BANCA D'ITALIA

EUROSISTEMA

Temi di Discussione

(Working Papers)

Inequality and trust: new evidence from panel data

by Guglielmo Barone and Sauro Mocetti

September 2014

Number 973

BANCA D'ITALIA
EUROSISTEMA

Temi di discussione

(Working papers)

Inequality and trust: new evidence from panel data

by Guglielmo Barone and Sauro Mocetti

Number 973 - September 2014

The purpose of the Temi di discussione *series is to promote the circulation of working papers prepared within the Bank of Italy or presented in Bank seminars by outside economists with the aim of stimulating comments and suggestions.*

The views expressed in the articles are those of the authors and do not involve the responsibility of the Bank.

ISSN 1594-7939 (print)
ISSN 2281-3950 (online)

Printed by the Printing and Publishing Division of the Banca d'Italia

INEQUALITY AND TRUST: NEW EVIDENCE FROM PANEL DATA

by Guglielmo Barone* and Sauro Mocetti*

Abstract

The relationship between inequality and trust has attracted the interest of many scholars, who have found a negative relationship between the two variables. However, the causal link from inequality to trust has by no means been identified and the existing empirical evidence remains weak, as omitted variable bias, reverse causation and/or measurement error might be at work. In this paper we reconsider the country-level evidence to address this issue. First, we exploit the panel dimension of the data, controlling for any country unobservable time-invariant variables. Second, we provide instrumental variable estimates using the predicted exposure to technological change as an exogenous driver of inequality. According to our findings, income inequality significantly and negatively affects generalised trust. However, this result only holds for developed countries. We also explore new insights into the effects of different dimensions of inequality, exploiting measures of both *static* inequality – such as the Gini index and top income shares – and *dynamic* inequality – proxied by intergenerational income mobility.

JEL Classification: D31, O15, Z13.
Keywords: trust, inequality, top incomes, intergenerational mobility.

Contents

* Bank of Italy, Economic Research Unit, Bologna Branch.

1. Introduction[1]

There is a general consensus that trust is important for economic efficiency and growth. In the presence of imperfect information, costly enforcement or coordination failures, trust may overcome market failure and lead to achievements that would not be possible otherwise. Indeed, on the empirical side, trust has been found to be associated with less corruption and more effective bureaucracies (La Porta et al., 1997), financial development (Guiso et al., 2004) and, in a broader perspective, higher economic development (Knack and Keefer, 1997; Zak and Knack, 2001).

Unsurprisingly, many social scientists have thus attempted to understand the determinants of trust and why it varies widely across countries (Knack and Keefer, 1997; Zak and Knack, 2001; Bjørnskov, 2006; Leigh, 2006a).[2] Most of these studies have focussed on the relationship between trust and income inequality (and/or other measures of heterogeneity such as ethnic or religious fractionalisation), reaching the general conclusion that there is a robust negative correlation between inequality and generalised trust. According to the literature, this correlation is driven by three main factors.[3] The first has its theoretical roots in the homophily principle (McPherson et al. 2001) and aversion to heterogeneity (Alesina and La Ferrara 2002).[4] From this perspective, economic inequality is a source of diversity and socio-economic distance: the higher the level of economic inequality, the higher the "social barriers" between different groups and the less that individuals will feel familiar with and connect to other people. This, in turn, hampers the formation of trust. The second factor is related to the concept of fairness: inequality may generate a perception of injustice and the belief that others have unfair advantages, thus hindering the development of trust towards others.[5] The third factor refers to the hypotheses of resource conflict. Namely, unequal communities may disagree over how to share (and finance) public goods. These conflicts, in turn, break social ties and lessen the formation of trust and social cohesion (Delhey and Newton, 2005).[6] The recent global economic crisis has generated renewed interest in this topic. The political slogan "we are the 99 percent" betrays an intolerance of the concentration of income and wealth in the top 1 percent and the belief that the crisis is attributable to the mistakes of a tiny minority. The

[1] We wish to thank Monica Andini, Chiara Bentivogli, Guido de Blasio, Paolo Sestito, two anonymous referees , as well as participants at seminars at the Bank of Italy, AIEL conference 2013 and SIE conference 2013. The views expressed herein are our own and do not necessarily reflect those of the Bank of Italy. Email: guglielmo.barone@bancaditalia.it and sauro.mocetti@bancaditalia.it.

[2] Other studies have exploited within country variation in the level of trust (Alesina and La Ferrara, 2002; Leigh, 2006b; Gustavsson and Jordahl, 2008).

[3] See Jordahl (2007) for a review.

[4] The propensity to place greater trust in someone who is closer socially has been suggested also by Coleman (1990) and Fukuyama (1995).

[5] It is worth noting that a perfectly equal distribution is not necessarily fair and inequality is not necessarily unfair. See Roemer (1998 and 2002) and Alesina and Angeletos (2005) for a discussion on the determinants of inequality and related perceptions of fairness.

[6] Regarding more micro-determinants, some studies have highlighted the role of religion and education (Bjørnskov, 2006; Leigh, 2006b). Other studies have found evidence in support of the relative income hypothesis, that is, frustration with not being able to "keep up with the Joneses" decreases generalised trust (Fischer and Torgler, 2006).

legitimacy of inequality itself has thus been questioned, with potential negative consequences in terms of social cohesion and trust towards others.

Despite the relevance of the issue, the existing empirical evidence on the inequality-trust nexus admittedly remains weak. First, the relationship between the two variables has typically been observed at a single point in time: the cross-sectional relationship might be severely biased because inequality and trust might likely have common correlates that cannot all be credibly controlled for, in spite of a large number of covariates one can include in the specification.[7] Second, reverse causality from trust to inequality might create an upward bias. Bergh and Bjørnskov (2011) show that countries with higher trust levels are more prone to have larger welfare states so reducing inequality; alternatively one may argue that higher trust might lead to better institutions and better-performing markets and these, in turn, might favour a more equitable income generation process. Third, measurement error in inequality measures, which is not unlikely in a cross-country setting, might result in a downward bias. All in all, the causal link from inequality to trust is far from being identified.

In this paper, we provide a reappraisal of country-level evidence and, in particular, attempt to address the drawbacks of previous studies by exploiting the panel dimension of the data and by using an instrumental variable (IV) approach. Indeed, several waves of the World Value Survey (WVS) are now available, covering the period from the beginning of the 1980s to the mid-2000s, a sufficiently long period to make the within variability of trust not negligible. Moreover, several measures of income inequality have also recently been made available for many countries and longer time periods. Therefore, we have a sufficiently deep longitudinal dimension to appreciate country-specific trends in both trust and inequality, and above all, we can introduce country fixed effects to capture any time-invariant unobserved factor at the country level. Moreover, to identify a causal link from inequality to trust, we also rely on IV strategy. Namely, we construct a variable that predicts the country-level exposure to technological change – one of the most prominent explanations for inequality trends in recent decades is related to skill-biased technical change – based on the initial sector (2-digit) composition of the economy, the technological intensity of each sector, and the global valued added dynamics of the Information and Communication Technology (ICT) industry. A further novelty of the paper concerns the analysis of different dimensions of inequality, exploiting measures of both *static* inequality – from the traditional Gini index to the top income shares – and *dynamic* inequality – proxied by intergenerational income mobility, which is traditionally interpreted in terms of equality of opportunity.

According to our findings, inequality negatively affects generalised trust in wealthier countries, whereas the two variables are substantially unrelated in poorer countries. The

[7] Stated differently, trusting societies appear to perform well in almost any dimension, and the risk of bias due to an omitted variable (e.g., welfare institutions or culture) is large. The measurement of trust itself may reflect unobserved, country-specific factors. Indeed, Torpe and Lolle (2011) questioned the capacity of international surveys to capture the meaning of social trust equally well in all countries and suggest that comparisons between countries belonging to different geographic blocs and/or cultural settings should be interpreted with caution.

latter result can be arguably related (at least in part) to larger measurement errors and/or individual misperception of the income distribution in those societies. In developed countries, the relationship is both statistically and economically significant. According to our preferred estimation, a 1 percentage point increase in the Gini index leads to a decrease of approximately 2 percentage points in the fraction of individual who believe that most people can be trusted. Similar results are obtained if we use top income shares instead of the Gini index. A tentative interpretation is that the relationship between inequality and trust is primarily driven by the concentration of income at the top of the distribution. Our results prove robust to the introduction of further control variables. Finally, we include a measure of intergenerational income mobility and its interaction with income inequality, and we find that both dimensions of inequality negatively affect trust and reinforce one another.

The remainder of the paper is organised as follows. In section 2, we review the literature. In section 3, we present the data and empirical strategy. The main results, robustness checks and refinements are discussed in section 4. Section 5 concludes.

2. Review of the literature

We are not the first to examine the empirical relationship between inequality and trust on the base of cross-country data. Previous studies include Knack and Keefer (1997), Zak and Knack (2001), Bjørnskov (2006) and Leigh (2006a). The five waves of the World Values Survey have made this line of research possible by providing a simple and internationally comparable measure of the average level of trust for a growing sample of countries. All of these studies find a negative and statistically significant relationship between inequality and trust. Figure 1 – in which we plot the regression of trust on the Gini index, net of year dummies – provides a simple graphical representation for this negative relationship. Most of previous studies are roughly based on evidence of this type. An attractive feature of these studies is that there is a lot of variation between countries. In the latest wave of the World Values Survey the share of trusting people was well above 60 percent in Scandinavian countries and below 10 percent in Brazil and Turkey, among the others. Economic inequality varies almost as widely. However, these studies also share some common drawbacks.

An almost neglected problem concerns the measure of our key variables. As for trust, the international surveys might fail to capture the meaning of social trust equally well in all countries. As for inequality, compilations of data from a variety of sources may threaten the comparability across countries. For example, inequality indexes may refer to different units (e.g. households or individuals) and/or different definition of incomes. Atkinson and Brandolini (2001) discuss these and several related pitfalls in their excellent survey on the use of secondary data sets in studies of income inequality.

Moreover, although the negative relationship between inequality and trust is well-established, any casual interpretation is equivocal at best. First, there is a high risk of omitted variable bias: systematic cultural, social, political and/or institutional differences across countries – all factors that cannot be credibly controlled for in a cross-sectional approach – may be correlated with both inequality and trust, thus generating a spurious correlation between the two variables. Second, reverse causality may also be at work. For example, low levels of trust might lead to less provision of public goods and welfare services and therefore to higher levels of disposable income inequality. Bjørnskov (2006) and Leigh (2006a) correctly acknowledge the potential endogeneity issues; however, the IVs they propose – the size of mature cohorts and political ideology, respectively – are not completely satisfactory because they may well *directly* affect trust.

This paper is also secondly related to those studies that are based on within-country data (Alesina and La Ferrara, 2000 and 2002; Leigh, 2006b; Gustavsson and Jordahl, 2008; de Blasio and Nuzzo, 2012). However, in the mentioned studies, the relationship between inequality and trust is generally weaker than in cross-country analyses.[8] This result may have two opposite explanations. On the one hand, there may not be sufficient variation in the data, thus casting doubt on the suitability of within-country studies to investigate this issue. On the other hand, the correlation may be weaker because within-country studies, implicitly controlling for cultural, social and institutional variables that vary at the country level, reduce the risk of capturing a spurious correlation. This, in turn, would cast doubt on the suitability of cross-country correlations.[9] Moreover, this second set of studies is still not exempt from identification issues. The paper by Gustavsson and Jordahl (2008) represents a step forward in the identification of a causal nexus between inequality and trust. They employ Swedish panel data with trust measured at the individual level and the Gini index measured at the county level. Their results are based on both a panel with fixed effects at the county level and IV estimates where inequality is instrumented with international demand. However, potential concerns relate to the short duration of the panel (1994-1998), whereas inequality and cultural variables (such as trust) tend to move smoothly across time. Moreover, Sweden is traditionally characterised by a high level of trust and low levels of inequality relative to other countries, thus raising questions regarding the generalizability of their results.

In the next section, we describe our empirical strategy designed to address these concerns.

[8] In Alesina and La Ferrara (2000 and 2002), the negative correlation vanishes when they control for racial heterogeneity. Leigh (2006b) does not find any statistically significant relationship between trust and inequality. The two variables are also uncorrelated in many of the specifications contained in Gustavsson and Jordahl (2008).

[9] In Alesina and La Ferrara (2000 and 2002), the weaker correlation may also be due to an attenuation bias. Indeed, they obtain an annual Gini index at the MSA level by interpolation and extrapolation, beginning from three census waves (1970, 1980 and 1990). They thus measure income inequality with some error, which could lead to underestimation.

3. Empirical strategy and data

In contrast to previous cross-country studies, we adopt a panel approach, thus holding constant both stable country-to-country differences and changes in trust that equally affect all countries in the same year. The empirical specification is as follows:

$$Trust_{c,t} = \alpha + \beta\, Inequality_{c,t} + \delta\, X_{c,t} + \gamma_c + \rho_t + \mu_{c,t}$$

where $Trust_{c,t}$ is the level of trust in country *c* at time *t*, $Inequality_{c,t}$ is the measure of income inequality in the same country and the same year, and $X_{c,t}$ include time-varying controls (e.g., the log of GDP per capita). Finally, γ_c and ρ_t are fixed effects at the country and year level, respectively, and $\mu_{c,t}$ is the error term.[10]

Our measure of trust is constructed using the WVS, covering five waves from the 1980s to the mid-2000s. Namely, respondents were asked, "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" Respondents who said "most people can be trusted" were coded as 1, while those who said, "you need to be very careful in dealing with people" were coded as 0. The data are then collapsed to the country level.[11] The measures of income inequality were drawn from other sources. Namely, we use the Gini index – from the World Bank's World Development Indicators Database – and top income shares – from the World Top Incomes Database, which has only recently been made available (Atkinson and Piketty, 2010).[12] The Gini index is likely the most popular indicator of inequality and measures the extent to which the (overall) income distribution differs from perfect equality. Top income shares, in contrast, measure concentration at the top of the distribution. However, they may also significantly drive overall inequality. According to Atkinson (2007): "if we treat the very top group as infinitesimal in numbers, but with a finite share *S* of total income, then the Gini coefficient *G* can be approximated by $G^*(1-S)+S$, where G^* is the Gini coefficient for the rest of the population." Among the control variables, we include the log of the GDP per capita, average years of schooling, the fraction of immigrants over total population and the age index. Table 1 provides a brief description, descriptive statistics and the corresponding source for each variable. Looking at the main variables, the share of trusting

[10] Alternatively, one could have taken into account consumption inequality instead of income inequality. Consumption (dynamics) is smoother and less variable than income, therefore it may be more suited for capturing the distribution of well-being in a society. However country data on inequality are typically available for incomes and not for consumption.

[11] This measure is often referred to as *generalised* trust and is contrasted with *particularised* trust, where individuals only have faith in their in-group. On this point, see also the Banfield's (1958) famous study of a Southern Italian village in which individuals were connected by very strong bonds within families but not at all between families (the so-called 'amoral familism').

[12] The use of the Gini index provided by the World Bank is widely accepted in the literature. It has been criticized because, as it is common in many secondary datasets, most countries use households as reference unit but in some countries data are at the individual level. Moreover, the definition of income may change between countries (Atkinson and Brandolini, 2001). However, in our paper these drawbacks are largely moderated thanks to the IV fixed effects identification strategy.

people is 32 per cent, and it is significantly higher in rich countries than in poor countries (39 and 26 percent, respectively). The Gini index for all the sample of countries is 34 percent, slightly lower for the subset of richer countries (32 percent). It is worth noting that these variables are highly correlated (see Table 2), and in particular, the GDP per capita arguably captures many dimensions of well-being and societal progress.

A concern about the use of a panel analysis with country fixed effects is its potential inefficiency since our key variables (trust and inequality indices) have little longitudinal variance. Descriptive statistics of our data confirm that trust and inequality indices have much more variation across countries than over time, though the within variation is not negligible.[13] Concerning the latter point, Putnam (2000) reports some evidence on the decline of social capital, along several dimensions, in the US. Similar trends are also discernible in other countries. Moreover, OECD (2011) and Atkinson and Piketty (2010) highlight heterogeneous trend in inequalities across countries in the last decades. Therefore, the adoption of a long term perspective covering the period from the beginning of the 1980s to the mid-2000s allows us to have a sufficient variability also along the longitudinal dimension.

One caveat about the empirical specification described above is that concerns regarding endogeneity may persist, in spite of the introduction of country fixed effects. First, there may be time-variant omitted variables. For example, unobserved welfare reforms or socio-economic changes may affect both the level of inequality and the formation of trust. Second, there may be reverse causality: for instance, more trust may lead to larger welfare state and/or to better institutions and better-performing markets and these, in turn, may favour a more equitable income generation process. Moreover, measurement error in inequality measures may also result in a bias. To further address endogeneity, we adopt an IV strategy and use a proxy variable capturing Skill-Biased Technological Change (SBTC) as an exogenous driver of inequality.

One of the most prominent explanations for inequality trends in recent decades concerns SBTC (see Levy and Murnane, 1992; Acemoglu, 2002; Autor et al., 2006). The basic notion is that an exogenous burst of new information and communication technology (ICT) caused a rise in the demand for highly skilled workers that, in turn, led to a rise in wage inequality. Some empirical evidences confirm this hypothesis (Berman et al., 1998; Van Reenen, 2011; Jaumotte et al., 2013).[14] Our instrument exploits the SBTC as driver of inequality. However, rather than measuring *current* technological endowments at the

[13] The standard deviation of TRUST is 0.143 for the between component and 0.042 for the within component. The corresponding figures for GINI are 0.096 and 0.029, for TOP10 are 0.064 and 0.023 and for TOP01 are 0.033 and 0.016.

[14] It is worth noting that the SBTC hypothesis has been challenged by several studies, the one by Card and DiNardo (2002) being the most widely cited. One problem refers to the timing of the impact. Indeed, wage inequality in the U.S. stabilized in the 1990s despite continuing advances in computer technology. Moreover, the SBTC theory also fails to explain the evolution of other dimensions of wage inequality, including the gender and racial wage gaps and the age gradient in the return to education. More generally, it is reasonable to assume that there is not a unicausal explanation for the complex patterns of inequality trends during the 80s, the 90s and the 00s. Other important variables, like labor market reforms, the impact of globalization, the changes in the economic structures, contributed to the movements in the wage distribution.

country level, we predict exposure to it by interacting three sources of variation that are plausibly exogenous with respect to the country trend in trust: (i) the initial sector composition (2-digit) of the country, (ii) technological coefficients capturing the sectoral dependence on ICT and (iii) the worldwide growth of the ICT industry. Formally, our instrument is as follows:

$$SBTC_{c,t} = \sum_{s} \frac{EMP_{c,s,1980}}{EMP_{s,1980}} \cdot \theta_s \cdot \log\left(ICT_t\right)$$

where $EMP_{c,s,1980}$ is the number of workers in sector *s* and country *c* in 1980 and $EMP_{s,1980}$ is the number of workers at the global level in the same sector and the same year. The technical coefficient θ_s measures for each sector *s* the fraction of ICT inputs – "office, accounting and computing machinery" and "computer and related activities" – over total consumption of intermediate goods and services; the technological coefficients are constructed on the basis of the input-output matrix for the US and refer to the mid-1990s. Finally, ICT_t is the global value added of the technological sector. *SBTC* can be interpreted as an approximation of each country's consumption of ICT inputs produced worldwide. The instrument was constructed using data from STAN – the OECD database for structural analysis – and we only consider the countries for which the data are nearly complete.[15]

The identification assumption is that conditional on $X_{c,t}$ and country- and year-fixed effects, *SBTC* only affects trust through its effect on inequality. We believe that this is a reasonable assumption because the three terms used to construct the IV are plausibly exogenous with respect to the country *trend* in generalised trust. Specifically, the second term (θ_s) and the third term (ICT_t) are sector- and time-specific, respectively; therefore they are common across countries and unrelated to the country-trend correlates of trust. The first term (i.e. the shares of sectors in each country at the beginning of the period) may be associated to the *level* of trust if the latter is, say, higher in richer countries that are characterized by a prevalence of high-value added sectors with respect to more traditional ones. However, all the unobserved time-invariant variables are controlled for by country fixed-effects and the identification strategy (common to all the instrumental variables based on a shift-share approach) relies on the assumption that those shares are unrelated to country *trends*.

[15] The list of the countries, in alphabetical order, is: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States. Some countries have missing values in 1980, and these are imputed residually using information from the rest of the sample.

4. Results

4.1 Main results

In Table 3, we provide some preliminary evidence on the relationship between inequality and trust. The estimated coefficient for the correlation between the two variables is equal to -0.42 and is statistically significant (column 1). If we split the sample on the basis of GDP per capita, we find that the negative and significant correlation is confirmed for both the subsamples (columns 2 and 3), though the coefficient is larger for the subset of richer countries.[16] In the last three columns, we include fixed effects to capture any unobserved factor that is country specific.[17] The results change dramatically. The correlation between trust and inequality is no longer significantly different from zero for the entire sample (column 4) or the subsample of poor countries (column 5). On the contrary, we find an even stronger negative relationship for the subsample of wealthier countries (column 6).[18] This simple evidence highlights two important facts. First, unobserved country variables may drive the relationship between trust and inequality and failing to control for them may severely bias the estimates. Second, combining data from very heterogeneous countries is itself a source of bias. Indeed, the insignificance of the correlation between trust and inequality in poorer countries can be partly explained by measurement error. The Gini index and level of trust are likely measured with greater noise in those countries, and this leads to a downward bias and less efficient estimates. Moreover, the mis-perception of income distribution may be larger in poorer countries. A further potential explanation for the absence of a significant relation in poor countries is that the longitudinal component of the panel is smaller.[19]

In Table 4, we proceed by exploiting both the panel dimension and the IV estimates. For comparability between OLS and IV estimates and reasons of data availability, we are forced to restrict the analysis to a set of advanced economies belonging to the OECD. We

[16] The wealthier countries – those with a GDP per capita above the median – are Argentina, Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Singapore, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States; the poorer countries – those with a GDP per capita below the median – are Albania, Azerbaijan, Bangladesh, Belarus, Bosnia and Herzegovina, Brazil, Bulgaria, Chile, China, Colombia, the Czech Republic, the Dominican Republic, Egypt, El Salvador, Estonia, Hungary, India, Iraq, Kyrgyzstan, Latvia, Lithuania, Macedonia, Mexico, Moldova, Poland, Peru, Romania, the Russian Federation, the Slovak Republic, South Africa, Ukraine, Uruguay, and Venezuela.

[17] The introduction of country fixed effects substantially increases the R-squared since those variables captures the between variation in the data. Moreover, a simple F test does not reject the joint significance of country dummies.

[18] Unfortunately, this type of exercise is not replicable when employing top incomes instead of the Gini index because top income data are primarily available for developed countries.

[19] In the WVS, respondents were asked to identify the income decile to which they belong. If the individuals were randomly sampled from the population and were familiar with income distributions of their countries, we would expect a uniform distribution of the individuals across deciles. However, according to our elaborations, certain differences arise and are larger in poorer countries. The implications of this misclassification are twofold. On the interviewer side, one may cast some doubt on the representativeness of the sample across deciles of the income distribution in poorer countries. On the respondent side, individuals in those countries may have a greater misperception of their position in the income distribution. As far as the longitudinal component is concerned, poor countries are observed, on average, 2,3 times (2,9 for rich countries).

start with a very parsimonious specification (including only GDP per capita among the control variables) and we add further controls in a stepwise fashion. Specifically, we include average years of schooling, the age index and the fraction of immigrants over total population. The choice of these further controls is driven by data availability and by the fact that they are plausibly correlated to both trust and inequality. Moreover, the richer the set of controls, the more likely is the exclusion restriction assumption. According to the OLS estimates, there is a negative relationship between inequality and trust and the coefficient is fairly stable across specifications. Turning to the IV estimates, note first that the instrumental variable is largely significant and has the expected sign: the larger the country exposure to the ICT revolution, the higher income inequality. The IV estimates confirm the negative relationship, thus suggesting a causal link between the two variables (from inequality to trust). On the basis of these estimates, a 1 standard deviation increase in the Gini index would entail a decrease in the level of trust equal to 70 percent of its standard deviation. Stated differently, a 1 percentage point increase in the Gini index leads to around 2 percentage point decrease in the share of individuals who believe "most people can be trusted". Therefore, the relationship is also economically sizeable. The IV estimates are larger in absolute values with respect to the OLS ones and a plausible explanation is the relevance of measurement errors which would lead to an attenuation bias.

4.2 Robustness checks

There are some potential concerns with the empirical findings discussed above and they are basically related to the small size of our sample. Indeed, it is well known that the 2SLS estimator is biased in finite samples and that the bias is larger the weaker the instrument and the smaller the sample (Angrist and Pischke, 2009). Moreover, one may wonder whether our results are driven by few influential observations. In the following we address these concerns one at a time.

Although the first stage results are fairly good, the F-statistic of the excluded instrument is slightly below the 10 cut-off value suggested by Stock and Yogo (2005). The weakness of the instrument might lead to a non-negligible bias of the 2SLS estimator. On this respect, it is worth noting that in our case the weak instrument bias is minimized because our model is just identified. Moreover, our estimates are fairly stable across specifications, further reassuring our conclusions. Nevertheless, we also check our results by using a limited information maximum likelihood (LIML) estimator that is approximately median unbiased for over-identified models and provides a finite-sample bias reduction (Angrist and Pischke, 2009). Following Leigh (2006a), we use the relative size of the mature-aged cohort (the ratio of the size of the cohort aged between 40 and 59 to the population aged 15-64) as additional instrument.[20] The latter variable might shape inequality through two conflicting forces. On the one hand, if one assumes that workers of different experience level are imperfect substitutes, then workers belonging to fat cohorts

[20] The LIML estimator requires an over-identified model.

receive relatively low salaries. It follows that if the fat cohort is the older one (and therefore that at the top of the age-earnings curve), earnings dispersion would be reduced and our instrument should have a negative impact on inequality (Leigh, 2006a). On the other hand, the sign of the effect might also be positive if the within cohort earning variance grows with the age of the cohort (Mincer, 1958; Deaton and Paxson, 1997). Overall, we empirically test whether one effect significantly prevails so to have a non-irrelevant additional instrument. Results are report in Table 5 and show that the different estimator qualitatively confirms our baseline findings. As to the first stage, both SBTC and the size of the mature-aged cohort have a positive and significant effect on the Gini index.

The bias of the 2SLS estimator might be non-negligible also because of the small sample size. To address this concern we resort to a Monte Carlo simulation. In details, we replicated the baseline regression on random samples generated with replacement from the original sample (1,000 runs). For each run, the key coefficient has been estimated. The mean of the coefficient across all runs is -2.503 and the median -2.235, very near to our baseline estimate (results are available upon request).

A final concern is due to the fact that the observed relationship between inequality and trust might be driven by few outliers and/or non-representative countries. In Table 6 we report some robustness check to mitigate the role of influential observations. Specifically we exclude in each specification the country with the lowest (Portugal) and the highest (Norway) level of trust and the least (Austria) and most (United States) unequal societies, respectively. Consistently with Table 4, we also report both OLS and IV estimates. The negative and significant relationship between trust and inequality is confirmed in all the specification. Moreover, the coefficient is fairly similar to that of the baseline specification.

4.3 The role of top incomes

In this subsection we use top income shares in place of the Gini index as measure of inequality. The advantages for this are twofold. First, top income share is an alternative indicator of income concentration (drawn from different data sources), thus representing a sort of robustness check for the measurement of the inequality. Second, top income share, contrarily to the Gini index, captures inequality at the top of income distribution. This, in turn, allows us to explore the differential sensitivity of trust to overall inequality versus income concentration among the richest.

Results are reported in Table 7 that is divided in two panels, top panel for top decile income shares and bottom panel for top percentile income shares. In each panel we report both OLS and IV estimates for different specifications, with an increasing number of controls as done before.

According to our findings, top income shares are negatively and significantly associated to trust. As in the previous section, OLS are slightly downward biased for top decile income shares while they are pretty close to the IV estimates for top percentile

income shares. A tentative explanation is that incomes at the very top of the distribution are less susceptible of measurement errors and suffer less of individual incentives in reporting incomes (Atkinson and Piketty, 2010), thus attenuating the downward bias from measurement errors. The first stage F-statistic of the excluded instrument is well above 10. According to our preferred specification, a 1 percentage point increase in the top decile (percentile) income share leads to 1.5 (2.3) percentage point decrease in the share of individuals who believe "most people can be trusted".

Recalling the relationship between the Gini index and the top income shares mentioned above, we may conclude that the relationship between inequality and trust is primarily driven by the concentration of income at the top of the distribution.[21] In order to further corroborate this evidence, in Table 8 we jointly include the Gini index and the top income shares as determinants of trust. After controlling for top income shares, the coefficient of the Gini index is not statistically different from zero while the coefficients for top income share remain negative and highly significant. Though intriguing, this result should be interpreted with some caution given the high correlation between the two variables.

4.4 Inequality and intergenerational mobility

Income inequality is a static dimension of a society. However, inequality can also be examined from dynamic perspective. Namely, intergenerational income elasticity is a summary indicator that captures the extent to which individual income is correlated with his parental income in a given society. Examining different dimensions of inequality might provide further insights into the formation of trust.

To better understand this point, consider two societies with the same income distribution (i.e., identical static inequality). Let us now assume that in the first society, individuals inherit the economic positions of their parents, and income inequality for the children's generation is simply a reflection of income inequality in the parental generation. In this society there is no intergenerational income mobility. Let us assume, on the contrary, that the second society is more fluid: individual incomes do not depend on family background, and income inequality in each generation is independent of that of the previous generation. Overall, the two societies are equally unequal at any point in time, but they differ substantially in the nature of inequality and in how it is transmitted across generations. This has some implications for how inequality is viewed and perceived. The second society is arguably fairer, as the economic distance across individuals is reshuffled in each generation and the economic classes are less rigid. Ultimately, this difference is also likely to matter in terms of trust accumulation.

This idea is not totally new. Rothstein and Uslaner (2005) suggested the exploration

[21] The IV estimates using the Gini index upwardly revise those obtained via OLS, thus suggesting the existence of an omitted variable that is negatively related to trust and positively related to inequality (or vice-versa). Conversely, the magnitudes of the coefficients on the top income shares are roughly similar between OLS and IV.

of different dimensions of inequality. However, the distinct impact of income inequality and intergenerational mobility (and their potential interactions) has never been empirically investigated.[22] This lack of investigation is likely due to the lack of appropriate data to measure intergenerational mobility (which requires data covering at least two generations). However, a growing number of studies that have been recently published allow us to obtain some (comparable) cross-country evidence.[23]

The main drawback of using both static and dynamic measures of inequality is that we have to exclusively rely on cross-country correlations because cross-country trends in intergenerational mobility are not available. Moreover, even if they were available, it would be difficult to match them in a panel structure. Indeed, intergenerational mobility is difficult to associate with a particular year because it is estimated using permanent income (income over the life-cycle), in contrast with income inequality (which is measured using current incomes in a given year). Finally, note that intergenerational income elasticity is – at least to some extent – positively correlated with income inequality.[24] Bearing this caution in mind, we believe that the analysis of further dimensions of inequality is still worthy of investigation.

The results of pooled OLS regressions are reported in Table 9, which is divided into three panels, one for each dependent variable – Gini index, top decile share and top percentile share. We include intergenerational income elasticity as a further regressor – to examine whether static and dynamic measures of inequality have distinct effects on trust – and interacted with income inequality to examine whether the negative effect of inequality is reinforced in more immobile societies. According to these findings, the different dimensions of inequality always enter with a negative sign and are statistically significant when they are jointly included in the specification (first column of each panel). Moreover, the coefficient estimated for the interaction term is negative and highly significant in the second column – thus suggesting that the negative impact of inequality is more accentuated in more immobile societies – while it is not statistically significant in the third column, likely due to the collinearity induced when all of the regressors are jointly included in the specification.

The interpretation of the impact of intergenerational mobility clearly mirrors that of inequality. First, inequality generates social barriers across groups, thus hampering social ties and the formation of trust, and this effect is clearly even stronger in more immobile countries. Second, the perception of unfairness is likely more rooted in societies in which

[22] Rothstein and Uslaner (2005) distinguish between income inequality and inequality of opportunity. However, in their empirical analysis, they do not investigate equality of opportunity as such, but they proxy it with the adoption of universal state welfare programs, which is a questionable assumption.

[23] For data on intergenerational income elasticities, see Corak (2006), Mocetti (2007) and the special issue on intergenerational mobility edited by the B.E. Journal of Economic Analysis and Policy (http://www.degruyter.com/view/j/bejeap.2007.7.2/issue-files/bejeap.2007.7.issue-2.xml).

[24] From a more technical perspective, the drawbacks of this analysis are twofold. First, we cannot introduce country fixed effects in the specifications, and therefore, we add certain controls to capture country-specific characteristics. Second, the simultaneous inclusion of the two dimensions of inequality may generate some collinearity concerns.

inequality is transmitted across generations, thus negatively affecting trust.[25] Third, inequality may generate resource conflicts that, in turn, deteriorate trust. This sentiment is again more widespread in more immobile societies, where the reproduction of social classes may reinforce class consciousness and resource conflicts.

5. Conclusion

The relationship between inequality and trust has attracted the attention of many social scientists. Moreover, the recent economic crisis has generated renewed interest in the concentration of incomes and concerns regarding social cohesion and trust in others.

In this paper, we provide a reappraisal of country-level evidence on inequality and trust. In particular, we attempt to address the drawbacks of previous studies by exploiting the panel dimension of the data and adopting a new IV strategy. A further novelty of this paper is related to the analysis of different dimensions of inequality, exploiting measures of both *static* inequality – from the traditional Gini index to the top income shares – and *dynamic* inequality – proxied by intergenerational income mobility, which is traditionally interpreted in terms of equality of opportunity.

According to our findings, inequality negatively affects generalised trust in developed countries. The relationship is both statistically and economically significant. According to our preferred estimation, a 1 percentage point increase in the Gini index leads to a decrease of approximately 2 percentage points in the share of individuals who believe that most people can be trusted. Qualitatively similar results are obtained if we use top income shares instead of the Gini index. We also provide some suggestive evidence on the impact of intergenerational mobility and its interaction with income inequality. Overall, our results indicate that an unequal and immobile society generates high social barriers between social groups and reinforces the perceived unfairness of the income generation process, thus hampering the formation of trust. With respect to policy implications, measures aimed at reducing income inequality are also trust-enhancing, thus potentially leading to other favourable consequences for many economic outcomes.

[25] It is widely believed that a high level of intergenerational mobility indicates greater openness, more equality of opportunity and social justice. It is worth noting that there is a latent difference between inequality of opportunity and intergenerational mobility, as the latter may also reflect preferences or other factors for which the individual can be held responsible (Swift, 2004; Roemer, 1998 and 2002).

References

Acemoglu D. (2002), Technical change, inequality, and the labor market, *Journal of Economic Literature*, 40, 7-72.

Alesina, A. and G.M. Angeletos (2005), Fairness and redistribution, *American Economic Review*, 95, 960-980.

Alesina, A. and E. La Ferrara (2000), Participation in heterogeneous communities, *Quarterly Journal of Economics*, 115, 847-904.

Alesina, A. and E. La Ferrara (2002), Who trusts others? *Journal of Public Economics*, 85, 207-234.

Angrist, J.D. and J.S. Pischke (2009), *Mostly harmless econometrics*, Princeton University Press.

Atkinson, A.B. (2007), Measuring top incomes: methodological issues, in A.B. Atkinson and T. Piketty (eds.), *Top incomes over the twentieth century: a contrast between continental European and English-speaking countries*, Oxford University Press.

Atkinson, A.B. and A. Brandolini (2001), Promise and pitfalls in the use of "secondary" data-sets: Income inequality in OECD countries as a case study, *Journal of Economic Literature*, 39: 771-799.

Atkinson, A.B. and T. Piketty (2010), *Top incomes. A global perspective*, Oxford University Press.

Autor, D.H., L.F. Katz and M.S. Kearney (2006), The polarization of the U.S. labor market, *American Economic Review*, 96, 189-194.

Banfield, E.C. (1958), *The moral basis of a backward society*, Free Press.

Barro, R. and J.W. Lee (2010), A new data set of educational attainment in the world, 1950-2010, NBER working paper, 15902.

Bergh, A. and C. Bjørnskov (2011), Historical trust levels predict the current size of the welfare state, *Kyklos*, 64, 1-19.

Berman, E., J. Bound and S. Machin (1998), Implications of skill-biased technological change: international evidence, *Quarterly Journal of Economics*, 113, 1245-1279

Bjørnskov, C. (2006), Determinants of generalized trust: a cross-country comparison, *Public Choice*, 130, 1-21.

Card, D. and J.E. DiNardo (2002), Skill-biased technological change and rising wage inequality: some problems and puzzles, *Journal of Labor Economics*, 20: 733-783.

Coleman, J. (1990), *Foundations of social theory*. Harvard University Press, Cambridge MA.

Corak, M. (2006), Do poor children become poor adults? Lessons for public policy from a cross country comparison of generational earnings mobility, *Research on Economic Inequality*, 13, 143-188.

Deaton, A.S. and C.H. Paxson (1997), The effects of economic and population growth on national saving and inequality, *Demography*, 34, 97-114.

de Blasio, G. and G. Nuzzo (2012), Capitale sociale e disuguaglianza in Italia, Questioni di Economia e Finanza, 116, Banca d'Italia.

Delhey, J. and K. Newton (2005), Predicting cross-national levels of social trust: global pattern or Nordic exceptionalism? *European Sociological Review*, 21, 311-327.

Fischer, J.A.V. and B. Torgler (2006), The effect of relative income position on social capital, *Economics Bulletin*, 26, 1-20.

Fukuyama, F. (1995), *Trust: the social virtues and the creation of prosperity*, Free Press, New York.

Guiso, L., P. Sapienza and L. Zingales (2004), The role of social capital in financial development, *American Economic Review*, 94, 526-556.

Gustavsson, M. and H. Jordahl (2008), Inequality and trust in Sweden: some inequalities are more harmful than others, *Journal of Public Economics*, 92, 348-365.

Jaumotte, F., S. Lall and C. Papageorgiou (2013), Rising income inequality: technology, or trade and financial globalization? *IMF Economic Review*, forthcoming.

Jordahl, H. (2007), Inequality and trust, *IFN working paper*, 715.

Knack, S. and P. Keefer (1997), Does social capital have an economic payoff? A cross-country investigation, *Quarterly Journal of Economics*, 52, 1251-1287.

La Porta, R., F. Lopez-De-Silanes, A. Schleifer and R. Vishny (1997), Trust in large organizations, *American Economic Review*, 87, 333-338.

Leigh, A. (2006a), Does equality lead to fraternity? *Economic Letters*, 93, 121-125.

Leigh, A. (2006b), Trust, inequality and ethnic heterogeneity, *Economic Record*, 82, 268-280.

Levy, F. and R.J. Murnane (1992), U.S. earnings levels and earnings inequality: a review of recent trends and proposed explanation, *Journal of Economic Literature*, 30, 1333-1381.

Mincer, J. (1958), Investment in human capital and personal income distribution, *Journal of Political Economy*, 66, 281-302.

McPherson, M., L. Smith-Lovin and J. Cook (2001), Birds of a feather: homophily in social networks, *Annual Review of Sociology*, 27, 415-444.

Mocetti, S. (2007), Intergenerational earnings mobility in Italy, *B.E. Journal of Economic Analysis and Policy*, 7, (2).

OECD (2011), *Divided we stand: why inequality keeps rising*, Paris: OECD Publishing.

Putnam, R.D. (2000), *Bowling Alone: the Collapse and Revival of American Community*, New York: Simon & Schuster.

Roemer, J.E. (1998), *Equality of opportunity*, Harvard University Press.

Roemer, J.E. (2002), Equality of opportunity: a progress report, *Social Choice and Welfare*, 19, 455-471.

Rothstein, B. and E.M. Uslaner (2005), All for one: equality, corruption, and social

trust, *World Politics*, 58, 41-72.

Stock, J.H. and M. Yogo (2005), Testing for weak instruments in linear IV regression, in D.W.K. Andrews and J.H. Stock (eds.), *Identification and inference for econometric models: Essays in honour of Thomas Rothenberg*, Cambridge University Press.

Swift, A. (2004), Would perfect mobility be perfect? *European Sociological Review*, 20, 1-11.

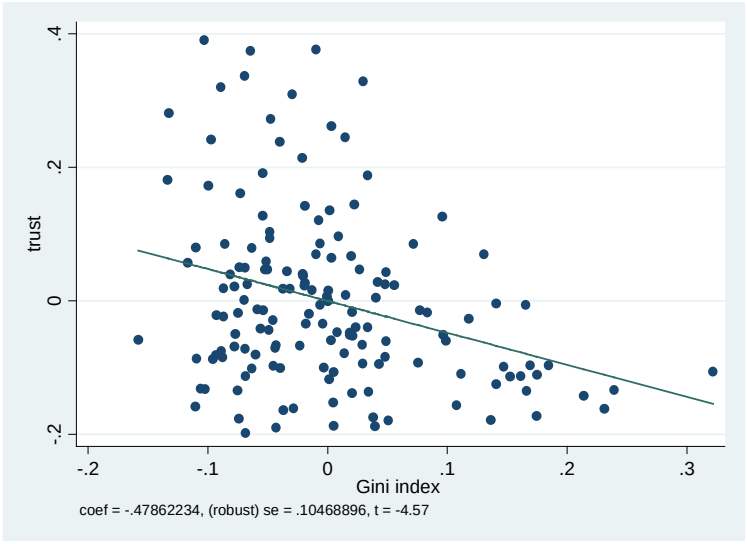
Torpe, L. and H. Lolle (2011), Identifying social trust in cross-country analysis: do we really measure the same? *Social Indicators Research*, 103, 481-500.

Van Reenen, J. (2011), Wage inequality, technology and trade: 21st century evidence, *Labour Economics*, 18, 730-741.

Zak, P.J. and S. Knack (2001), Trust and growth, *Economic Journal*, 111, 295-321.

Figures

Figure 1. Cross-country correlation between trust and income inequality



Plots are the country-year residuals from an OLS regression pooling data from all waves of the WVS and including year fixed effects.

Tables

Table 1. Descriptive statistics

Variable	Description and source	Mean	St.dev.	Min	Max
TRUST	Share of individuals responding "Most people can be trusted" to the question "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"; source: World Value Survey (all waves)	0.32	0.150	0.03	0.74
GINI	The Gini index measures the extent to which the distribution of income deviates from a perfectly equal distribution; a value of 0 represents perfect equality, while a value of 1 implies perfect inequality; source: World Bank	0.34	0.094	0.20	0.63
TOP10	Top decile income share; source: World Top Incomes Database, http://g-mond.parisschoolofeconomics.eu/topincomes	0.32	0.064	0.20	0.45
TOP01	Top percentile income share; source: World Top Incomes Database, http://g-mond.parisschoolofeconomics.eu/topincomes	0.09	0.034	0.03	0.18
IGE	Intergenerational income elasticity; a value close to 1 indicates high intergenerational immobility, while a value close to 0 indicates a very mobile society in which the individual's income does not strongly depend on his parental background; source: Corak (2006) supplemented by estimates for other countries published in the special issue on intergenerational mobility edited by the B.E. Journal of Economic Analysis and Policy	0.36	0.140	0.15	0.63
GDP	Log of GDP per capita in US dollars at purchasing power parity and constant prices; source: World Bank	8.80	1.287	5.72	10.68
YRSCH	Years of schooling (population over 15); data for missing years are obtained via interpolation and extrapolation; source: Barro and Lee (2010)	9.27	1.851	3.44	12.95
AGE	Ratio of individuals older than 64 to those aged 0-14; source: World Bank	0.62	0.311	0.08	1.44
MIGRANTS	International migrants as a percentage of the population; data for missing years are obtained via interpolation and extrapolation; source United Nations. http://esa.un.org/migration/index.asp	0.07	0.069	0.00	0.38
SBTC	Predicted skill-biased technological change based on initial sector (2-digit) composition of the country, the technological intensity of each sector, and world aggregate valued added of technological industry; source: STAN.	23.26	39.714	0.29	238.31
MATURE COHORT	Ratio between people in the age bracket 40-59 and working age population (15-64); source: OECD	0.37	0.042	0.24	0.45

Table 2. Correlation matrix

	GINI	TOP10	TOP01	IGE	GDP	YRSCH	AGE
GINI							
TOP10	0.537 (0.000)						
TOP01	0.498 (0.000)	0.929 (0.000)					
IGE	0.370 (0.006)	0.284 (0.040)	0.212 (0.111)				
GDP	-0.213 (0.008)	0.178 (0.153)	0.063 (0.588)	-0.450 (0.000)			
YRSCH	-0.349 (0.000)	0.174 (0.163)	0.145 (0.212)	-0.382 (0.002)	0.472 (0.000)		
AGE	-0.523 (0.000)	-0.111 (0.373)	-0.138 (0.234)	-0.156 (0.231)	0.503 (0.000)	0.503 (0.000)	
MIGRANTS	-0.179 (0.073)	0.134 (0.288)	0.136 (0.247)	-0.377 (0.003)	0.493 (0.000)	0.518 (0.000)	0.172 (0.073)

P-values in parentheses.

Table 3. Inequality and trust by group of countries

	(1)	(2)	(3)	(4)	(5)	(6)
	All countries	Poor countries	Rich countries	All countries	Poor countries	Rich countries
GINI	-0.423*** (0.092)	-0.217*** (0.077)	-0.471** (0.234)	-0.137 (0.153)	0.201 (0.186)	-0.865** (0.370)
GDP	0.044*** (0.010)	-0.039** (0.018)	0.157*** (0.033)	-0.011 (0.034)	0.019 (0.036)	-0.154** (0.065)
Country FE	NO	NO	NO	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	152	75	77	152	75	77
R-squared	0.417	0.486	0.502	0.942	0.929	0.953

The dependent variable is trust. OLS estimates. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 4. Inequality and trust: baseline estimates

	OLS				IV			
GINI	-0.852**	-0.830**	-0.838**	-0.868***	-2.169***	-2.134***	-2.123***	-1.852***
	(0.387)	(0.413)	(0.382)	(0.317)	(0.687)	(0.622)	(0.619)	(0.532)
GDP	-0.155**	-0.186	-0.191	-0.267**	-0.240***	-0.336**	-0.339**	-0.384**
	(0.067)	(0.132)	(0.127)	(0.130)	(0.091)	(0.165)	(0.165)	(0.153)
YRSCH		0.005	-0.003	-0.002		-0.011	-0.020	-0.015
		(0.016)	(0.020)	(0.016)		(0.025)	(0.033)	(0.023)
AGE			0.069	0.074			0.077	0.080
			(0.086)	(0.073)			(0.119)	(0.092)
MIGRANTS				1.643***				1.716**
				(0.543)				(0.682)
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	62	60	60	60	62	60	60	60
R-squared	0.932	0.932	0.933	0.941	0.909	0.912	0.913	0.929
First stage F-statistics of excluded instrument					7.7	8.8	8.5	8.3

The dependent variable is trust. OLS and IV estimates (SBTC is the instrumental variable). Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5 Inequality and trust: robustness with additional instrument

	LIML			
GINI	-1.796***	-1.991***	-1.934***	-1.510**
	(0.451)	(0.552)	(0.559)	(0.629)
GDP	-0.216***	-0.319**	-0.317**	-0.344***
	(0.075)	(0.137)	(0.139)	(0.129)
YRSCH		-0.009	-0.018	-0.010
		(0.021)	(0.026)	(0.018)
AGE			0.076	0.078
			(0.096)	(0.071)
MIGRANTS				1.690***
				(0.518)
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	62	60	60	60
R-squared	0.920	0.916	0.919	0.936
First stage F-statistics of excluded instruments	7.1	5.2	6.2	6.5

The dependent variable is trust. LIML estimates (SBTC and MATURE COHORT are the instrumental variables). Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6. Inequality and trust: robustness to outliers

	OLS				IV			
GINI	-0.814***	-0.969***	-0.868***	-0.753**	-1.964***	-1.546***	-1.852***	-1.373*
	(0.316)	(0.285)	(0.317)	(0.329)	(0.546)	(0.500)	(0.532)	(0.721)
GDP	-0.255*	-0.428***	-0.267**	-0.266**	-0.393**	-0.501***	-0.384**	-0.335**
	(0.133)	(0.089)	(0.130)	(0.130)	(0.160)	(0.111)	(0.153)	(0.157)
YRSCH	-0.008	-0.009	-0.002	0.001	-0.022	-0.016	-0.015	-0.005
	(0.016)	(0.016)	(0.016)	(0.015)	(0.025)	(0.020)	(0.023)	(0.019)
AGE	0.119*	0.106	0.074	0.048	0.115	0.111	0.080	0.051
	(0.069)	(0.070)	(0.073)	(0.070)	(0.104)	(0.082)	(0.092)	(0.078)
MIGRANTS	1.531***	2.182***	1.643***	1.822***	1.643**	2.229***	1.716**	1.877***
	(0.518)	(0.504)	(0.543)	(0.520)	(0.671)	(0.578)	(0.682)	(0.590)
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Exclusion of:	Portugal (low trust)	Norway (high trust)	Austria (low Gini)	US (high Gini)	Portugal (low trust)	Norway (high trust)	Austria (low Gini)	US (high Gini)
Observations	58	57	59	56	58	57	59	56
R-squared	0.935	0.949	0.940	0.947	0.917	0.945	0.929	0.942
First stage F-statistics of excluded instrument					8.6	8.8	8.3	3.6

The dependent variable is trust. OLS and IV estimates (SBTC is the instrumental variable). Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7. Top incomes and trust

	OLS				IV			
				(a) Top decile				
TOP10	-1.141***	-1.393***	-1.406***	-1.370***	-1.446*	-1.675*	-1.648*	-1.503*
	(0.411)	(0.503)	(0.492)	(0.462)	(0.856)	(0.955)	(0.937)	(0.871)
GDP	-0.059	-0.091	-0.094	-0.162	-0.039	-0.085	-0.089	-0.158
	(0.095)	(0.097)	(0.097)	(0.107)	(0.116)	(0.104)	(0.103)	(0.114)
YRSCH		-0.019	-0.023	-0.021		-0.023	-0.027	-0.023
		(0.015)	(0.016)	(0.014)		(0.018)	(0.021)	(0.018)
AGE			0.032	0.030			0.036	0.032
			(0.079)	(0.074)			(0.083)	(0.077)
MIGRANTS				1.362***				1.354***
				(0.421)				(0.439)
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	57	57	57	57	57	57	57	57
R-squared	0.948	0.950	0.950	0.955	0.947	0.949	0.950	0.955
First stage F-statistics of excluded instrument					40.7	20.2	18.6	17.9
				(b) Top percentile				
TOP01	-2.174***	-2.737***	-2.742***	-2.581***	-2.138*	-2.487*	-2.477*	-2.253*
	(0.605)	(0.654)	(0.661)	(0.663)	(1.229)	(1.339)	(1.317)	(1.360)
GDP	0.032	0.006	0.006	-0.036	0.030	-0.005	-0.005	-0.053
	(0.114)	(0.116)	(0.117)	(0.125)	(0.140)	(0.128)	(0.127)	(0.146)
YRSCH		-0.027*	-0.026*	-0.025*		-0.024	-0.023	-0.021
		(0.014)	(0.014)	(0.013)		(0.019)	(0.019)	(0.018)
AGE			-0.006	0.003			-0.003	0.007
			(0.054)	(0.053)			(0.053)	(0.052)
MIGRANTS				0.700*				0.770
				(0.408)				(0.547)
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	62	62	62	62	62	62	62	62
R-squared	0.946	0.950	0.950	0.951	0.946	0.950	0.950	0.951
First stage F-statistics of excluded instrument					12.1	9.1	11.5	12.3

The dependent variable is trust. OLS and IV estimates (SBTC is the instrumental variable). Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 8. Inequality, top incomes and trust

	(1)	(2)	(3)	(4)	(5)	(6)
GINI	0.152	0.120	0.162	-0.203	-0.104	-0.117
	(0.242)	(0.268)	(0.273)	(0.160)	(0.203)	(0.228)
TOP10	-1.784***	-1.226***	-1.210**			
	(0.265)	(0.405)	(0.487)			
TOP01				-3.125***	-2.373***	-2.782***
				(0.583)	(0.472)	(0.551)
GDP	0.031**	0.088	0.055	0.029***	0.044	0.026
	(0.015)	(0.064)	(0.072)	(0.010)	(0.053)	(0.061)
CONTROLS	NO	NO	YES	NO	NO	YES
Country FE	NO	YES	YES	NO	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	61	61	60	67	67	66
R-squared	0.558	0.948	0.949	0.517	0.952	0.953

The dependent variable is trust. OLS estimates. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 9. Income inequality, intergenerational mobility and trust

	(a) Gini Index		
GINI	-0.966***	-0.309	-2.234*
	(0.293)	(0.453)	(1.099)
IGE	-0.532***		-1.381*
	(0.131)		(0.709)
IGE×GINI		-1.543***	2.730
		(0.413)	(2.210)
CONTROLS	YES	YES	YES
Year FE	YES	YES	YES
Observations	53	53	53
R-squared	0.674	0.656	0.685
	(b) Top decile share		
TOP10	-1.167***	-1.043***	-2.062***
	(0.326)	(0.372)	(0.627)
IGE	-0.280**		-1.365
	(0.137)		(0.827)
IGE×TOP10		-0.704*	3.314
		(0.386)	(2.369)
CONTROLS	YES	YES	YES
Year FE	YES	YES	YES
Observations	52	52	52
R-squared	0.748	0.741	0.761
	(c) Top percentile share		
TOP01	-2.159**	-1.614	-3.370***
	(0.841)	(1.083)	(1.030)
IGE	-0.336**		-0.622*
	(0.144)		(0.331)
IGE×TOP01		-2.601*	3.548
		(1.376)	(2.922)
CONTROLS	YES	YES	YES
Year FE	YES	YES	YES
Observations	57	57	57
R-squared	0.707	0.687	0.714

Controls include GDP per capita, years of schooling, age index and the fraction of immigrants over total population. Pooled OLS estimates. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

RECENTLY PUBLISHED "TEMI" (*)

N. 945 – *Simple banking: profitability and the yield curve*, by Piergiorgio Alessandri and Benjamin Nelson (January 2014).

N. 946 – *Information acquisition and learning from prices over the business cycle*, by Taneli Mäkinen and Björn Ohl (January 2014).

N. 947 – *Time series models with an EGB2 conditional distribution*, by Michele Caivano and Andrew Harvey (January 2014).

N. 948 – *Trade and finance: is there more than just 'trade finance'? Evidence from matched bank-firm data*, by Silvia Del Prete and Stefano Federico (January 2014).

N. 949 – *Natural disasters, growth and institutions: a tale of two earthquakes*, by Guglielmo Barone and Sauro Mocetti (January 2014).

N. 950 – *The cost of firms' debt financing and the global financial crisis*, by Daniele Pianeselli and Andrea Zaghini (February 2014).

N. 951 – *On bank credit risk: systemic or bank-specific? Evidence from the US and UK*, by Junye Li and Gabriele Zinna (February 2014).

N. 952 – *School cheating and social capital*, by Marco Paccagnella and Paolo Sestito (February 2014).

N. 953 – *The impact of local minimum wages on employment: evidence from Italy in the 1950s*, by Guido de Blasio and Samuele Poy (March 2014).

N. 954 – *Two EGARCH models and one fat tail*, by Michele Caivano and Andrew Harvey (March 2014).

N. 955 – *My parents taught me. Evidence on the family transmission of values*, by Giuseppe Albanese, Guido de Blasio and Paolo Sestito (March 2014).

N. 956 – *Political selection in the skilled city*, by Antonio Accetturo (March 2014).

N. 957 – *Calibrating the Italian smile with time-varying volatility and heavy-tailed models*, by Michele Leonardo Bianchi (April 2014).

N. 958 – *The intergenerational transmission of reading: is a good example the best sermon?*, by Anna Laura Mancini, Chiara Monfardini and Silvia Pasqua (April 2014).

N. 959 – *A tale of an unwanted outcome: transfers and local endowments of trust and cooperation*, by Antonio Accetturo, Guido de Blasio and Lorenzo Ricci (April 2014).

N. 960 – *The impact of R&D subsidies on firm innovation*, by Raffaello Bronzini and Paolo Piselli (April 2014).

N. 961 – *Public expenditure distribution, voting, and growth*, by Lorenzo Burlon (April 2014).

N. 962 – *Cooperative R&D networks among firms and public research institutions*, by Marco Marinucci (June 2014).

N. 963 – *Technical progress, retraining cost and early retirement*, by Lorenzo Burlon and Montserrat Vilalta-Bufí (June 2014).

N. 964 – Foreign exchange reserve diversification and the "exorbitant privilege", by Pietro Cova, Patrizio Pagano and Massimiliano Pisani (July 2014).

N. 965 – *Behind and beyond the (headcount) employment rate*, by Andrea Brandolini and Eliana Viviano (July 2014).

N. 966 – *Bank bonds: size, systemic relevance and the sovereign*, by Andrea Zaghini (July 2014).

N. 967 – *Measuring spatial effects in presence of institutional constraints: the case of Italian Local Health Authority expenditure*, by Vincenzo Atella, Federico Belotti, Domenico Depalo and Andrea Piano Mortari (July 2014).

N. 968 – *Price pressures in the UK index-linked market: an empirical investigation*, by Gabriele Zinna (July 2014).

(*) Requests for copies should be sent to:
Banca d'Italia – Servizio Struttura economica e finanziaria – Divisione Biblioteca e Archivio storico –
Via Nazionale, 91 – 00184 Rome – (fax 0039 06 47922059). They are available on the Internet www.bancaditalia.it.

2011

S. DI ADDARIO, *Job search in thick markets*, Journal of Urban Economics, v. 69, 3, pp. 303-318, **TD No. 605 (December 2006).**

F. SCHIVARDI and E. VIVIANO, *Entry barriers in retail trade*, Economic Journal, v. 121, 551, pp. 145-170, **TD No. 616 (February 2007).**

G. FERRERO, A. NOBILI and P. PASSIGLIA, *Assessing excess liquidity in the Euro Area: the role of sectoral distribution of money,* Applied Economics, v. 43, 23, pp. 3213-3230, **TD No. 627 (April 2007).**

P. E. MISTRULLI, *Assessing financial contagion in the interbank market: maximun entropy versus observed interbank lending patterns,* Journal of Banking & Finance, v. 35, 5, pp. 1114-1127, **TD No. 641 (September 2007).**

E. CIAPANNA, *Directed matching with endogenous markov probability: clients or competitors?*, The RAND Journal of Economics, v. 42, 1, pp. 92-120, **TD No. 665 (April 2008).**

M. BUGAMELLI and F. PATERNÒ, *Output growth volatility and remittances*, Economica, v. 78, 311, pp. 480-500, **TD No. 673 (June 2008).**

V. DI GIACINTO e M. PAGNINI, *Local and global agglomeration patterns: two econometrics-based indicators,* Regional Science and Urban Economics, v. 41, 3, pp. 266-280, **TD No. 674 (June 2008).**

G. BARONE and F. CINGANO, *Service regulation and growth: evidence from OECD countries,* Economic Journal, v. 121, 555, pp. 931-957, **TD No. 675 (June 2008).**

P. SESTITO and E. VIVIANO, *Reservation wages: explaining some puzzling regional patterns*, Labour, v. 25, 1, pp. 63-88, **TD No. 696 (December 2008).**

R. GIORDANO and P. TOMMASINO, *What determines debt intolerance? The role of political and monetary institutions*, European Journal of Political Economy, v. 27, 3, pp. 471-484, **TD No. 700 (January 2009).**

P. ANGELINI, A. NOBILI and C. PICILLO, *The interbank market after August 2007: What has changed, and why?*, Journal of Money, Credit and Banking, v. 43, 5, pp. 923-958, **TD No. 731 (October 2009).**

G. BARONE and S. MOCETTI, *Tax morale and public spending inefficiency,* International Tax and Public Finance, v. 18, 6, pp. 724-49, **TD No. 732 (November 2009).**

L. FORNI, A. GERALI and M. PISANI, *The Macroeconomics of Fiscal Consolidation in a Monetary Union: the Case of Italy,* in Luigi Paganetto (ed.), Recovery after the crisis. Perspectives and policies, VDM Verlag Dr. Muller, **TD No. 747 (March 2010).**

A. DI CESARE and G. GUAZZAROTTI, *An analysis of the determinants of credit default swap changes before and during the subprime financial turmoil*, in Barbara L. Campos and Janet P. Wilkins (eds.), The Financial Crisis: Issues in Business, Finance and Global Economics, New York, Nova Science Publishers, Inc., **TD No. 749 (March 2010).**

A. LEVY and A. ZAGHINI, *The pricing of government guaranteed bank bonds,* Banks and Bank Systems, v. 6, 3, pp. 16-24, **TD No. 753 (March 2010).**

G. BARONE, R. FELICI and M. PAGNINI, *Switching costs in local credit markets,* International Journal of Industrial Organization, v. 29, 6, pp. 694-704, **TD No. 760 (June 2010).**

G. BARBIERI, C. ROSSETTI e P. SESTITO, *The determinants of teacher mobility: evidence using Italian teachers' transfer applications*, Economics of Education Review, v. 30, 6, pp. 1430-1444, **TD No. 761 (marzo 2010).**

G. GRANDE and I. VISCO, *A public guarantee of a minimum return to defined contribution pension scheme members,* The Journal of Risk, v. 13, 3, pp. 3-43, **TD No. 762 (June 2010).**

P. DEL GIOVANE, G. ERAMO and A. NOBILI, *Disentangling demand and supply in credit developments: a survey-based analysis for Italy,* Journal of Banking and Finance, v. 35, 10, pp. 2719-2732, **TD No. 764 (June 2010).**

G. BARONE and S. MOCETTI, *With a little help from abroad: the effect of low-skilled immigration on the female labour supply,* Labour Economics, v. 18, 5, pp. 664-675, **TD No. 766 (July 2010).**

S. FEDERICO and A. FELETTIGH, *Measuring the price elasticity of import demand in the destination markets of italian exports,* Economia e Politica Industriale, v. 38, 1, pp. 127-162, **TD No. 776 (October 2010).**

S. MAGRI and R. PICO, *The rise of risk-based pricing of mortgage interest rates in Italy*, Journal of Banking and Finance, v. 35, 5, pp. 1277-1290, **TD No. 778 (October 2010).**

M. TABOGA, *Under/over-valuation of the stock market and cyclically adjusted earnings*, International Finance, v. 14, 1, pp. 135-164, **TD No. 780 (December 2010).**

S. NERI, *Housing, consumption and monetary policy: how different are the U.S. and the Euro area?*, Journal of Banking and Finance, v.35, 11, pp. 3019-3041, **TD No. 807 (April 2011).**

V. CUCINIELLO, *The welfare effect of foreign monetary conservatism with non-atomistic wage setters*, Journal of Money, Credit and Banking, v. 43, 8, pp. 1719-1734, **TD No. 810 (June 2011).**

A. CALZA and A. ZAGHINI, *welfare costs of inflation and the circulation of US currency abroad,* The B.E. Journal of Macroeconomics, v. 11, 1, Art. 12, **TD No. 812 (June 2011).**

I. FAIELLA, *La spesa energetica delle famiglie italiane*, Energia, v. 32, 4, pp. 40-46, **TD No. 822 (September 2011).**

D. DEPALO and R. GIORDANO, *The public-private pay gap: a robust quantile approach*, Giornale degli Economisti e Annali di Economia, v. 70, 1, pp. 25-64, **TD No. 824 (September 2011).**

R. DE BONIS and A. SILVESTRINI, *The effects of financial and real wealth on consumption: new evidence from OECD countries,* Applied Financial Economics, v. 21, 5, pp. 409–425, **TD No. 837 (November 2011).**

F. CAPRIOLI, P. RIZZA and P. TOMMASINO, *Optimal fiscal policy when agents fear government default*, Revue Economique, v. 62, 6, pp. 1031-1043, **TD No. 859 (March 2012).**

2012

F. CINGANO and A. ROSOLIA, *People I know: job search and social networks*, Journal of Labor Economics, v. 30, 2, pp. 291-332, **TD No. 600 (September 2006).**

G. GOBBI and R. ZIZZA, *Does the underground economy hold back financial deepening? Evidence from the italian credit market*, Economia Marche, Review of Regional Studies, v. 31, 1, pp. 1-29, **TD No. 646 (November 2006).**

S. MOCETTI, *Educational choices and the selection process before and after compulsory school*, Education Economics, v. 20, 2, pp. 189-209, **TD No. 691 (September 2008).**

P. PINOTTI, M. BIANCHI and P. BUONANNO, *Do immigrants cause crime?*, Journal of the European Economic Association , v. 10, 6, pp. 1318–1347, **TD No. 698 (December 2008).**

M. PERICOLI and M. TABOGA, *Bond risk premia, macroeconomic fundamentals and the exchange rate*, International Review of Economics and Finance, v. 22, 1, pp. 42-65, **TD No. 699 (January 2009).**

F. LIPPI and A. NOBILI, *Oil and the macroeconomy: a quantitative structural analysis,* Journal of European Economic Association, v. 10, 5, pp. 1059-1083, **TD No. 704 (March 2009).**

G. ASCARI and T. ROPELE, *Disinflation in a DSGE perspective: sacrifice ratio or welfare gain ratio?,* Journal of Economic Dynamics and Control, v. 36, 2, pp. 169-182, **TD No. 736 (January 2010).**

S. FEDERICO, *Headquarter intensity and the choice between outsourcing versus integration at home or abroad*, Industrial and Corporate Chang, v. 21, 6, pp. 1337-1358, **TD No. 742 (February 2010).**

I. BUONO and G. LALANNE, *The effect of the Uruguay Round on the intensive and extensive margins of trade,* Journal of International Economics, v. 86, 2, pp. 269-283, **TD No. 743 (February 2010).**

A. BRANDOLINI, S. MAGRI and T. M SMEEDING, *Asset-based measurement of poverty*, In D. J. Besharov and K. A. Couch (eds), Counting the Poor: New Thinking About European Poverty Measures and Lessons for the United States, Oxford and New York: Oxford University Press, **TD No. 755 (March 2010).**

S. GOMES, P. JACQUINOT and M. PISANI, *The EAGLE. A model for policy analysis of macroeconomic interdependence in the euro area,* Economic Modelling, v. 29, 5, pp. 1686-1714, **TD No. 770 (July 2010).**

A. ACCETTURO and G. DE BLASIO, *Policies for local development: an evaluation of Italy's "Patti Territoriali",* Regional Science and Urban Economics, v. 42, 1-2, pp. 15-26, **TD No. 789 (January 2006).**

F. BUSETTI and S. DI SANZO, *Bootstrap LR tests of stationarity, common trends and cointegration,* Journal of Statistical Computation and Simulation, v. 82, 9, pp. 1343-1355, **TD No. 799 (March 2006).**

S. NERI and T. ROPELE, *Imperfect information, real-time data and monetary policy in the Euro area,* The Economic Journal, v. 122, 561, pp. 651-674, **TD No. 802 (March 2011).**

A. ANZUINI and F. FORNARI, *Macroeconomic determinants of carry trade activity,* Review of International Economics, v. 20, 3, pp. 468-488, **TD No. 817 (September 2011).**

M. AFFINITO, *Do interbank customer relationships exist? And how did they function in the crisis? Learning from Italy*, Journal of Banking and Finance, v. 36, 12, pp. 3163-3184, **TD No. 826 (October 2011).**

P. GUERRIERI and F. VERGARA CAFFARELLI, *Trade Openness and International Fragmentation of Production in the European Union: The New Divide?,* Review of International Economics, v. 20, 3, pp. 535-551, **TD No. 855 (February 2012).**

V. DI GIACINTO, G. MICUCCI and P. MONTANARO, *Network effects of public transposrt infrastructure: evidence on Italian regions,* Papers in Regional Science, v. 91, 3, pp. 515-541, **TD No. 869 (July 2012).**

A. FILIPPIN and M. PACCAGNELLA, *Family background, self-confidence and economic outcomes,* Economics of Education Review, v. 31, 5, pp. 824-834, **TD No. 875 (July 2012).**

2013

A. MERCATANTI, *A likelihood-based analysis for relaxing the exclusion restriction in randomized experiments with imperfect compliance*, Australian and New Zealand Journal of Statistics, v. 55, 2, pp. 129-153, **TD No. 683 (August 2008).**

F. CINGANO and P. PINOTTI, *Politicians at work. The private returns and social costs of political connections*, Journal of the European Economic Association, v. 11, 2, pp. 433-465, **TD No. 709 (May 2009).**

F. BUSETTI and J. MARCUCCI, *Comparing forecast accuracy: a Monte Carlo investigation*, International Journal of Forecasting, v. 29, 1, pp. 13-27, **TD No. 723 (September 2009).**

D. DOTTORI, S. I-LING and F. ESTEVAN, *Reshaping the schooling system: The role of immigration*, Journal of Economic Theory, v. 148, 5, pp. 2124-2149, **TD No. 726 (October 2009).**

A. FINICELLI, P. PAGANO and M. SBRACIA, *Ricardian Selection*, Journal of International Economics, v. 89, 1, pp. 96-109, **TD No. 728 (October 2009).**

L. MONTEFORTE and G. MORETTI, *Real-time forecasts of inflation: the role of financial variables*, Journal of Forecasting, v. 32, 1, pp. 51-61, **TD No. 767 (July 2010).**

R. GIORDANO and P. TOMMASINO, *Public-sector efficiency and political culture*, FinanzArchiv, v. 69, 3, pp. 289-316, **TD No. 786 (January 2011).**

E. GAIOTTI, *Credit availablility and investment: lessons from the "Great Recession"*, European Economic Review, v. 59, pp. 212-227, **TD No. 793 (February 2011).**

F. NUCCI and M. RIGGI, *Performance pay and changes in U.S. labor market dynamics*, Journal of Economic Dynamics and Control, v. 37, 12, pp. 2796-2813, **TD No. 800 (March 2011).**

G. CAPPELLETTI, G. GUAZZAROTTI and P. TOMMASINO, *What determines annuity demand at retirement?,* The Geneva Papers on Risk and Insurance – Issues and Practice, pp. 1-26, **TD No. 805 (April 2011).**

A. ACCETTURO e L. INFANTE, *Skills or Culture? An analysis of the decision to work by immigrant women in Italy,* IZA Journal of Migration, v. 2, 2, pp. 1-21, **TD No. 815 (July 2011).**

A. DE SOCIO, *Squeezing liquidity in a "lemons market" or asking liquidity "on tap"*, Journal of Banking and Finance, v. 27, 5, pp. 1340-1358, **TD No. 819 (September 2011).**

S. GOMES, P. JACQUINOT, M. MOHR and M. PISANI, *Structural reforms and macroeconomic performance in the euro area countries: a model-based assessment,* International Finance, v. 16, 1, pp. 23-44, **TD No. 830 (October 2011).**

G. BARONE and G. DE BLASIO, *Electoral rules and voter turnout,* International Review of Law and Economics, v. 36, 1, pp. 25-35, **TD No. 833 (November 2011).**

O. BLANCHARD and M. RIGGI, *Why are the 2000s so different from the 1970s? A structural interpretation of changes in the macroeconomic effects of oil prices*, Journal of the European Economic Association, v. 11, 5, pp. 1032-1052, **TD No. 835 (November 2011).**

R. CRISTADORO and D. MARCONI, *Household savings in China,* in G. Gomel, D. Marconi, I. Musu, B. Quintieri (eds), The Chinese Economy: Recent Trends and Policy Issues, Springer-Verlag, Berlin, **TD No. 838 (November 2011).**

E. GENNARI and G. MESSINA, *How sticky are local expenditures in Italy? Assessing the relevance of the flypaper effect through municipal data,* International Tax and Public Finance (DOI: 10.1007/s10797-013-9269-9), **TD No. 844 (January 2012).**

A. ANZUINI, M. J. LOMBARDI and P. PAGANO, *The impact of monetary policy shocks on commodity prices*, International Journal of Central Banking, v. 9, 3, pp. 119-144, **TD No. 851 (February 2012).**

R. GAMBACORTA and M. IANNARIO, *Measuring job satisfaction with CUB models,* Labour, v. 27, 2, pp. 198-224, **TD No. 852 (February 2012).**

G. ASCARI and T. ROPELE, *Disinflation effects in a medium-scale new keynesian model: money supply rule versus interest rate rule,* European Economic Review, v. 61, pp. 77-100, **TD No. 867 (April 2012).**

E. BERETTA and S. DEL PRETE, *Banking consolidation and bank-firm credit relationships: the role of geographical features and relationship characteristics,* Review of Economics and Institutions, v. 4, 3, pp. 1-46, **TD No. 901 (February 2013).**

M. ANDINI, G. DE BLASIO, G. DURANTON and W. STRANGE, *Marshallian labor market pooling: evidence from Italy,* Regional Science and Urban Economics, v. 43, 6, pp.1008-1022, **TD No. 922 (July 2013).**

G. SBRANA and A. SILVESTRINI, *Forecasting aggregate demand: analytical comparison of top-down and bottom-up approaches in a multivariate exponential smoothing framework,* International Journal of Production Economics, v. 146, 1, pp. 185-98, **TD No. 929 (September 2013).**

A. FILIPPIN, C. V, FIORIO and E. VIVIANO, *The effect of tax enforcement on tax morale,* European Journal of Political Economy, v. 32, pp. 320-331, **TD No. 937 (October 2013).**

2014

M. TABOGA, *The riskiness of corporate bonds*, Journal of Money, Credit and Banking, v.46, 4, pp. 693-713, **TD No. 730 (October 2009).**

G. MICUCCI and P. ROSSI, *Il ruolo delle tecnologie di prestito nella ristrutturazione dei debiti delle imprese in crisi*, in A. Zazzaro (a cura di), Le banche e il credito alle imprese durante la crisi, Bologna, Il Mulino, **TD No. 763 (June 2010).**

P. ANGELINI, S. NERI and F. PANETTA, *The interaction between capital requirements and monetary policy*, Journal of Money, Credit and Banking, v. 46, 6, pp. 1073-1112, **TD No. 801 (March 2011).**

M. FRANCESE and R. MARZIA, *Is there Room for containing healthcare costs? An analysis of regional spending differentials in Italy,* The European Journal of Health Economics, v. 15, 2, pp. 117-132, **TD No. 828 (October 2011).**

L. GAMBACORTA and P. E. MISTRULLI, *Bank heterogeneity and interest rate setting: what lessons have we learned since Lehman Brothers?,* Journal of Money, Credit and Banking, v. 46, 4, pp. 753-778, **TD No. 829 (October 2011).**

M. PERICOLI, *Real term structure and inflation compensation in the euro area*, International Journal of Central Banking, v. 10, 1, pp. 1-42, **TD No. 841 (January 2012).**

V. DI GACINTO, M. GOMELLINI, G. MICUCCI and M. PAGNINI, *Mapping local productivity advantages in Italy: industrial districts, cities or both?*, Journal of Economic Geography, v. 14, pp. 365–394, **TD No. 850 (January 2012).**

A. ACCETTURO, F. MANARESI, S. MOCETTI and E. OLIVIERI, *Don't Stand so close to me: the urban impact of immigration,* Regional Science and Urban Economics, v. 45, pp. 45-56, **TD No. 866 (April 2012).**

S. FEDERICO, *Industry dynamics and competition from low-wage countries: evidence on Italy*, Oxford Bulletin of Economics and Statistics, v. 76, 3, pp. 389-410, **TD No. 879 (September 2012).**

F. D'AMURI and G. PERI, *Immigration, jobs and employment protection: evidence from Europe before and during the Great Recession,* Journal of the European Economic Association, v. 12, 2, pp. 432-464, **TD No. 886 (October 2012).**

M. TABOGA, *What is a prime bank? A euribor-OIS spread perspective,* International Finance, v. 17, 1, pp. 51-75, **TD No. 895 (January 2013).**

L. GAMBACORTA and F. M. SIGNORETTI, *Should monetary policy lean against the wind? An analysis based on a DSGE model with banking,* Journal of Economic Dynamics and Control, v. 43, pp. 146-74, **TD No. 921 (July 2013).**

U. ALBERTAZZI and M. BOTTERO, *Foreign bank lending: evidence from the global financial crisis,* Journal of International Economics, v. 92, 1, pp. 22-35, **TD No. 926 (July 2013).**

R. DE BONIS and A. SILVESTRINI, *The Italian financial cycle: 1861-2011,* Cliometrica, v.8, 3, pp. 301-334, **TD No. 936 (October 2013).**

D. PIANESELLI and A. ZAGHINI, *The cost of firms' debt financing and the global financial crisis,* Finance Research Letters, v. 11, 2, pp. 74-83, **TD No. 950 (February 2014).**

A. ZAGHINI, *Bank bonds: size, systemic relevance and the sovereign,* International Finance, v. 17, 2, pp. 161-183, **TD No. 966 (July 2014).**

FORTHCOMING

M. BUGAMELLI, S. FABIANI and E. SETTE, *The age of the dragon: the effect of imports from China on firm-level prices*, Journal of Money, Credit and Banking, **TD No. 737 (January 2010).**

F. D'AMURI, *Gli effetti della legge 133/2008 sulle assenze per malattia nel settore pubblico,* Rivista di Politica Economica, **TD No. 787 (January 2011).**

E. COCOZZA and P. PISELLI, *Testing for east-west contagion in the European banking sector during the financial crisis,* in R. Matoušek; D. Stavárek (eds.), Financial Integration in the European Union, Taylor & Francis, **TD No. 790 (February 2011).**

R. BRONZINI and E. IACHINI, *Are incentives for R&D effective? Evidence from a regression discontinuity approach,* American Economic Journal : Economic Policy, **TD No. 791 (February 2011).**

G. DE BLASIO, D. FANTINO and G. PELLEGRINI, *Evaluating the impact of innovation incentives: evidence from an unexpected shortage of funds,* Industrial and Corporate Change, **TD No. 792 (February 2011).**

A. DI CESARE, A. P. STORK and C. DE VRIES, *Risk measures for autocorrelated hedge fund returns,* Journal of Financial Econometrics, **TD No. 831 (October 2011).**

D. FANTINO, A. MORI and D. SCALISE, *Collaboration between firms and universities in Italy: the role of a firm's proximity to top-rated departments,* Rivista Italiana degli economisti, **TD No. 884 (October 2012).**

G. BARONE and S. MOCETTI, *Natural disasters, growth and institutions: a tale of two earthquakes,* Journal of Urban Economics, **TD No. 949 (January 2014).**