of social barriers across European regions, ultimately leading to stronger social ties and bridging the political, economic, and social gaps among European nations (Anastasiadou, 2004).

Most of the existing research on the field has focused on the political and financial aspects

[1] As to the indirect effect, there is abundant evidence highlighting the effect of infrastructure on several different aspects of the economy. For instance, Perlman (2017) and Andersson et al. (2021) show that a reduction in communication and transportation costs has an effect on local innovative activity. Railroads also changed the character of the regions, increasing urbanization (Atack et al., 2009) and leading to higher economic development (Atack et al., 2014).

of the expansion of the Balkan railway network. Lampe (1982) and Palairet (1997) presented a detailed study of political struggles in the Balkans and their economic consequences for railways; Nikova et al. (2007) focused on the lack of cooperation between the Balkan states regarding the development of the region's infrastructure and Turnock (1979) explored social and economic issues related to the construction of railways Balkan countries which proved very useful as for many years the economic integration of Balkans was strongly related to the level of the region's political and economic dependence on the outside world.

A profound example of the importance of infrastructure nowadays, is considered the "Egnatia" motorway in Greece. This motorway was aimed to have a prominent role as a development axis mainly in Northern Greece, as it was anticipated to increased investments in several economic sectors such as transportation, industry and tourism. An additional significant element that made this motorway a great source for development in Greece was that it would operate as a collector route for the Balkan and South-eastern European transport system (Nikolakopoulou and Karampekou, 2013) by mitigating the territorial and social isolation between the regions and the individuals, respectively. Specifically, the "Egnatia" motorway brought isolated regions, such as Epirus and Western Macedonia, closer to the rest of Macedonia and Thrace. As a result, this facilitated trade across regions, tourism and social life, while halting and reversing the trend of rural depopulation, a major problem causing isolation of certain areas and overpopulation of urban places in Greece. Many citizens now commute across regions to their workplace rather easily and there is also a continuous interaction with other people from different regions, fostering friendly relations and unhindered communication between neighbouring populations. Egnatia (2022).

Additionally, an illustrative example is the large-scale transportation investment that the Turkish government undertaker in 2002. As a result, a significant percentage of existing single carriageways were upgraded into dual carriageways. By 2015, the arterial routes had been improved with dual carriageways accounting for 35% of inter-provincial roads, up from 10% in 2002. This increase in the capacity allowed vehicles to travel faster, making arrival times more predictable and reducing accident rates, with the number of fatalities per kilometer traveled declining by 57% between 2002 and 2014 (Coşar et al., 2022).

2 Literature Review

Recently, there is a growing literature in economics that explores the interplay between infrastructure, economic outcomes and social attitudes. Consequently, our paper aims to contribute to the existing literature by quantifying the social implications of contemporary expansions of infrastructure. In particular, in this paper, we try to uncover the relation

between infrastructure and trust. As such, we highlight the contribution of infrastructure, not only to the economy but also to the formation of social attitudes. This approach sheds further light to our understanding of the contribution of infrastructure in shaping societies in multiple ways. Past literature associates economic geography by using distance to trade routes with religion outcomes (Michalopoulos et al., 2018). Similarly, Spolaore and Wacziarg (2014) provide measures of historical and genealogical distances between populations, and provide evidence on how such distances, relative to the world's technological frontier, act as barriers, affecting the trade and financial flows across countries and the diffusion of development, and of specific innovations.

Ou furst contribution is that we suggest an additional novel determinant of trust. To date there is an extensive literature that analyses the determinants of trust (Dohmen et al., 2012; Becker et al., 2016; Nunn and Wantchekon, 2011) and highlights it as an inseparable element of the modern economic systems (Zak and Knack, 2001). By showing that infrastructure affects trust, we establish an additional channel via which infrastructure affects growth, as the link between trust and growth is already known. Spolaore and Wacziarg (2013) not only document all the determinants that have been transmitted across generations over the very long run and may affect the economic development, but also, they discuss the different channels through which intergenerationally transmitted characteristics may impact economic development, biologically and culturally. [2]

Second, our paper contributes to the literature that studies the overall impact of transportation technologies on current and past economic outcomes. Notable examples are airplanes (Wong, 2019; Feyrer, 2019; Campante and Yanagizawa-Drott, 2018), highways (Baum-Snow et al., 2018; Duranton and Turner, 2011; Faber, 2014), railroads (Donaldson and Hornbeck, 2016; Donaldson, 2018; Yamasaki, 2017), as well as steamships (Pascali, 2017).

From a historical perspective, Andersson et al. (2021) and Perlman (2017) finds that railroads have a positive impact on innovative activity in nineteenth century. Andersson et al.

[2]In general, trust can affect economic development (Knack and Keefer, 1997; Butler et al., 2016; Francois and Zabojnik, 2005), individual performance (Jeffrey et al., 2014), financial development, participation in the stock market, and trade (Guiso et al. (2004); Guiso et al. (2008), Guiso et al. (2009)) , innovation (Szabo et al., 2013), and firm productivity (Bloom et al. (2012); La Porta et al. (1997)). Moreover, this literature is largely inspired by important contributions in political science (Putnam, 1993) which provide evidence that social trust and participation in social activities differ strikingly across regions and countries, and bear important consequences for economic and institutional development. Aghion et al. (2010) highlight that government regulation and individual demands for a stronger government role are negatively correlated with different measures of trust. Focusing on sub-national regional cultural variations Beugelsdijk and Van Schaik (2005) provide evidence that growth differentials in European regions correlate positively with regional levels of social capital. Tabellini (2010) explores the causal link between culture and economic development by instrumenting different measures of cultural traits with regional literacy rates and constraints on the executive government before the 20th century, showing that the current economic regional growth rates correlate with the exogenous component of regional culture.

(2021) investigate how railroads facilitate the entry and improve the productivity of inventors. The expansion of the network leads inventors to develop ideas with applications outside of the local economy. Perlman (2017) associates railroads with market access and an increase in the demand for innovation. Agrawal et al. (2017) provides solid evidence that the stock of highways has a positive effect on patenting in metropolitan statistical areas of USA and facilitate the diffusion of knowledge. Krisztián Nagy (2016) reports that railroads boost the growth of US cities while Donaldson and Hornbeck (2016) and Donaldson (2018) states that they were meaningful for the development of the agricultural sector in USA in 1890. Santamaria (2020) studies the reallocation of road investments after the division of Germany and their impact on German economy. Buckwalter (2018) finds no significant effect of rail access between 1884 and 1892 on population densities in French Algeria. A long-term comparative study of the influence that rail services exerted on urban growth reveals that the creation of a structured railway network in France, Portugal, and Spain intensified the depopulation of extensive rural areas, as more and more people moved to, and between, cities. Areas that were once relatively small and insignificant began to thrive when the railway reached them. (Mojica and Martí-Henneberg, 2011). In addition, Berger and Enflo (2017) use a differences in differences approach in case of Sweden and report limited evidence related to the convergence in town populations, despite the railroad network expanding further to connect nearly all towns while Büchel and Kyburz (2018) indicate that being connected to the railway network increased a municipality's annual population growth rate. Railroads also have a significant impact on fertility and human capital (Katz, 2018). Transportation linkages have an adverse effect on health in the rural US (Zimran, 2019). Railroads manage to boost manufacturing productivity in US (Hornbeck and Rotemberg, 2019; Pontarollo and Ricciuti, 2020). Improvements in transport and communications technologies boost the employment in interactive occupations (Michaels et al., 2019). Finally, the steam railway led to the first large-scale separation of workplace and residence (Heblich et al., 2020).

Similar results are reported with respect to current economic outcomes. Hiroyasu et al. (2017) and Gao and Zheng (2018) find that the opening of the high speed rail in Tokyo and China is responsible for an increase in inventiveness. In line with these results, Dong et al. (2020) uses publications and reports that bullet train enhances the quantity and the quality of co-authored papers. According to Heuermann and Schmieder (2019) bullet trains reduces travel time and increases the number of commuters between regions. This fact leads to a matching between the workers from small cities and jobs in large cities and the workers do not change their place of residence. Égert et al. (2009) finds that the contributions of infrastructure to long-run growth is not homogeneous across countries and that the expansion of infrastructure depends on capital expenditure while Bougheas et al. (2000) reports an

inverted U-shaped relation between infrastructure and the rate of economic growth across countries. Baum-Snow et al. (2018) find that on average, roads that improve access to local markets have small or negative effects on prefecture economic activity and population. On the top of that highway construction promotes residential decentralization of the cities leading the within– central city commuters to become within-suburb commuters (Baum-Snow, 2010, 2020). A recent paper by Coşar et al. (2022) provides evidence that public investment in roads have a positive impact of reduced travel times on trade as well as local manufacturing employment and wages. Additional evidence demonstrates that air connectivity accelerates the movement of capital and enhances economic development but increases also the inequality locally (Campante and Yanagizawa-Drott, 2018). In addition, railway network increases the collaborations Catalini et al. (2020) and patent activity (Wong, 2019).

Closer to the scope of our research is the paper by Melander (2020) exploring the relationship between the social movements and infrastructure and highlighting the role played by interaction costs in shaping social phenomena. He establishes that reductions in interaction costs shaped the diffusion of social movements, during the period 1881-1910 in Sweden. He finds that mobilisation in these social movements shaped participation and voting outcomes in Sweden's first election with universal male suffrage. As a mechanism the author employs a market access framework and finds that the social movements of a given parish i is affected by the least-cost path weighted average of movement memberships in all other parishes.

Beyond economics, Graham and Marvin (2001) highlight the role of public infrastructures and new technologies in facilitating the mobility of people, goods, and utilities when old forms decay. The ongoing life of these structures and networks themselves is argued to have created new social collectivities (Larkin, 2008). Ethnographic research sheds light on the formation of citizenship through infrastructure (Anand, 2011). Overall, the literature emphasizing the social implications of an expanding infrastructure is very limited, we thus aspire that our research will bring new insights into the field and propose novel mechanisms associated with it.

3 Data and Empirical Strategy

3.1 The Data

To explore the interplay between the level of infrastructure and trust, we employ data from the nine consecutive rounds of the European Social Survey (2002-2019), a repeated cross section survey that quantifies the attitudes, beliefs and behavioral patterns of citizens in 34 European countries. The sample comprises individuals from Albania, Austria, Belgium,

Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Germany, Finland, France, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kosovo, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Russia, Sweden, Slovenia, Slovakia, Spain, Switzerland, Turkey, United Kingdom and Ukraine. The ESS contains a rich set of questions that capture personal characteristics such as age, gender, the highest level of education achieved, the place of residence and the interest of individuals to have an active role regarding the politics etc.

In our analysis we employ six proxies to capture several aspects of trust. These are trust in i) political parties; ii) country's parliament iii) politicians, iv) police, v) legal system and last, vi) the degree of trust on people, all measured on a scale between 0 (no trust) and 10 (full trust). However, in our benchmark analysis in order to create a general political trust variable, we create a composite political trust index using principal component analysis (P.C.A.) of the three distinct variables (trust parties, politicians and parliament).

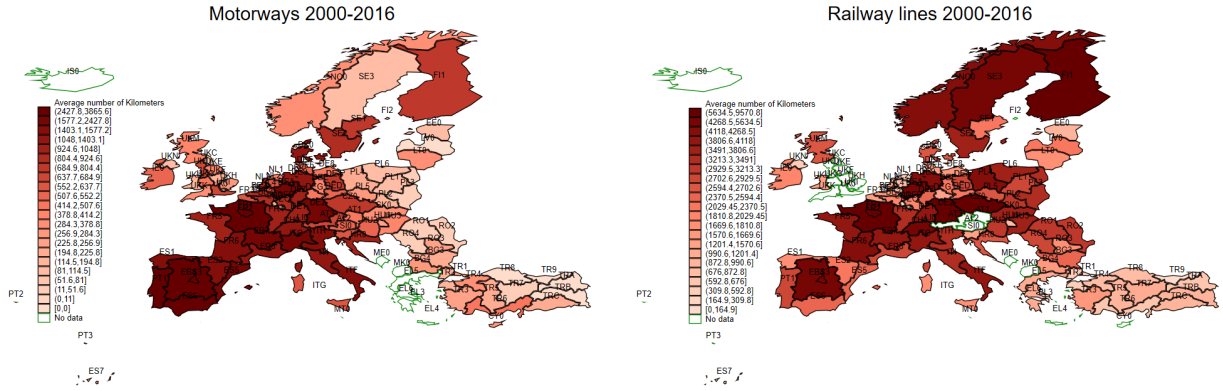
Our key explanatory variable is the mean level of infrastructure stock including two types of infrastructure, i.e., i) railroads and ii) railways (similar to Agrawal et al. (2017) and Àngel Garcia-López (2019)). We extract data from the Eurostat for the infrastructure during the years 2000-2019. Eurostat provides us with a panel of regional transport statistics and more specifically with data related to the extent of the rail and road network in Nuts 1 regions. The data about the length of railways and railroads are measured in kilometres (Eurostat, 2009).

Beyond our main explanatory variables our analysis controls for a wide range of individual characteristics derived from the ESS that have been argued to affect both political and interpersonal trust such as age, gender, the highest level of education achieved, the place of residence i.e., live in big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside and the interest of individuals of having an active role regarding the politics. We include the place of residence to capture the degree of urbanisation which is directly related with the stock of infrastructure (Gonzalez-Navarro and Turner, 2018; Rauch, 2018) and possible positive attitudes towards trust for the people living in more international environments such as the big cities. Furthermore, individuals who are more educated, are less prone to trust the political institutions. Last, we also control for gender and the individual's age; older individuals are shown to display a lower political and interpersonal trust, something that can be explained more in the literature on collective memories (Fouka and Voth, 2016). Thus, as people age experience more and more (economic and socio-political) shocks which can lead to a decline on the political and interpersonal trust. Additional regional level controls are included in our analysis such as regional GDP per capita in PPP derived by Eurostat as the main determinant of trust that can capture the stage of socioeconomic development.

In the end, we are ending up with a sample of Nuts 1 regions for which we have infrastructure and trust data for the years 2002 to 2019. In our main specification we exploit the spatial dimension of our data, i.e., we show that even if the rail network has been developed in most of the European countries, there is important variation in the number of kilometers across regions and over time, suggesting that it is still significantly expanding. Thus, we can infer that there is still sufficient variation in the evolution of infrastructure which is leaving room for conferring a significant effect on trust outcomes even in the contemporary period. Secondly, we show that there is significant variation across Nuts 1 regions, which is the main source of variation that we exploit.

Figure 1 illustrates the mean levels of infrastructure across Nuts 1 regions. In particular, it presents the average value of railways and railways across regions in Europe from 2000 to 2019.

Figure 1: Spatial Distribution of Infrastructure Stock



(a) railways **(b)** Railroads

Notes: These figures present the average value of infrastructure stock across regions in Europe for the period 2000-2019. The measurement unit is kilometers.

3.2 Empirical Strategy

3.2.1 Reduced Form Model

We begin by applying an OLS regression model to estimate the relationship between the level of infrastructure in an individual's region (Nuts 1) and the individual's current level of political and interpersonal trust. Our baseline estimating equation is:

$$T_{ij} = \alpha_0 + \alpha_1 I_j + \alpha_2 X_i + \alpha_3 G_i + \alpha_4 C_v + \alpha_5 R_t + \epsilon_i$$

Here, T_{ij} denotes the political and interpersonal trust of individual i, residing in region

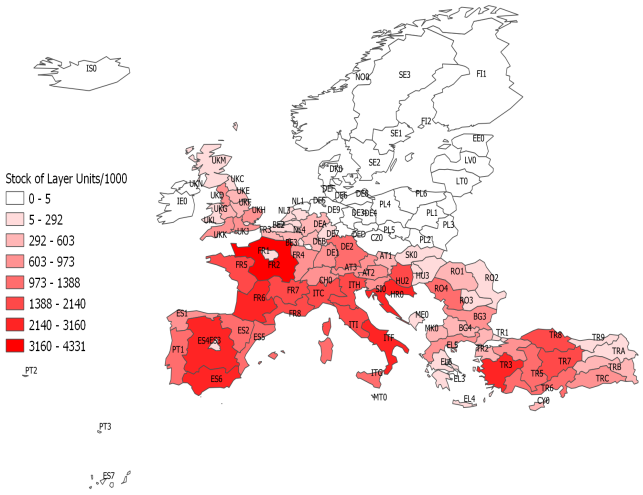
j, participating at ESS round t. The vector T denotes one of our trust variables: trust in other people, police, legal system and the composite index of political trust created using a principal component analysis. Vector I_j represents the level of infrastructure including i) stocks of railroads and ii) railways at the Nuts 1 region j. The vector X_i includes a set of individual-level covariates that may also affect the level of trust: age, age squared, a gender indicator, place of residence (big city, suburbs, small city, village or countryside) and educational level fixed effects. We control also for the interest of the respondent i to have an active role regarding the politics. We also include the GDP per capita in PPP at the Nuts 1 level as a proxy for regional development. Finally, the C_v denotes country fixed effects that control for all time invariant unobserved heterogeneity at the country level and the R_t denotes fixed effects for each ESS round aimed to capture round specific shocks that could affect individual responses. ϵ_i is an individual specific error term. Since the source of variation is across regions j, we estimate robust standard errors, clustered at the Nuts 1 regions.

3.2.2 Identification 1: Instrumenting for Infrastructure Stock

Despite accounting for a wide range of individual, regional and country level characteristics, we cannot preclude that various sources of endogeneity may plague our analysis. The development of infrastructure and the evolution of trust levels may both be driven by unobservable regional characteristics. Moreover, increased levels of interpersonal and political trust may positively influence the level of cooperation at the regional level, which can be reflected in better regional conditions, infrastructure being among them.

To this end, we pursue an instrumental variable approach, where we use the pre-existing Roman network (McCormick et al., 2013) as our instrument for the modern level of infrastructure. Since the Romans introduced the first program of planned road-building in the year 43 AD, roads have enabled the transport of goods and people, facilitated industrialization and inspired adventure and brought people closer. The rational behind using this instrument lies into the idea advanced by Baum-Snow et al. (2017) according to them, it is feasible the construction of a modern and low cost infrastructure network whether it is planned upon or next to an older network. The authors argue that the influences of the instrument should be on the location and configuration of the modern transportation network. They use the infrastructure network of 1962 to cause exogenous variation. More recent papers follow this identification strategy and build on this intuition. Zheng and Kahn (2013), Baum-Snow et al. (2018) and Dong et al. (2020) rely their empirical strategies on the same argument. Likewise, Zheng and Kahn (2013) and Dong et al. (2020) use the railway network of 1961 to instrument for the high speed rail network in China. Close to our first identification strategy

Figure 2: Stock of Major Roman Road Network



Notes: This Figure presents the stock of layer units of the major Roman road network for the NUTS1 regions. Authors' computations. Source: McCormick et al. (2013)

are several papers which use Roman road network as an instrument such as the paper by Àngel Garcia-López (2012) instrumenting for the the nearest highway ramp and the distance to the nearest railroad station in the case of Barcelona, Percoco (2016) and Bottasso et al. (2022) instrumenting for highways in the case of Italy and Àngel Garcia-López (2019) for highways in the case of European cities.

As it can be seen, Figure 2 illustrates the Roman network for all the European regions included in our sample. We construct the infrastructure stock of Roman roads at the Nuts 1 level using only the major roads since we are interested to instrument for railroads and railways as we are able to to compute the length of the line for each Nuts 1 region.

Overall, in order for our instrument to be a valid one we must be sure that Roman network components predict recent levels of trust only via their influences on the location and configuration of the modern transportation network, conditional on control variables (Baum-Snow et al., 2017). In addition, they cannot be correlated with unobserved variables that influence modern transportation networks and the recent evolution of interpersonal and political trust. The vast time difference between our recent proxy of trust and the pre-existing Roman roads networks, is our first argument to defend our instrumental variable approach. To further mitigate concerns regarding our identification strategy we follow the same approach as in Baum-Snow et al. (2017). Baum-Snow et al. (2017) use several control variables from 1982,

since it is the earliest year with county-level census data, to block potential channels between their instrument and the dependent variables. In line with this approach, we include in our regressions as an additional control the past level of trust (average based on the years 1981, 1990 and 1999) extracted from the EVS dataset. The results are included in the Appendix A, Table A.9 and Table A.10. The impact of motorways and railroads remains the same as in the benchmark analysis.

3.2.3 Identification 2: Immigrant Analysis (International Immigration)

While the multilevel nature of our analysis as well as our instrument we have adopted eliminates reverse causality concerns, yet we cannot eliminate simultaneity concerns. Therefore, we might be concerned that there is a set of omitted variables driving the variation in trust and the evolution of infrastructure at the regional level. In order to eliminate this concern, we rely on the epidemiological analysis (Fernández, 2011), exploiting variations in the trust levels of immigrants living in the same host country, coming from countries with different levels of infrastructure.

The analysis in this section employs data from eight waves of the European Social Survey (2004-2018) which allow us to trace immigrants. One element in the construction of the dataset is that the ESS provides us with an immigrant identifier that allows us to trace immigrants up to the second generation, as well as concrete information about the mother and father's country of origin. This element is crucial as we can exploit the event of immigration in order to explore the evolution of cultural traits. The identifying assumption is that when immigrants move to a host country their current attitudes are no longer directly affected by the economic or the institutional environment at the country of origin. Thus, any effect of the origin country on immigrants' attitudes operates indirectly via culture (Fernández and Fogli, 2009).

In particular, our analysis relies on a sub-sample of N=8160 first generation immigrants, who are coming from 31 non-European countries and currently reside in 34 European countries. First generation immigrants are defined as those individuals who were born in a different country and eventually moved to the host country. To identify the immigrants' country of origin, the analysis employs the individuals' country of origin. In our analysis, we use the first generation immigrants rather than the second generation immigrants in order to keep variation at the country of origin level.

As far as the key explanatory variables are concerned, they remain the same as in our benchmark analysis but now, the source and the level of infrastructure data are different. Precisely, we link the immigrants with the average level of infrastructure that they have experienced in the past. Eurostat data is not any longer useful as it is rather than recent

data thus, we use the World Infrastructure Stocks dataset from 1950 to 2005 (Canning, 1998; World Bank, 2006) instead. This dataset provides us with historical data on two types of infrastructure, railroads and railways. We associate each immigrant with the mean value of each type of infrastructure stock for the three years proceeding individuals' departure from the country of origin. We consider this as a good proxy of the quality of infrastructure during the time of individuals' departure, while the 3-year average eliminates any outliers due to year-specific conditions, e.g., a potential damage or large scale replacement.

In order to explore the effect of *origin* infrastructure on immigrants' trust towards people in the host country and towards *host* political institutions we adopt the following specification:

$$T_{ihot} = \alpha_0 + \alpha_1 I_o + \alpha_2' \mathbf{X}_i + \alpha_3 G_o + \alpha_4^{'} \mathbf{\Phi}_h + \alpha_5^{'} \mathbf{\Pi}_o + \alpha_6' \mathbf{R}_t + \varepsilon_{ihot}$$

Here, T_{ihot} denotes the political and interpersonal trust of individual i, residing in the host country h, coming from the origin country o, participating at the ESS round t. The vector T denotes one of trust variables: trust in other people, police, legal system and the composite index (P.C.A.) of political trust created using principal component analysis. Vector I_o represents the level of infrastructure stocks including i) railroads and ii) railways for the three years proceeding individuals' departure from the country of origin. The vector X_i includes a set of individual-level covariates that may also affect the level of trust: age, age squared, a gender indicator, place of residence and educational level fixed effects. We control also for the interest of the respondent i having an active role regarding the politics. G_o is GDP per capita in PPP of origin country as a measure of socioeconomic development. $\mathbf{\Phi}_h$ is a vector of host country fixed effects that captures all time invariant unobserved heterogeneity at the host country level. $\mathbf{\Pi}_o$ is a vector of origin country fixed effects that captures all time invariant unobserved heterogeneity at the origin country level. $\mathbf{R}_t$ is a vector of ESS round fixed effects aimed to capture round specific shocks that could affect individual responses. ε_{ihot} is an individual specific error term. The standard errors are corrected for double clustering at the dimension of the host country and country of origin.

3.2.4 Identification 3: Immigrant Analysis (Inter-regional Immigration)

In this section we conduct an inter-regional immigrant analysis in order to exploit variation in the trust levels of immigrants living in the same region, coming from regions with different levels of infrastructure, as to eliminate further identification concerns.

Our analysis in this section employs data from four waves of the European Values Survey (1981-2010). We use the EVS rather than the European Social Survey (ESS) as we do in our

benchmark analysis, as the EVS provides us with an immigrant identifier that allows to trace the individuals who moved to other regions after their 14 years of age, as well as additional information about the region where the individuals have migrated to (host region) and their region of origin.

More analytically, as far as the key explanatory variables, we use the same infrastructure stock variables as in the baseline specification, derived from the Eurostat. In particular, we use the average level of stocks of railways and railroads, taking into account the year when the individuals were 14 years old.

Thus, in order to explore the effect of *origin* infrastructure on immigrants' trust towards other people in the host region and towards *host* institutions at the regional level, we adopt the following specification:

$$C_{ihot} = \alpha_0 + \alpha_1 I_o + \alpha_2' \mathbf{X}_i + \alpha_3 G_o + \alpha_4^{'} \mathbf{\Phi}_h + \alpha_5^{'} \mathbf{\Pi}_o + \alpha_6' \mathbf{R}_t + \varepsilon_{ihot}$$

Here, C_{ihot} denotes the political and interpersonal trust of individual i, residing in the host region h, coming from the origin region o, participating at EVS wave t. The vector T denotes one of our trust variables: trust on other people, police, legal system and the composite index of political trust i.e., trust in politicians, political parties and country's national parliament. Vector I_o represents the average level of infrastructure stocks including i) railroads and ii) railways at the origin region the year when the individual was 14 years old. The vector X_i includes a set of individual-level covariates that may also affect the level of trust: age, age squared, a gender indicator, place of residence and educational level fixed effects. We control also for for the interest of the respondent i on having an active role regarding the politics. G_o is the regional GDP per capita in PPP-average value for the year when the individual was 14 year old. $\mathbf{\Phi}_h$ is a vector of host country fixed effects that captures all time invariant unobserved heterogeneity at the host country level. $\mathbf{\Pi}_o$ is a vector of origin country fixed effects that captures all time invariant unobserved heterogeneity at the origin country level. $\mathbf{R}_t$ is a vector of EVS wave fixed effects aimed to capture time specific shocks that could affect individual responses. ε_{ihot} is an individual specific error term. The standard errors are robust and clustered at the Nuts 1 regions.

4 Empirical Findings

4.1 Benchmark Specification

To assess the magnitude of our results we calculate the beta coefficients. Table 1 documents the effect of stocks of railways on several aspects of trust i.e., interpersonal and political trust. In all columns (1-4) we include the full set of individual and regional controls as well as ESS round and country fixed effects. Precisely, our findings suggest that the stock of the railways can significantly facilitate the exposure of people to new cultures which are able to shape the individuals' level of trust. More analytically, the results of the Table 1 suggest that individuals who live in regions with an extended railways network tend to trust other people, even more the legal system and the police as well as they trust the politicians, national parliament and the political parties. An 1 standard deviation increase in the stock of railways measured in km is associated with 0.02 standard deviations increase in trust on other people, 0.04 standard deviations increase in trust the legal system, 0.03 standard deviations in trust the police and an increase in trust the political institutions (i.e., politicians, country's parliament and political parties) by 0.03 standrad deviations, conducting a principal component analysis (P.C.A.). The results are significant at the 1% confidence level except for the trust in police which is significant at the 5% level. In practical terms this implies that an increase in the total length of railways of approximately 70 km is associated with approximately an 0.08 rise in the indices of trust. Or more concretely, an approximately 70 km expansion of motorways is associated with 0.01 rise in the index of trust.

Table 2 illustrates the effect of railroads on trust. Specifically, as it can be seen the length of the railroads can also significantly lead to an increase on interpersonal and political trust. The results suggest that the stocks of railroads lead individuals to trust other people, the legal system and the police and as well as the political institutions. An 1 standard deviation increase in railroads network measured in km makes individuals to trust more people by 0.03 standard deviations, trust more the legal system by 0.05 and the police by 0.05 standard deviations and last, trust the political institutions by 0.04 standard deviations, expressed by using the first principal component of trust in politicians, parliament and political parties. The results are significant at the 1% and 5% confidence level respectively.

As discussed in the introduction, one could use instead motor and rail density to capture the implications of infrastructure on trust. Though we have adopted a different benchmark specification, Tables A.12 and A.13 in the appendix use those alternative specifications. The results are qualitatively the same for both cases.

Table 1: Motorways and Trust - OLS Results

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Motorways	0.02***	0.04***	0.03**	0.03***
	[0.01]	[0.01]	[0.01]	[0.01]
Age of Respondent	-0.20***	-0.39***	-0.26***	-0.52***
	[0.04]	[0.04]	[0.03]	[0.03]
Age of Respondent^2	0.17***	0.34***	0.29***	0.49***
	[0.03]	[0.03]	[0.03]	[0.03]
GDP per Capita	0.07***	0.06***	0.03*	0.06***
	[0.02]	[0.01]	[0.01]	[0.02]
R-squared	0.17	0.22	0.17	0.25
Sample Size	282105	276655	280102	254211
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of motorways on trust for our sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of motorways is the infrastructure length of motorways over the period 2000-2016, age of the respondent and GDP per capita in PPP. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interested in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table 2: Railroads and Trust - OLS Results

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Railroads	0.03***	0.05***	0.05***	0.04**
	[0.01]	[0.02]	[0.02]	[0.02]
Age of Respondent	-0.19***	-0.39***	-0.26***	-0.51***
	[0.04]	[0.04]	[0.03]	[0.03]
Age of Respondent^2	0.16***	0.33***	0.29***	0.48***
	[0.03]	[0.03]	[0.03]	[0.03]
GDP per Capita	0.08***	0.07***	0.04**	0.06***
	[0.02]	[0.02]	[0.02]	[0.02]
R-squared	0.18	0.23	0.17	0.26
Sample Size	266228	261006	264285	238755
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of railroads on trust for our sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of Railroads is the infrastructure length of railways over the period 2000-2016, age of the respondent and GDP per capita in PPP.(iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table 3: Motorways and Trust - IV Results

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Motorways	0.02**	0.05***	0.03**	0.03*
	[0.01]	[0.02]	[0.01]	[0.02]
Age of Respondent	-0.20***	-0.39***	-0.26***	-0.52***
	[0.04]	[0.04]	[0.03]	[0.03]
Age of Respondent^2	0.17***	0.34***	0.29***	0.49***
	[0.03]	[0.03]	[0.03]	[0.03]
GDP per Capita	0.07***	0.06***	0.03*	0.06***
	[0.02]	[0.01]	[0.01]	[0.02]
F-First Stage	44.43	45.41	44.85	48.21
Sample Size	282105	276655	280102	254211
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of motorways on trust for our sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of motorways is the infrastructure length of motorways over the period 2000-2016. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Country and ESS round fixed effects are used.
Notes: (i) IV model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

4.2 IV Estimation Results

Table 3 represents the effect of stocks of railways on interpersonal and political trust using the pre-existing Roman network as an instrument for the modern level of infrastructure. The results remain significant and robust using the railways as the key explanatory variable in all columns (1)-(4) but the magnitude is less significant at the 5% confidence level for the trust on people and trust in political institutions.

Table 4 represents the effect of stocks of railroads on trust on people, legal system and police and political trust instrumented by existing Roman network. The results are significant at the 5% level for all the aspects of trust except for trust in political institutions which is insignificant.

4.3 International Immigrant Analysis

Tables 5 and 6 report the results from the international immigrant analysis. In order to eliminate the concern of omitted variables which is considered as a source of endogeneity, we exploit variations in the trust levels of immigrants living in the same host country, coming from countries with different levels of infrastructure. We follow the baseline specification,

Table 4: Railroads and Trust - IV Results

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Railroads	0.04**	0.08**	0.06**	0.05
	[0.02]	[0.03]	[0.03]	[0.03]
Age of Respondent	-0.19***	-0.39***	-0.26***	-0.51***
	[0.04]	[0.04]	[0.03]	[0.03]
Age of Respondent^2	0.16***	0.33***	0.29***	0.48***
	[0.03]	[0.03]	[0.03]	[0.03]
GDP per Capita	0.08***	0.07***	0.04**	0.07***
	[0.03]	[0.02]	[0.02]	[0.02]
F-First Stage	23.22	23.72	23.43	24.81
Sample Size	266228	261006	264285	238755
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of railroads on trust for our sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of Railroads is the infrastructure length of railroads over the period 2000-2016. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Country and ESS round fixed effects are used.
Notes: (i) IV model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

thus all columns (1-4) control for the full set of individual controls as well as host country, origin country and ESS round fixed effects. They also control for the average level of GDP per capita in PPP at the origin country.

Table 5 confirms the findings of benchmark analysis, using as key explanatory variable the stocks of railways. An 1 standard deviation increase in the length of railways is associated with a 0.01 standard deviations increase in trust other people, 0.05 standard deviations increase in trust in legal system, 0.06 standard deviations increase in trust in the police and last, 0.08 standard deviations increase in political trust. Although Table 5 confirms the findings of the benchmark analysis for the sample of first generation immigrants, we lose significance in the variables of trust on other people (column 1) and trust in the legal system (column 2). Thus, the main results that go through are the results associated with political trust and trust in police which are significant at the 5% level.

Table 6 represents the results of the baseline specification having now as a key explanatory variable the stocks of railroads. The findings in Table 6 suggest that they are in accordance with the benchmark results as reported in Table 2.

Table 5: Motorways and Trust - International Immigrant Analysis

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Motorways	0.01	0.05	0.06**	0.08**
	[0.03]	[0.05]	[0.02]	[0.03]
Age of Respondent	0.02	-0.13***	-0.02	-0.17**
	[0.09]	[0.05]	[0.06]	[0.07]
Age of Respondent^2	0.00	0.15***	0.09	0.22***
	[0.08]	[0.04]	[0.06]	[0.06]
GDP per Capita	-0.02	0.06**	0.08***	0.10***
	[0.03]	[0.03]	[0.03]	[0.03]
R-squared	0.11	0.14	0.16	0.22
Sample Size	7467	7251	7394	6872
Host Country FE	Yes	Yes	Yes	Yes
Origin Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of motorways on trust for our inter national immigrant sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of motorways comes from the infrastructure stocks dataset of (Canning, 1998; World Bank, 2006) and is the infrastructure length of motorways from 1950 to 2005. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, double clustered at the host country and country of origin, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table 6: Railroads and Trust - International Immigrant Analysis

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Railroads	0.04***	0.08***	0.02*	0.02**
	[0.01]	[0.02]	[0.01]	[0.01]
Age of Respondent	0.04	-0.06	-0.00	-0.05
	[0.07]	[0.05]	[0.04]	[0.06]
Age of Respondent^2	-0.04	0.08**	0.07*	0.08
	[0.06]	[0.04]	[0.03]	[0.06]
GDP per Capita	0.03	0.08***	0.07***	0.12***
	[0.03]	[0.03]	[0.03]	[0.03]
R-squared	0.11	0.11	0.12	0.19
Sample Size	9209	8924	9139	8373
Host Country FE	Yes	Yes	Yes	Yes
Origin Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of railroads on trust for our inter national immigrant sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of Railroads comes from the infrastructure stocks dataset of (Canning, 1998; World Bank, 2006) and is the infrastructure length of railways from 1950 to 2005. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

4.4 Inter-regional Immigrant Analysis

Tables 7 and 8 report the results from the inter-regional immigrant analysis. To eliminate further identification concerns, we exploit variations in the trust levels of immigrants living in the same host region, coming from regions with different levels of infrastructure. We follow the baseline specification, thus all columns (1-4) control for the full set of individual controls as well as host country, origin country and EVS wave fixed effects. They also control for the average regional level of income per capita at the origin region.

Table 7 confirms the findings of benchmark analysis, using as a key explanatory variable the stocks of railways when the individuals were 14 years old. An 1 standard deviation increase in the stocks of railways is associated with a 0.01 standard deviations increase in trust on other people, 0.03 standard deviations increase in trust in the legal system, 0.07 standard deviations increase in trust in the police and last, 0.07 standard deviations increase in trust in the political institutions.

Table 7: Motorways and Trust - Inter-regional Immigrant Analysis

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Motorways	0.01	0.03*	0.07***	0.07***
	[0.01]	[0.02]	[0.02]	[0.02]
Age of Respondent	0.08*	-0.12	-0.12	-0.14
	[0.05]	[0.10]	[0.10]	[0.12]
Age of Respondent^2	-0.10**	0.15	0.17*	0.18
	[0.05]	[0.10]	[0.09]	[0.12]
GDP per Capita	0.00	0.04**	0.02	0.03
	[0.02]	[0.02]	[0.03]	[0.02]
R-squared	0.20	0.16	0.12	0.19
Sample Size	4523	4547	4636	4420
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of motorways on trust for our inter regional immigrant sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of motorways is the infrastructure length of motorways over the period 2000-2016. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

In Table 8, we use now as our explanatory variable the stocks of railroads when the individuals were 14 years old. An 1 standard deviation increase in the stocks of railroads is associated with a 0.02 standard deviations rise in trust on people, 0.06 standard deviations increase in trust in the legal system, 0.10 standard deviations rise in trust in the police and

0.09 standard deviations increase in trust in the political system. However, the main results that go through are the results associated with political trust and trust in police which are significant at the 1% confidence level.

Table 8: Railroads and Trust - Inter-regional Immigrant Analysis

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Railroads	0.02	0.06*	0.10***	0.09***
	[0.02]	[0.03]	[0.04]	[0.03]
Age of Respondent	0.04	-0.09	-0.13	-0.11
	[0.05]	[0.10]	[0.10]	[0.12]
Age of Respondent^2	-0.06	0.12	0.18*	0.16
	[0.05]	[0.11]	[0.09]	[0.12]
GDP per Capita	0.00	0.04**	0.01	0.04*
	[0.02]	[0.02]	[0.03]	[0.02]
R-squared	0.22	0.17	0.15	0.20
Sample Size	4260	4270	4359	4152
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of railroads on trust for our inter regional immigrant sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of Railroads is the infrastructure length of railroads over the period 2000-2016. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interested in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

4.5 IV vs Benchmark Analysis

It is mentioned earlier in the paper that various sources of endogeneity may undermined our analysis. The literature about transportation infrastructure and economic outcomes confirms the existence of endogeneity and several different methods have been used in the past (Baum-Snow and Ferreira, 2015). In our analysis, we employ as an instrument the Roman roads, widely used in transportation literature, and two epidemiological set ups used in the socio-economic literature.

Regarding our IV strategy based on the Roman road network, we provide additional findings in the Appendix A, Table A.9 and Table A.10, where we add as a control the past level of trust in line with the methodology proposed in Baum-Snow et al. (2018). Our results are similar to the benchmark analysis.

Based on our findings, we report that the magnitude of the effect of motorways and railroads on interpersonal and political trust across the OLS and our various identification strategies to be similar. It appears that the level of significance to be slightly lower in the IV

estimates. By definition standard errors are much larger in an IV estimate. However, the signs and magnitudes are not fundamentally different from the corresponding OLS ones. For instance, in the Table A.11 in the Appendix A, we test the hypothesis that the coefficient of motorways on the PCA of political trust from Table 1 and column (4) to be statistically significant different from the coefficient of motorways from the international immigrant analysis, Table 5 column (4), and based on our test we do not find evidence supporting this hypothesis. We particularly choose these two coefficients from all our estimates as they appear to have the largest difference in terms of magnitude. Given that, we believe that our OLS estimates can estimate correctly the impact of railroads and motorways on interpersonal and political trust.[3]

5 Mechanism: Access to Trust

The benchmark analysis established a relationship between transportation infrastructure and interpersonal and political trust. This section attempts to shed light on the underlying mechanism behind our main findings. We argue that infrastructure stock provides a higher connectivity to the people by allowing them to travel and become exposed to new cultures.

We exploit the market access framework proposed by Donaldson and Hornbeck (2016), and then used widely in the empirical literature (see Aggarwal et al. (2018), Jedwab and Storeygard (2022), Melander (2020), Coşar et al. (2022) and Perlman (2017) among others) to introduce as a mechanism the access to trust. Our aim is to associate the average level of trust of a given Nuts 2 region with the level of trust of the all the other regions weighted by the transportation cost to reach to them. We believe that the mobility of individuals is the key mechanism. Our mechanism lies on the prospect that by lowering the restrictions related to traveling, people can freely move among regions and to become exposed in new ideas and cultures. The movement of people in a given region can be thought of as a travel cost-weighted function of movement people in other regions. After they become connected to regions with high levels of trust, they can learn to be more open minded than before and to establish beneficial relationships and collaboration for the economy as a whole.

Following the existing literature we define access to trust as the fraction:

$$AT_i = \sum_{j \neq i} Cost_{ij}^{-\theta} \times T_j$$

in which the denominator is a cost function and the numerator is a variable of interest. Our measure of access to trust relates very closely to the peer effects literature. Essentially, every

[3]For a similar explanation regarding the coefficients from different estimations see Steijn et al. (2022).

region is a "peer" of every other region, where the strength of the connection is determined by the transportation infrastructure linking them. The term $Cost_{ijt} \times T_j$ captures the access to and influence from the average level of trust in region j on region i. The lower the cost or the higher the average level of trust in j, a greater peer effect is expected on i by j, thereby increasing the probability of contagion. Our mechanism is close to the mechanism proposed by Melander (2020) about the spatial contagion of social movements, where the author uses the average of movement memberships in all other municipalities.

For our paper, we extract data about the cost from Weiss et al. (2018) for the year 2015 which is a raster file that provides us with information about the travel time to the big urban centers. However, we hypothesize the travel time as the cost to move from one region to the other. Figure A.1 presents the raster file we use for the cost data. The travel time was computed based on the the major and minor road network. In order to construct our least cost paths, we divide Europe into $0.02^o \times 0.02^o$ grids. Then we fill in these grids with the average time from the raster file. Next, we create a new raster file which we use to compute the least cost paths. Figure A.2 represents the least cost paths for eastern Austria (AT1) region. Finally, we compute the matrix cost for the rest NUTS 1 regions. We are ending up with a sample of 113 NUTS 1 regions. This means 12.769 combinations for the cost matrix.

$$C_t = \begin{vmatrix} Cost_{11}^{-\theta} & Cost_{12}^{-\theta} & \cdots & Cost_{1n}^{-\theta} \\ Cost_{21}^{-\theta} & Cost_{22}^{-\theta} & \cdots & Cost_{2n}^{-\theta} \\ \vdots & \vdots & \ddots & \vdots \\ Cost_{n1}^{-\theta} & Cost_{n2}^{-\theta} & \cdots & Cost_{nn}^{-\theta} \end{vmatrix}$$

Then, the estimating equation is:

$$T_{ij} = \alpha_0 + \alpha_1 AT_j + \alpha_2 X_i + \alpha_3 G_i + \alpha_4 E_i + \alpha_5 P_i + \alpha_6 C_v + \alpha_7 R_t + \epsilon_i$$

where, T is an index of the level of trust of individual i, residing in region j, who participated in the tth ESS round. The vector T denotes one of our trust variables: trust in other people, police, legal system and the composite index of political trust created using principal components analysis. Our main independent variable is the access to trust, AT_j. We take into account the individual characteristics by applying the appropriate controls X_i such as age, age squared and gender. G_j is regional GDP per capita in PPP as a measure of development. E_i is a vector of place of place of residence and educational fixed effect for the respondent i. P_i is a vector of fixed effects regarding the wiliness of the respondent i to have

Table 9: Mechanism

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Access to Interpersonal Trust	0.05**			
	[0.03]			
Access to Legal Trust		0.01		
		[0.01]		
Access to Police Trust			0.03**	
			[0.01]	
Access to Political Trust				0.04***
				[0.01]
Age of Respondent	-0.21***	-0.41***	-0.21***	-0.55***
	[0.03]	[0.04]	[0.03]	[0.03]
Age of Respondent^2	0.18***	0.36***	0.25***	0.53***
	[0.03]	[0.03]	[0.03]	[0.03]
GDP per Capita	0.05**	0.06***	0.02	0.04**
	[0.02]	[0.02]	[0.02]	[0.02]
R-squared	0.13	0.16	0.12	0.22
Sample Size	150356	147775	149454	134932
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of access to different measures of trust on trust for our sample. More specifically, (i) the trust of citizens to: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) We define our four measures of access to trust for a given region i as a fraction which has as a numerator the trust of all the other regions except i divided by the cost to reach to these regions from i using the road network. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside), age of the respondent, age squared and GDP per capita in PPP and if the respondent is interested in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

an active role for the politics. C_v is a vector of country fixed effects that controls for all time invariant unobserved heterogeneity at the country level. R_t is a vector of ESS round fixed effects aimed to capture round specific shocks that could affect individual responses. ϵ_i is an individual specific error term. We estimate robust standard errors, clustered at the NUTS 1 level, in all our regressions.

Table 9 reports the results using the access to trust as a mechanism using the specification as described above. The findings suggest that an 1 standard deviation increase in the access to several aspects of trust (i.e., interpersonal trust, legal trust, police trust and political trust) is associated with 0.05 standard deviations increase in trust on other people, 0.03 standard deviations rise in trust in the police significant at the 5% and 0.04 standard deviations rise in trust in political institutions i.e., politicians, political parties and parliament significant at the 1% confidence level. Finally, in the Appendix A, Table A.14, we repeat the same analysis with the inclusion of the trade elasticity 8.22 proposed by Donaldson and Hornbeck (2016) and our results remain the same in terms of magnitude and significance.

6 Conclusions

In this paper, we establish the interplay between the infrastructure (i.e., stocks of railroads and railways) and interpersonal and political trust. Individuals who live in regions with extended railways and railroads network tend to trust more other people, even more the legal system and the police as well as they trust the politicians, national parliament and the political parties, suggesting that the infrastructure can significantly facilitate the exposure of people to new cultures which are able to shape the individuals' levels of trust. Additionally, we show that our results remain robust when we conduct an international immigrant analysis as a natural experiment, exploiting variations in the trust levels of immigrants. Our findings survive and demonstrate that first generation immigrants who are coming from countries with higher levels of infrastructure, they trust more other people and political institutions in their (host) countries. Similarly, we conduct an inter-regional immigrant analysis. Furthermore, in order to eliminate endogeneity concerns, we adopt the pre-existing Roman network (McCormick et al., 2013) as an instrument for the modern level of infrastructure. However, there are a potential mechanism driving our results. This mechanism is relying on having access to several aspects of trust (interpersonal and political trust) due to having easier access to market and other regions. Precisely, it is suggested that access to several aspects of trust is associated with higher levels of trust on people and political institutions.

The policy implications of our findings are clear as they highlight that even nowadays, where infrastructure is already very extensive, nevertheless it still has a significant effect on individual's attitudes. Infrastructure is frequently part of political decisions aimed to boost the economic conditions, creating new jobs and mitigating inequalities into the society. Our study sheds light to a novel role of further expanding of the infrastructure which is closely related to interpersonal and political levels of trust, making individuals more trustful to others and political institutions and also to new ideas through diminishing the "physical" distances and enhancing the social proximity and face-to-face interactions (Boschma, 2005). Thus, policy-makers should consider all these social benefits as a powerful weapon in their hands, trying to invest more in infrastructure and trustiness that they both could promote knowledge spillovers and reduce regional disparities which is a hot topic in the research agenda.

We have to acknowledge specific limitation mainly related to the development of the ICT technologies. It is true that the internet facilitates the development of long distance relationships by establishing informal social interactions (Diemer and Regan, 2022). However, as it is pointed out by other scholars in the field, face-to-face interactions are still crucial in finding and evaluating new collaborators as they promote trust, and joint work (Catalini et al., 2020).

Collaborations within firms, research centres and universities remain crucial (Crescenzi et al., 2016). The reduction of communication costs, complements and not substitutes the remote interactions (Catalini et al., 2020).

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A Online Appendix

A.1 ESS Variables

Trust in other people. It corresponds to the question "Using this card, generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted". 0 means you do not trust other people at all, and 10 means you have complete trust.

Trust in the legal system. It corresponds to the question "Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. Firstly...the legal system?". 0 means you do not trust police at all, and 10 means you have complete trust.

Trust in the police. It corresponds to the question "Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. Firstly...the police?". 0 means you do not trust police at all, and 10 means you have complete trust.

Trust in Parties. "Trust in Political Parties" corresponds to the question "Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. Firstly [country]'s political parties?".

Trust in Politicians. "Trust in Politicians" corresponds to the question "Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. Firstly [country]'s politicians?".

Trust in Parliament. "Trust in Parliament" corresponds to the question "Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. Firstly [country]'s parliament?".

Age. The age of the respondent.

Age Squared. The age of the respondent.

Gender. The gender of the respondent.

Educational background. Individuals correspond to the question "What is the highest level of education you have achieved?". 1 means less than lower secondary education and 7 means tertiary education completed.

Domicile. Individuals describe where they live; 1 is associated with living in a big city, 2 live in the suburbs or outskirts of big city, 3 live in a town or small city, 4 live in a country village and 5 live in a farm or home in the countryside.

Interested in Politics. Individuals correspond to the question "How interested in politics are you?". 1 means very interested and 4 means not at all interested.

A.2 Eurostat Variables

Stock of railways. Stock of railways divided by 1000 is the infrastructure length of railways over the period 2000-2016, measured in kilometers.

Stock of Railroads. Stock of Railroads divided by 1000 is the infrastructure length of railroads over the period 2000-2016, measured in kilometers.

GDP per capita in PPP. Gross domestic product converted to international dollars using purchasing power parity rates and divided by total population.

A.3 EVS Variables

Trust in other people. It corresponds to the question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?". 1 means that most people can be trusted, and 2 means you need to be very careful.

Trust in the legal system. It corresponds to the question "How much confidence you have in the legal system?" 1 means no trust and 4 means full trust.

Trust in the police. It corresponds to the question "How much confidence you have in the police?" 1 means no trust and 4 means full trust.

Trust in Parties. It corresponds to the question "How much confidence you have in political parties?" 1 means no trust and 4 means full trust.

Trust in Politicians. It corresponds to the question "How much confidence you have in politicians?" 1 means no trust and 4 means full trust.

Trust in Parliament. It corresponds to the question "How much confidence you have in Parliament?" 1 means no trust and 4 means full trust.

Age. The age of the respondent.

Age Squared. The age of the respondent.

Gender. The gender of the respondent.

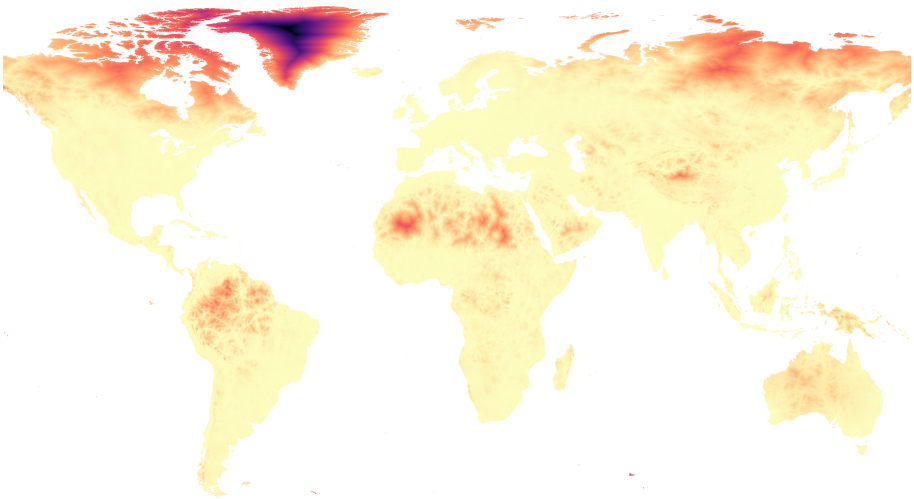
Educational level. Individuals correspond to the question "What is the highest educational level that you have attained?". 0 means no education attained and 6 means tertiary education attained.

Size of the town. Individuals respond about the size of the town they live. 1 is associated with a town's size below 2000 and 8 is associated with a town's size above 500.000 inhabitants.

Interested in Politics. Individuals correspond to the question "Do you belong to political parties/groups?". 0 means no and 1 means yes.

A.4 Supplementary Tables and Figures

Figure A.1: Global Accessibility in 2015



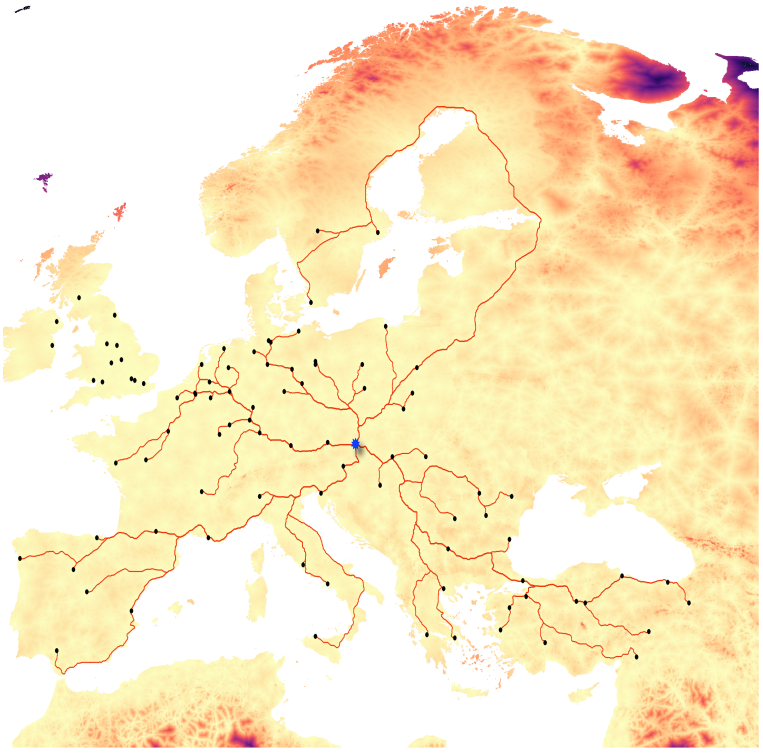
Notes: This Figure presents the raster file of global accessibility to cities based on the road network for the year 2015. Source: Nelson (2008)

Table A.1: First Stage Results - Major Roman Roads and Stock of Infrastructure

Dep. var. =	Stock of Motorways	Stock of Railroads
	(1)	(2)
Stock of Major Roman Roads	0.71***	0.43***
	[0.11]	[0.09]
Age of Respondent	-0.01*	-0.01**
	[0.00]	[0.00]
Age of Respondent^2	0.01	0.01
	[0.00]	[0.00]
GDP per Capita	0.15	-0.06
	[0.11]	[0.11]
Sample Size	282105	266228
Country FE	Yes	Yes
Gender FE	Yes	Yes
Education FE	Yes	Yes
ESS round FE	Yes	Yes
Location FE	Yes	Yes
Politics FE	Yes	Yes

Summary: This table presents the first stage results of Table 3 and Table 4. Stock of Major Roman Roads is the infrastructure length of major Roman roads during Roman Empire. Stock of railways is the infrastructure length of railways over the period 2000-2016, stock of Railroads is the infrastructure length of railroads over the period 2000-2016, age of the respondent and GDP per capita in PPP. We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. In addition, we apply country and ESS round fixed effects.
Notes: (i) First stage results with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Figure A.2: Least Cost Path for AT1 region



Notes: We illustrate the least cost path from AT1 region to all the other regions in our sample. Authors' computations.

Table A.2: Summary Statistics for the Tables 1 and 3

Variable	Obs	Mean	Std. Dev.	Min	Max
Most people can be trusted or you can't be too careful	283167	5.04	2.44	0	10
Trust in the legal system	277680	5.06	2.65	0	10
Trust in the police	281151	6.04	2.5	0	10
PCA of Political Trust	255030	.05	1.58	-2.57	4.46
Stock of Motorways	283860	807.81	719.36	0	3865.65
Stock of Roman Roads	283860	456564	727396.8	0	4330648
Age of the respondent	282792	48.71	18.71	14	110
Age of the respondentˆ2	282792	2723.36	1878.41	196	12100
GDP per Capita	283860	24845	9635.6	7941.18	63282.35
ESS round	283860	5.43	2.44	1	9
Domicile, respondent's description	283860	2.97	1.2	1	5
Men	283860	.47	.5	0	1
Highest level of education, ES - ISCED	283860	3.73	1.79	1	7
How interested in politics	283860	2.63	.9	1	4

Table A.3: Summary Statistics for the Tables 2 and 4

Variable	Obs	Mean	Std. Dev.	Min	Max
Most people can be trusted or you can't be too careful	267207	5.04	2.44	0	10
Trust in the legal system	261953	5.02	2.65	0	10
Trust in the police	265254	6.02	2.51	0	10
PCA of Political Trust	239497	.05	1.58	-2.57	4.46
Stock of Railroads	267881	3206.59	2229.27	0	9570.82
Stock of Roman Roads	267881	450372.6	746952.9	0	4330648
Age of the respondent	266896	48.55	18.71	14	110
Age of the respondentˆ2	266896	2707.71	1874.12	196	12100
GDP per Capita	267881	24679.24	9798.97	7941.18	63282.35
ESS round	267881	5.32	2.45	1	9
Domicile, respondent's description	267881	2.97	1.21	1	5
Men	267881	.47	.5	0	1
Highest level of education, ES - ISCED	267881	3.74	1.79	1	7
How interested in politics	267881	2.63	.89	1	4

Table A.4: Summary Statistics for the Table 5

Variable	Obs	Mean	Std. Dev.	Min	Max
Most people can be trusted or you can't be too careful	10912	5.18	2.36	0	10
Trust in the legal system	10561	5.7	2.63	0	10
Trust in the police	10783	6.14	2.63	0	10
PCA of Political Trust	10055	.23	1.56	-2.66	4.23
Stock of Motorways	10960	228840.5	487157.8	62.92	3799246
Age of the respondent	10893	44.56	15.63	15	99
Age of the respondentˆ2	10893	2229.85	1520.43	225	9801
GDP per Capita	9081	10875.49	12728.56	155.93	85233.59
ESS round	10960	5.55	2.13	2	9
Domicile, respondent's description	10928	2.42	1.22	1	5
Men	10955	.46	.5	0	1
Highest level of education, ES - ISCED	9288	4.11	1.95	1	7
How interested in politics	10915	2.62	.97	1	4

Table A.5: Summary Statistics for the Table 6

Variable	Obs	Mean	Std. Dev.	Min	Max
Most people can be trusted or you can't be too careful	13627	5.16	2.36	0	10
Trust in the legal system	13169	5.82	2.57	0	10
Trust in the police	13483	6.29	2.54	0	10
PCA of Political Trust	12428	.28	1.54	-2.66	4.23
Stock of Railroads	13688	16487.18	31903.23	0	332428.8
Age of the respondent	13617	46.93	16.61	13	100
Age of the respondentˆ2	13617	2478.08	1701.58	169	10000
GDP per Capita	11114	12185.08	13071.12	134.57	85233.59
ESS round	13688	5.5	2.16	2	9
Domicile, respondent's description	13657	2.47	1.23	1	5
Men	13684	.47	.5	0	1
Highest level of education, ES - ISCED	11659	3.91	1.99	1	7
How interested in politics	13632	2.61	.98	1	4

Table A.6: Summary Statistics for the Table 7

Variable	Obs	Mean	Std. Dev.	Min	Max
People can be trusted	4585	1.45	.5	1	2
Trust in the legal system	4599	2.54	.82	1	4
Trust in the police	4703	2.8	.77	1	4
PCA of Political Trust	4475	.05	1.47	-2.44	4.26
Stock of Motorways	4760	956.85	782.62	0	3865.65
Age of the respondent	4748	52.85	17.33	18	100
Age of the respondentˆ2	4748	3093.83	1857.66	324	10000
GDP per Capita	4760	26789.34	9433.08	7941.18	56178.57
Size of town where interview was conducted	4760	4.77	2.28	1	8
Men	4760	.44	.5	0	1
Educational level respondent: ISCED code three digits	4760	349.66	144.75	0	600
Do you belong to: political parties/groups	4701	.05	.23	0	1

Table A.7: Summary Statistics for the Table 8

Variable	Obs	Mean	Std. Dev.	Min	Max
People can be trusted	4313	1.44	.5	1	2
Trust in the legal system	4321	2.52	.83	1	4
Trust in the police	4418	2.78	.78	1	4
PCA of Political Trust	4202	.07	1.48	-2.44	4.26
Stock of Railroads	4472	3343.91	2226.59	0	9570.82
Age of the respondent	4461	52.77	17.36	18	100
Age of the respondentˆ2	4461	3085.65	1858.42	324	10000
GDP per Capita	4472	26031.43	9601.41	7941.18	56178.57
Size of town where interview was conducted	4472	4.79	2.27	1	8
Men	4472	.44	.5	0	1
Educational level respondent: ISCED code three digits	4472	347.38	147.85	0	600
Do you belong to: political parties/groups	4421	.05	.23	0	1

Table A.8: Summary Statistics for the Table 9

Variable	Obs	Mean	Std. Dev.	Min	Max
Most people can be trusted or you can't be too careful	150812	4.93	2.35	0	10
Access to Interpersonal Trust	151099	.19	.32	0	1.43
Trust in the legal system	148217	5	2.56	0	10
Access to Legal Trust	151099	.21	.36	0	1.48
Trust in the police	149908	6.05	2.41	0	10
Access to Police Trust	151099	.24	.4	0	1.67
PCA of Political Trust	135282	.01	1.55	-2.57	4.46
Access to Political Trust	151099	.2	.37	0	1.58
Age of the respondent	150641	49.06	18.72	14	105
Age of the respondentˆ2	150641	2756.86	1890.11	196	11025
GDP per Capita	151099	25286.75	8846.02	7941.18	56178.57
ESS round	151099	5.61	2.46	1	9
Domicile, respondent's description	151099	2.99	1.17	1	5
Men	151099	.47	.5	0	1
Highest level of education, ES - ISCED	151099	3.67	1.84	1	7
How interested in politics	151099	2.58	.92	1	4

Table A.9: Motorways and Trust - IV Results Robustness

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Motorways	0.03***	0.04***	0.04**	0.03**
	[0.01]	[0.02]	[0.02]	[0.02]
Age of Respondent	-0.18***	-0.34***	-0.21***	-0.50***
	[0.05]	[0.04]	[0.04]	[0.03]
Age of Respondent^2	0.14***	0.29***	0.25***	0.47***
	[0.04]	[0.04]	[0.03]	[0.03]
GDP per Capita	0.06***	0.06***	0.03	0.05***
	[0.02]	[0.02]	[0.02]	[0.02]
Past Level of Trust	-0.05**	-0.00	-0.00	-0.01
	[0.02]	[0.03]	[0.03]	[0.03]
F-First Stage	87.73	87.88	87.79	89.11
Sample Size	174991	171935	173951	157783
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of railways on trust for our sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of railways is the infrastructure length of railways over the period 2000-2016, age of the respondent and GDP per capita in PPP. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Furthermore, in this robustness test we add as a control the past level of trust at the Nuts1 level. In addition, we apply country and ESS round fixed effects.
Notes: (i) IV model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table A.10: Railroads and Trust - IV Results

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Stock of Railroads	0.04***	0.07**	0.06**	0.05*
	[0.02]	[0.03]	[0.03]	[0.03]
Age of Respondent	-0.17***	-0.33***	-0.20***	-0.48***
	[0.05]	[0.04]	[0.04]	[0.03]
Age of Respondent^2	0.13***	0.28***	0.24***	0.46***
	[0.04]	[0.04]	[0.04]	[0.03]
GDP per Capita	0.07***	0.06**	0.04*	0.05**
	[0.02]	[0.03]	[0.02]	[0.02]
Past Level of Trust	-0.03	-0.00	0.00	-0.00
	[0.03]	[0.03]	[0.03]	[0.03]
F-First Stage	53.04	53.15	53.07	54.92
Sample Size	164646	161720	163627	147671
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of railroads on trust for our sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of Railroads is the infrastructure length of railroads over the period 2000-2016, age of the respondent and GDP per capita in PPP. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Furthermore, in this robustness test we add as a control the past level of trust at the Nuts1 level. In addition, we apply country and ESS round fixed effects.
Notes: (i) IV model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table A.11: Testing for the equality of the coefficients

test [M2_mean]road_variable = [M1_mean]motorways
- [M1_mean]motorways + [M2_mean]road_variable = 0
chi2(1) = 1.38
Prob > chi2 = 0.2405

Summary: This table compares the coefficient from the column (4) of Table 1 with the coefficient of column (4) of Table 5.

Table A.12: Motor Density and Trust - OLS Results

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Motor Density	0.02***	0.00	0.01***	0.01***
	[0.00]	[0.00]	[0.00]	[0.00]
Age of Respondent	-0.20***	-0.39***	-0.26***	-0.52***
	[0.04]	[0.04]	[0.03]	[0.03]
Age of Respondent^2	0.17***	0.34***	0.29***	0.49***
	[0.03]	[0.03]	[0.03]	[0.03]
GDP per Capita	0.09***	0.06***	0.03**	0.07***
	[0.02]	[0.02]	[0.02]	[0.02]
R-squared	0.17	0.22	0.17	0.25
Sample Size	282105	276655	280102	254211
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of motorways density on trust for our sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of motorways is the infrastructure length of motorways over the period 2000-2016 divided by the area of a Nuts 1 regions, age of the respondent and GDP per capita in PPP. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interested in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table A.13: Rail Density and Trust - OLS Results

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Rail Density	0.02***	0.01	0.01***	0.01***
	[0.00]	[0.00]	[0.00]	[0.00]
Age of Respondent	-0.19***	-0.39***	-0.26***	-0.52***
	[0.04]	[0.04]	[0.03]	[0.03]
Age of Respondent^2	0.16***	0.33***	0.29***	0.48***
	[0.03]	[0.03]	[0.03]	[0.03]
GDP per Capita	0.09***	0.06***	0.04**	0.07***
	[0.02]	[0.02]	[0.02]	[0.02]
R-squared	0.18	0.23	0.17	0.26
Sample Size	266228	261006	264285	238755
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of rail density on trust for our sample. More specifically, (i) the trust of citizens in: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) Stock of Rail density is the infrastructure length of railways over the period 2000-2016 divided by the area of a Nuts 1 regions, age of the respondent and GDP per capita in PPP.(iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside) and if the respondent is interesting in politics. Country and ESS round fixed effects are used.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table A.14: Mechanism with the value of trade elasticity of Donaldson and Hornbeck

Dep. var. =	Trust on People	Trust in the Legal System	Trust in the Police	PCA of Political Trust
	(1)	(2)	(3)	(4)
Access to Interpersonal Trust	0.06***			
	[0.01]			
Access to Legal Trust		0.01*		
		[0.00]		
Access to Police Trust			0.03***	
			[0.00]	
Access to Political Trust				0.04***
				[0.01]
Age of Respondent	-0.21***	-0.41***	-0.21***	-0.55***
	[0.03]	[0.04]	[0.03]	[0.03]
Age of Respondent^2	0.18***	0.36***	0.25***	0.52***
	[0.03]	[0.03]	[0.03]	[0.03]
GDP per Capita	0.04**	0.06***	0.02	0.05***
	[0.02]	[0.02]	[0.01]	[0.02]
R-squared	0.13	0.16	0.12	0.22
Sample Size	150356	147775	149454	134932
Country FE	Yes	Yes	Yes	Yes
Gender FE	Yes	Yes	Yes	Yes
Education FE	Yes	Yes	Yes	Yes
ESS round FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Politics FE	Yes	Yes	Yes	Yes

Summary: This table presents the effect of access to different measures of trust on trust for our sample. More specifically, (i) the trust of citizens to: a) other people, b) the legal system, c) the police and d) the principal component analysis of political trust. (ii) We define our four measures of access to trust for a given region i as a fraction which has as a numerator the trust of all the other regions except i divided by the cost to reach to these regions from i using the road network. (iii) We control for the educational background of the respondent, the gender, place of residence (Big city, suburbs or outskirts of big city, town or small city, country village and farm or home in countryside), age of the respondent, age squared and GDP per capita in PPP and if the respondent is interested in politics. In addition, we apply country and ESS round fixed effects.
Notes: (i) OLS model with robust standard errors, clustered at the NUTS1 level, are reported in parenthesis. (ii) *** denotes statistical significance at 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

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