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What Do Cross-Country Surveys Tell Us About Social Capital?

Abstract

We assess the predictive power of survey measures of social capital with a new behavioural data set that examines whether citizens report a lost wallet to its owner. Using data from more than 17,000 "lost" wallets across 40 countries, we find that survey measures of social capital — especially questions concerning generalized trust or generalized morality—are strongly and significantly correlated with country-level differences in wallet reporting rates. A second finding is that lost wallet reporting rates predict unique variation in the outputs of social capital, such as economic development and government effectiveness, not captured by existing measures.

JEL-Codes: C930, C830, Z100, O100.

Keywords: social capital, trust, honesty, field experiment, surveys.

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Social capital is considered a fundamental factor underlying persistent differences in economic development (Arrow 1972; Mokyr 2009), and has been linked to country-to-country differences in growth, innovation, crime, governance, and institutional performance (Algan and Cahuc 2010; Djankov et al. 2003; Fountain 1998; Knack and Keefer 1997; Lederman, Loayza, and Menendez 2002; Guiso, Sapienza, and Zingales 2004; La Porta et al. 1997; Putnam, Leonardi, and Nanetti 1993; Tabellini 2008). While the concept of social capital has a number of distinct interpretations,[1] in this paper we focus on the aspects of social capital thought to be most clearly tied to economic development and productivity — namely, the shared values, beliefs, and expectations that limit opportunistic behavior and facilitate cooperation among strangers. This includes the extent that individuals believe others to be honest and trustworthy, and are willing to cooperate and reciprocate in kind (Fukuyama 1995; Guiso, Sapienza, and Zingales 2011).

One of the more difficult issues in studying social capital is how to properly measure the construct. Standard practice across the social sciences has been to use data from large-scale surveys administered across countries,[2] such as the World Values Survey (WVS). While cross-country surveys have a number of attractive features, this approach also comes with several limitations. For example, cross-country comparisons of survey data are potentially biased due to cultural differences in how questions are interpreted (e.g., Laajaj et al. 2019), how participants make use of response scales (Johnson et al. 2005), and the degree that responses are influenced by social desirability concerns (Bernardi 2006). That such response biases may vary across countries presents a challenge for drawing clean comparisons through the use of survey data.[3] Layered on top of these concerns is whether survey responses translate to concrete, meaningful behaviors (Bertrand and Mullainathan 2001; Krosnick 1999). For instance, survey data that measure perceptions of corruption have been found to correspond poorly with observable levels of corruption, both when looking at

1. Social capital has also been conceptualized as the advantages and opportunities afforded to individuals through their social networks or membership in certain communities (Bourdieu 1986; Putnam, Leonardi, and Nanetti 1993), as any form of shared knowledge, norms, and rules among group members (Ostrom 2000), and as social organization that can not be achieved through individual means (Coleman 1990). While some of these formulations incorporate notions of reciprocity and trust, they also tend to emphasize the number and strength of social ties to a community. Others have argued that the concept of social capital should be abandoned, as the construct often includes components that are conceptually distinct and often empirically uncorrelated with one another (see Bjørnskov and Sønderskov 2013, for a critical review).

2. In addition to surveys, past research has explored experimental measures of trust in economic games (Glaeser et al. 2000; Karlan 2005), but experimental laboratory measures are not widely available at the scale needed for cross-country comparisons (see Fehr et al. 2003 and Bellemare and Kröger 2007 for representative experiments in Germany and the Netherlands). To what extent behavior in the lab generalizes to the field is still an open question (Levitt and List 2007). Besides experiments and surveys, researchers have also used behavioral proxies of social capital such as voter turnout and blood donations per capita (Guiso, Sapienza, and Zingales 2004; Nannicini et al. 2013). However, these behaviors are subject to different rules and regulations across countries, and for this reason have primarily been used to examine variation in social capital within rather than across countries.

3. Many survey measures are also conducted using face-to-face interviews, which likely exacerbate the variation in response bias across countries (e.g., for the WVS, see https://www.worldvaluessurvey.org /AJDocumentation.jsp?CndWAVE=7).

the correspondence within communities (Olken 2009) and across countries (Razafindrakoto and Roubaud 2010). These limitations raise the possibility that survey measures may have little correspondence with more concrete measures of social capital.[4]

In this paper we provide a portable, cross-country behavioral benchmark for studying social capital. We recently conducted a large international field experiment in which we turned in lost wallets with varying amounts of money at public and private institutions and measured whether recipients attempted to return the wallets (Cohn et al. 2019). In total, we deposited 17,303 wallets in 355 cities spanning 40 countries. Returning a lost wallet implies elements of honesty towards strangers as well as general prosocial preferences such as altruism, and as such can be seen as a representative instance of social capital (Gintis 2016).[5,6] Much like in large-scale surveys our data is designed to be portable across countries, but unlike surveys our data examines real behavior in a naturalistic setting (i.e., recipients are presumably unaware their behavior is observed by experimenters). In section 3 of the online appendix, we report a number of robustness checks that support the validity of our lost wallet paradigm, including that wallet reporting rates are unlikely to be confounded by risk of detection, legal regulations, beliefs about finder's fees, or cross-country differences in email usage. Furthermore, Figure 1 illustrates that wallet reporting rates in our experiment are negatively correlated with objective behavioral proxies of dishonest behavior (such as cheating on taxes and corruption of public officials) that are available at the regional level for the US and Italy (see section 4 of the online appendix for details). Together, the results suggest that our measure captures important variation in social capital across countries.

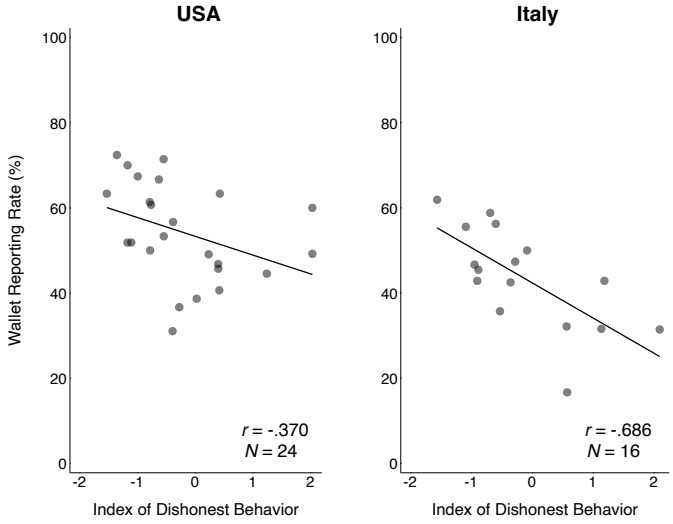
We compare the performance of a number of widely-used survey measures of social capital

4. More generally, our study adds to the literature on the correspondence between survey responses and behavior in natural settings. Evidence points to a mixture of both accurate and biased correspondence between the two. For instance, when survey responses are compared to administrative records, respondents often exaggerate engaging in a number of socially-desirable behaviors, such having voted in mayoral elections, donating to charity, or reporting their college grade point average (Kreuter, Presser, and Tourangeau 2008; Parry and Crossley 1950). At the same time, research has also found that survey measures can often correspond surprisingly well with behavior in natural settings (Dohmen et al. 2011; Hainmueller, Hangartner, and Yamamoto 2015; Epper et al. 2020; Maréchal et al. 2022; Sunde et al., in press).

5. In reviewing the literature on different measures of social capital, Paldam (2000) states "the famous wallet-test is an attempt to measure trust in a more general way: Here N wallets are 'forgotten' in public places and the test is how many that are handed back" (p. 644). Survey data also suggests that returning a lost wallet is viewed as an act of social capital. For example, when surveying nationally representative samples in the United Kingdom, Poland, and the United States, we found that the large majority of respondents (89%) viewed keeping a lost wallet as "somewhat inappropriate" or "very inappropriate" (Cohn et al. 2019).

6. Knack and Keefer (1997) compared trust scores to data from a lost-wallet study conducted by Reader's Digest. However, the sample size of the Digest study was considerably smaller than our current data set, at only 400 wallets total. Furthermore, this data is compromised by potential confounds which our study took explicit steps to remove. As an example, Reader's Digest dropped wallets in public spaces, which allows for selection effects (i.e., individuals who select into the study by deciding to pick up a lost wallet may be different from those who do not). By contrast, in our study we returned lost wallets to employees at the front desk of different institutions, thereby providing greater experimental control over who participated in the experiment. For these reasons, our data likely represent a substantial improvement in comprehensiveness and fidelity compared to previous lost wallet studies.

Figure 1: Wallet Reporting Rates and Dishonesty



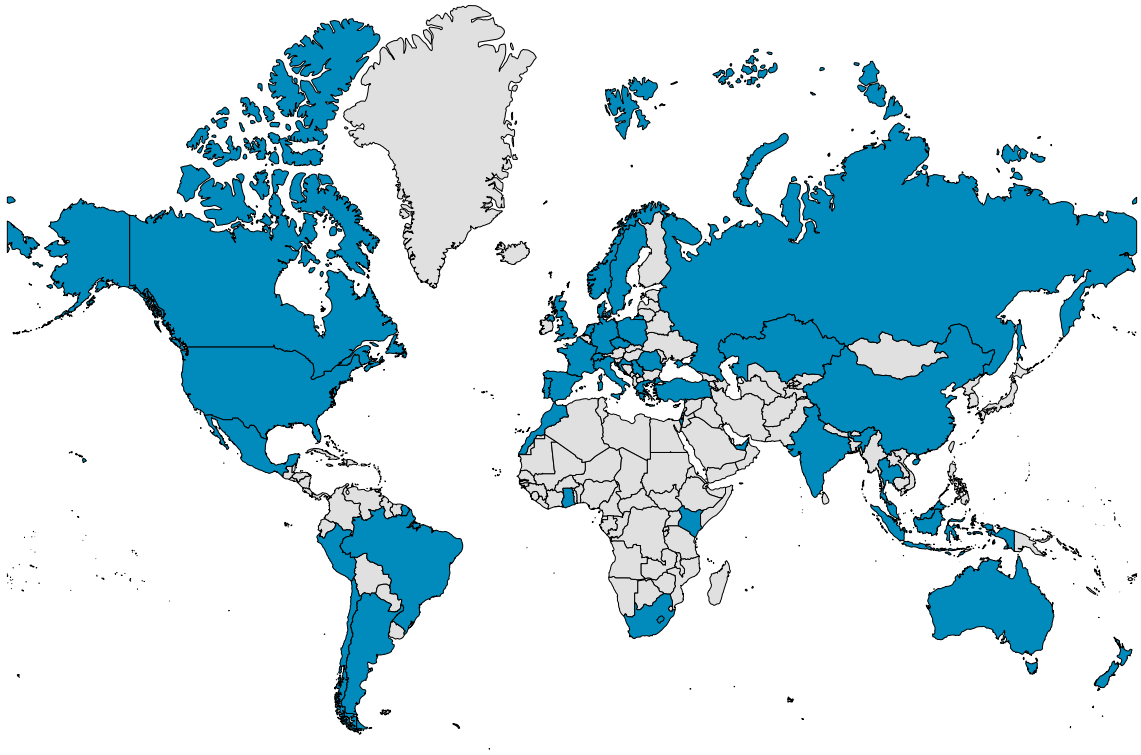
Notes: The y-axis represents the percentage of recipients in each city reporting a lost wallet in the US (left panel) and Italy (right panel). The x-axis represents city-level dishonesty index scores, with higher numbers reflecting greater dishonesty. For the US, our dishonesty index was constructed by extracting the first principal component from (1) the share of self-employed individuals in a city who reports an income in 2009 within US $500 of the first Earned Income Tax Credit (EITC) kink, as a percentage of individuals with non-zero self-employment income, as a measure of cheating on taxes (Chetty, Friedman, and Saez 2013), and (2) the number of federal court convictions for corrupt practices between 1976 and 2002 per 10,000 public officials in the state that the city belongs to (Glaeser and Saks 2006). For Italy, our dishonesty index was constructed by extracting the first principal component from (1) municipality-level rates of compliance or payment of a television licensing fee (Buonanno et al. 2019), (2) the difference between the cumulative amounts of public money allocated to capital expenditures and existing amounts of physical infrastructure (Golden and Picci 2006), and (3) historical data on prosecutors' requests to proceed with a criminal investigation against a member of Parliament (Nannicini et al. 2013). Lines represent the best fit to the data based on OLS estimation.

to our behavioral benchmark, and document two main findings. The first is that only a subset of survey measures meaningfully correlate with wallet reporting rates. The fact that only some survey measures are predictive of social capital (e.g., generalized trust from the World Value Survey) while other seemingly-similar measures are not (e.g., generalized trust from the Global Preferences Survey) highlights the importance of benchmarking survey responses against behavioral outcomes. The second finding is that wallet reporting rates in our data also strongly predict economic outputs associated with social capital. In fact, wallet reporting rates outperform virtually every survey measure in predicting country-level differences in gross domestic product, total factor productivity, and indicators of government effectiveness. In what follows, we explain in greater detail our lost wallet data and the set of survey measures benchmarked against wallet reporting rates.

A Global Field Experiment

Behavioral data comes from a field experiment we recently conducted consisting of 17,303 lost wallets in 355 cities across 40 countries (Cohn et al. 2019). Figure 2 provides an overview of the countries covered in our data set. We typically turned in 400 wallets in the six to eight largest cities of each country, at one of five institutional settings: (i) banks; (ii) theaters, museums, or other

Figure 2: Coverage of Lost Wallet Data (Blue Countries)



cultural establishments; (iii) post offices; (iv) hotels; and (v) public offices, such as police stations, courts of law, or town halls. We focused on these institutions because they serve as essential pillars of civic life, and typically have a public reception area that allowed us to perform the drop-offs.

Experimenters in our study handed over a "lost" wallet (that they ostensibly found outside on the street) to a front-desk worker and asked them to take custody of the wallet. The experimenter would then promptly leave without requesting written proof of the transaction. By telling recipients that the wallet was found outside the building, we prevented possible concerns that the owner might come back and look for the wallet (or at least provided recipients with plausible deniability of having received the wallet). After performing the wallet drop-off and exiting the building, experimenters would immediately record several recipient characteristics and situational factors. In particular, experimenters made note of the recipient's gender and approximate age (i.e., whether the person was 40 years or older), and also noted whether other coworkers or bystanders were present during the transaction (which we use as a proxy for how busy or observable[7] the recipient was). Experimenters also noted whether a computer was visible at the recipient's desk, which we use as a proxy for lower effort costs of contacting the owner.

For our wallets we used transparent business card cases, allowing the recipient to inspect its

7. In the online appendix we report additional analyses which suggest that concerns of being observed do not influence country differences in wallet reporting rates.

content without having to open the wallet. Each wallet contained three identical business cards providing the owner's contact information, and we typically created three fictitious male owners for each country using common local names. The wallets also contained a grocery list, a small dimple key, and (depending on experimental treatment) some money. To signal that the owner of the wallet was likely a resident, the business cards and shopping list were always provided in the country's local language and any money inside the wallet was always in local currencies. Business cards in each wallet were associated with a unique email address, allowing us to identify individual wallets that were reported. Our dependent measure was whether a wallet was reported to its owner by email within 100 days. For greater detail on the study procedure we direct the reader to the Supplemental Materials of Cohn et al. (2019). Data for the study is publicly available at https://doi.org/10.7910/DVN/YKBODN.

In the experiment we randomly varied the amount of money in the wallet, with wallets containing either no money or the equivalent of US $13.45 (adjusted for purchasing power parity). We also ran additional treatment arms in the United States, United Kingdom, and Poland, including a high stakes version in which wallets contained the equivalent of US $94.15 and another version that excluded the dimple key from the wallet. Country-level reporting rates were strongly correlated across experimental conditions — for example, the rank-order correlation between the $13.45 condition and the condition without money was 0.939 — so we combine data across conditions for the present analysis. The results we report below are virtually unchanged when we restrict our analysis only to wallets containing no money, or only to wallets containing money.

Survey Measures of Social Capital

Table 1 provides an overview of the survey measures we benchmark against wallet reporting rates. We selected these measures based on their prominence and use in the past literature, their degree of fit with our operationalization of social capital (i.e., values and beliefs that encourage cooperation among strangers and limit free-riding), and availability of data for public use and suitability for cross-country comparisons.

Generalized Trust. Our first two survey items attempt to measure general tendencies to trust others. Such measures logically relate to both social capital and to our measure of wallet reporting rates, as in equilibrium people should only be willing to trust if others are honest. The most popular measure of this sort (and perhaps the most widely used measure in the social capital literature) is the "generalized trust" measure used in both the World Values Survey (WVS) and European Values Study (EVS), which asks respondents whether most people can be trusted or not. Both the WVS and EVS are large-scale, representative surveys that ask a standardized set of questions in repeated

cross-sections.[8] One exception in our data set is Kenya, where we use generalized trust responses from the Afrobarometer (the question and response format is identical to that in the WVS/EVS). Our second measure of generalized trust ("GPS trust") comes from the Global Preferences Survey, which was collected within the framework of the 2012 Gallup World Poll (Falk et al. 2016; Falk et al. 2018). The GPS was designed to measure key economic preferences (such as risk, time, and social preferences) with nationally representative samples. The GPS trust measure asks respondents whether they assume others have "only the best intentions", and is a strong predictor of trusting behavior in incentivized trust games. In total, 39 of the 40 countries in our lost wallet data overlap with survey data from the WVS/EVS, and 36 of the 40 countries overlap with the GPS.

Generalized Morality. Our next two measures focus on norms and beliefs of appropriate conduct and behavior towards others beyond one's immediate family, kinship, or social group. This generalized, or non-parochial, sense of morality has been thought to be closely linked to social capital because it fosters large-scale cooperation (Tabellini 2008, 2010). Our first measure ("generalized morality") comes from the WVS/EVS and is based on prior work by Tabellini (2008). For this measure respondents indicate whether "tolerance and respect for other people" is one of the top five qualities children are encouraged to learn at home (from a list of ten possible qualities such as obedience, hard work, or feelings of responsibility).[9] Our second measure ("Universal Moral Values") is based on work by Enke (2019) and captures the strength of "universal" as opposed to "particularist" moral values taken from the Moral Foundations Questionnaire (Graham et al. 2011). This survey measure is based on a theoretical framework from moral psychology which distinguishes between impersonal (universal) values such as fairness and individual rights — which facilitate cooperation among strangers — and in-group-specific (particularist) values such as in-group loyalty and respect for established hierarchies. The MFQ data comes from a sample of self-selected respondents who chose to complete the MFQ at www.yourmorals.org between 2008 and 2018. In terms of coverage, data from 38 countries in our lost wallet data overlap with the generalized morality measure from the WVS/EVS, and data from 35 countries overlap with the universal moral values measure.

8. The WVS consists of seven waves collected from 1981 to 2020. The EVS consists of five waves collected from 1981 to 2017. For all measures from the WVS/EVS, we combine responses across survey waves as country-level responses since our set of items have a high degree of temporal stability. In section 7 of the online appendix, we report results when only using responses from the survey wave closest in time to when our lost wallet data was collected for each country. Using this alternative data set we find similar (and if anything, slightly stronger) results to those reported here.

9. Tabellini's index of generalized morality varies across papers. In Tabellini (2008) the index is a composite of the generalized trust and respect items from the WVS/EVSWorld Values Survey, and in Tabellini (2010) the index also includes a measure of obedience towards parents and locus of control. We decided to use the single respect item as our measure of generalized morality because this item (a) appears to most closely resemble the construct of interest (i.e., has the highest face validity), and (b) allows for cleaner comparisons of generalized trust in terms of predictive performance. We find similar results to those reported above when using other indices used by Tabellini.

Norms of Civic Cooperation. Our next survey measure involves norms of civic cooperation, which measure the degree of disapproval for actions that confer a private benefit while imposing a social cost on others. Such measures directly relate to our conceptualization of social capital as beliefs and values that limit free-riding. Following Guiso, Sapienza, and Zingales (2011), we extract the first principal component from three WVS/EVS items which ask opinions about claiming public benefits one is not entitled to, free riding on public goods, and accepting bribes. For this measure, data from 37 countries overlap with our lost wallet data.

Prosocial Preferences. The next two survey measures come from the Global Preference Survey and measure two distinct forms of prosocial preferences: positive reciprocity and unconditional altruism. Positive reciprocity attempts to measure the propensity to act in a positively reciprocal way towards others, which is thought to be a key ingredient in facilitating cooperation and limiting free-riding (i.e., conditional cooperation; Fischbacher and Gächter 2010; Rustagi, Engel, and Kosfeld 2010). The GPS measure of positive reciprocity is based on two questions. One item asks respondents to assess how willing they are to return a favor to someone else. The second item involves a hypothetical scenario in which respondents imagine they are lost in an unfamiliar area and, after asking a stranger for directions, receive an offer by the stranger to take them to their destination. Respondents are then asked which of six presents they would give to the stranger as a "thank you," with the presents varying between 5 and 30 euros. In the GPS the two items are aggregated and given roughly equal weights (0.485 and 0.515, respectively).

The GPS also provides a measure of unconditional altruism, a form of prosocial preferences that has been empirically linked to honest behavior in general (Cappelen, Sørensen, and Tungodden 2013; Kerschbamer, Neururer, and Gruber 2019; Maggian and Villeval 2016) and wallet reporting rates in particular (Cohn et al. 2019). The first item asks respondents how willing they would be to give to good causes without the expectation of anything in return. The second item involves a hypothetical scenario where the respondent receives an unexpected windfall of 1,000 euros, and asks them how much of the windfall they would donate towards a good cause. In the GPS the items receive weights of 0.365 and 0.635, respectively, before being combined. For both measures, data from 36 countries overlap with our lost wallet data.

Returning a Lost Item. Lastly, we include a recent measure ("Return Lost Item") from the 2019 Lloyd's Register Foundation World Risk Poll conducted by Gallup. The poll consists of interviews with nationally representative samples of over 150,000 respondents from 142 countries and territories. We use a single question that asks respondents how likely a stranger would be to return a small lost item if found, from "not at all likely" to "somewhat likely" to "very likely." Since the measure bears a close resemblance to our behavioral measure of social capital — returning a lost wallet — we include this item as a way to evaluate the strength of other survey measures (which attempt to measure more general values or beliefs) in predicting wallet reporting rates.

Results

Survey Measures and Wallet Reporting Rates

We report coefficient estimates and p-values from ordinary least squares (OLS) regressions where we regress wallet reporting behavior on country-level variables of social capital. Observations are coded as 100 when a wallet was reported and 0 otherwise, and all survey measures are standardized at the country-level to have a mean of zero and standard deviation of one. With this coding scheme, regression coefficients can be interpreted as the percentage point difference in reporting rates associated with a one standard deviation change in the explanatory variable. For all models we also include fixed effects for treatment condition, institutional setting, and all recipient and situational characteristics recorded during the wallet drop-off. We adjust standard errors for clustering at the country-level, and also adjust p-values to control for the false discovery rate[10] (i.e., the proportion of significant results expected to be false due to multiple hypothesis testing; Benjamini and Hochberg 1995; Benjamini and Yekutieli 2001). In the online appendix, we also show that our results are robust when excluding our set of covariates from the analyses, or when using probit rather than OLS models.

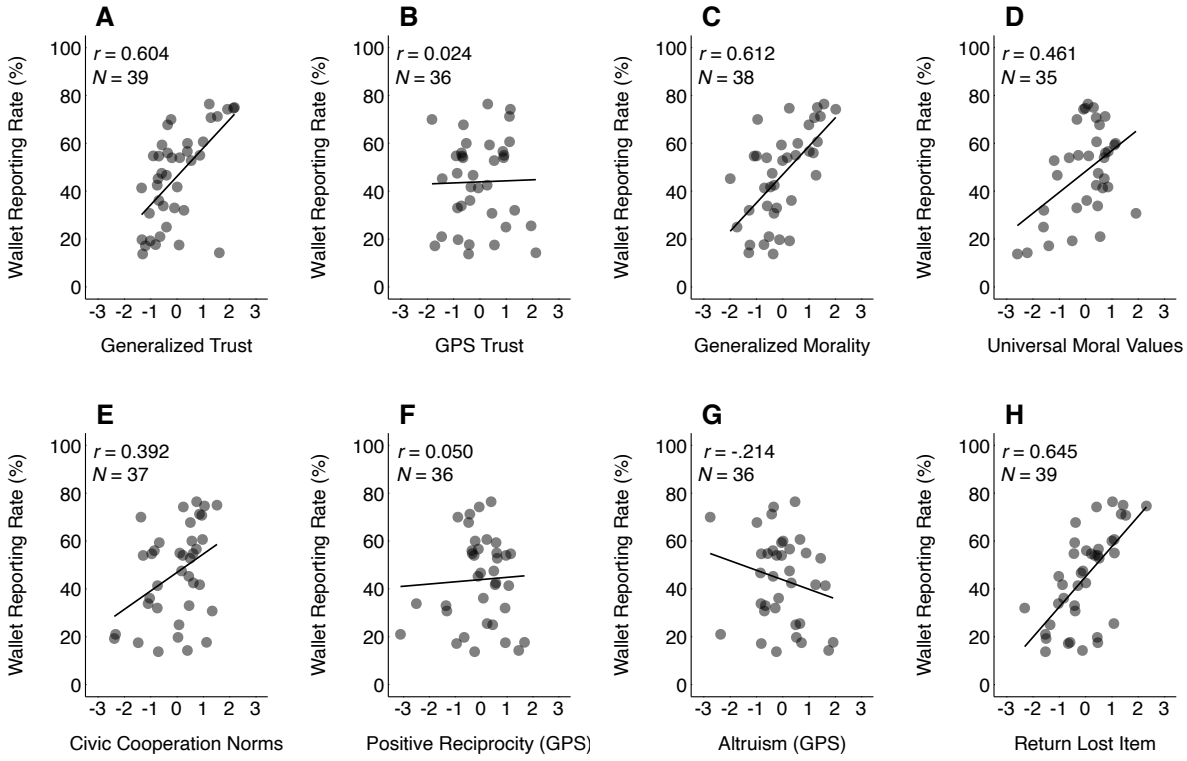
Figure 3 graphically displays the country-level correlations between survey measures of social capital and wallet reporting rates. First, and perhaps unsurprisingly, our strongest predictor of reporting a lost wallet is the "return lost item" (panel H) that serves as our benchmark correlation due to its close resemblance to our outcome measure. Based on our OLS specification, a one standard deviation increase in "return lost item" scores is associated with a 10.65 percentage point increase in wallet reporting rates ($p < 0.001$; see Table A4 in the online appendix for the full regression results). To give a sense of the magnitude for this relationship, the coefficient represents a 0.54 standard deviation in the total variation found in wallet reporting rates across countries.

Of the remaining seven survey measures of social capital, the two strongest predictors are the generalized trust[11] and generalized morality measures from the WVS/EVS (panels A and C, respectively). Based on our OLS models in Table A4, a one standard deviation increase in generalized trust is associated with an 9.5 point increase in wallet reporting rates ($p = 0.003$), and

10. We use Benjamini-Hochberg adjusted p-values to control the false discovery rate to be less than or equal to 0.05, which are calculated as follows: Let m be the total number of tests conducted and i be the ranking of p-values in the set, from smallest to largest. The adjusted p-value for a test is either the observed p-value multiplied by m/i or the adjusted p-value associated with any lower-ranked raw p-value, whichever is smaller.

11. We were also able to examine the role of measurement error for our estimates of generalized trust from the WVS/EVS, as we had near-identical measures of both generalized trust and wallet reporting rates (as suggested by Gillen, Snowberg, and Yariv 2019). Using an "obviously related" instrumental variables (ORIV) regression for the subset of countries in which we can apply the correction ($n = 30$), we find that the country-level correlation between generalized trust and wallet reporting rates increases from 0.58 (without correction) to 0.69 (with correction). Full details on our ORIV specification are provided in the online appendix.

Figure 3: Wallet Reporting Rates and Measures of Social Capital



Notes: Scatterplots display the country-level relationship between wallet reporting rates and (A) generalized trust from the World Values Survey (WVS) and European Values Study (EVS), (B) generalized trust from the Global Preferences Survey (Falk et al. 2018), (C) generalized morality ("respect and tolerance for others") from the WVS/EVS, (D) universal moral value scores from the Moral Foundations Questionnaire (Enke 2019; Graham et al. 2011), (E) an index of norms of civic cooperation from the WVS/EVS (Guiso, Sapienza, and Zingales 2011), (F & G) positive reciprocity and altruism scores from the Global Preferences Survey, and (H) expectations about having a lost item returned from the World Risk Poll. For each graph the y-axis represents wallet reporting rates in a given country (from 0-100%) and the x-axis represents the explanatory variable (standardized at the country-level to have a mean of 0 and standard deviation of 1). Lines represent the best fit to the data based on OLS estimation. The upper-left corner of each panel reports the country-level correlation between the outcome and predictor variable, as well as the number of countries in the analysis.

a one standard deviation increase in generalized morality is associated with a 10.2 point increase ($p < 0.001$). Remarkably, the predictive power of these two measures is nearly identical to that of our "return lost item" measure. After generalized morality, we observe positive but relatively weaker correlations for universal moral values (from the Moral Foundations Questionnaire) and norms of civic cooperation (from the WVS/EVS). Based on our OLS models, a one standard deviation increase in universal moral values and norms of civic cooperation are associated with, respectively, a 6.8 and 6.4 percentage point increase in wallet reporting rates (both are significant at the 5% level).

Lastly, all three measures from the GPS — trust, positive reciprocity, and altruism — fare relatively poorly in predicting wallet reporting rates. Coefficients for the three items are small and

not statistically distinguishable from 0 (p-values range from 0.193 to 0.949). The null result for generalized trust from the GPS may seem puzzling in light of the relatively strong performance of the generalized trust measure from the WVS/EVS. However, we note that the trust question from the GPS was selected based on its performance to predict (first-mover) trusting behavior in an incentivized trust game, and past research has found trust game behavior to be weakly correlated with generalized trust from the WVS/EVS (Glaeser et al. 2000; Karlan 2005; Lazzarini et al. 2005). In light of these findings, it is less surprising that trust from the WVS is predictive of wallet reporting rates while trust from the GPS is not.

We pause to note that respondents in our lost wallet data were not representatively sampled from each country's population. Respondents were front-desk employees at public and private institutions, and we performed wallet drop-offs in larger cities (with populations of 100k or greater) within each country. By contrast, our survey measures come from data sets with nationally representative samples (with the exception of the Moral Foundations Questionnaire). In section 8 of the online appendix we report results from a robustness test in which we compare coefficients for our WVS/EVS items with a restricted sample from the WVS/EVS that more closely resembles our front-desk workers based on demographic proxies available in the survey data. In particular, we restrict our sample to employed respondents who lived in a city with a population of 100k or greater. We find qualitatively similar results when using this restricted sample: generalized trust and generalized morality remain our two strongest survey measures of wallet reporting rates, while norms of civic cooperation is a relatively weak predictor. Thus, differences in sample characteristics do not appear to meaningfully bias our results.

Wallet reporting rates as a predictor of economic and institutional performance

Of ultimate interest to economists is the ability of social capital measures to explain variation in economic development. As such, we compared the lost wallet data to our set of survey measures in predicting economic and institutional performance. Unlike our previous analyses we now treat wallet reporting rates as a right hand side variable and, to facilitate comparison, we aggregate all measures at the country-level and standardize these measures (including wallet reporting rates) to have a mean of zero and standard deviation of one. Our aim here is not to establish causality, but rather to examine the extent that our behavioral measure contains new information in explaining variation in economic development.

Table 2 illustrates the additional predictive value of wallet reporting rates, over and above each survey measure of social capital, in explaining country-level heterogeneity in economic and institutional performance. Column 1 reports the bivariate relationship between each measure and

GDP per capita,[12] and column 2 reports the multivariate model where wallet reporting rates are included alongside each survey measure. The same exercise is repeated for total factor productivity in columns 3 and 4 of the table.

Two patterns clearly emerge from the analysis. First, wallet reporting rates explain substantial variation in economic productivity above existing survey measures. For instance, when predicting GDP per capita, adding wallet reporting rates alongside generalized trust increases the *R*-squared by nearly 50% (from 0.43 in the bivariate model to 0.63 in the multivariate model). Second, for the multivariate models, wallet reporting rates outperform (in terms of coefficient size) nearly every survey measure of social capital, and often substantially so. Wallet reporting rates also outperform the "return lost item" from the World Risk Poll.

The last four columns of Table 2 show that wallet reporting rates also explain unique variation in institutional performance across countries. Columns 5–8 of the table report the same analysis used in the previous paragraph, but with World Bank government effectiveness ratings and a behavioral measure of institutional efficiency (i.e., the proportion of incorrectly addressed international mail that is returned; Chong et al. 2014) as outcome variables.[13] Similar to our economic productivity measures, we find that wallet reporting rates explain substantial variation in institutional performance not captured by existing survey measures of social capital.

To quantify the relative contribution of wallet reporting rates in explaining economic outputs, we performed a series of pairwise dominance analyses (Azen and Budescu 2003; Budescu 1993). This procedure decomposes the total *R*-squared from a multivariate model into the relative contribution provided by each variable in the model, with contribution weights standardized to sum to one. We conducted a dominance analysis for all 32 comparisons provided in Table 2 (eight multivariate models for each of our four outcome variables). Results are reported in Table S4 in the online appendix. We find that wallet reporting rates contribute the majority of variance explained in 29 of the 32 models. In 23 of the comparisons, wallet reporting rates outperform its survey counterpart by more than a factor of two. Thus, a country's propensity to report a lost wallet appears to contain considerable new information above existing survey measures in explaining cross-country differences in economic performance.

12. We conducted our lost wallet experiment from 2013 to 2016, so we use GDP and total factor productivity indices from 2017. Data are from Penn World Tables

13. The World Bank has five other indices of governance quality: (1) voice and accountability, (2) political stability and absence of violence, (3) regulatory quality, (4) rule of law, and (5) control of corruption. Compared to government effectiveness ratings, we find even more pronounced effects of wallet reporting rates in predicting these other indices.

Conclusion

In this paper we use lost wallet reporting data from Cohn et al. (2019) to assess the predictive power of survey measures of social capital commonly used in economics, and establish two stylized facts. First, some survey measures of social capital, such as generalized trust and generalized morality, are strongly correlated with country differences in the tendency to report a lost wallet. This finding suggests that skepticism over the use of survey data to measure social capital may be unwarranted (see also Bjørnskov 2021). It is also reassuring that the most widely used survey measure of social capital — the generalized trust measure from the WVS/EVS — is highly predictive of wallet reporting rates. Other measures, such as prosocial preference measures from the recently developed Global Preferences Survey, performed relatively poorly in predicting wallet reporting rates. Additional empirical examination may be needed to establish whether such measures can serve as useful proxies of a country's social capital.

A second finding is that lost wallet reporting rates explain additional variation in economic and institutional performance across countries, suggesting that this measure contains unique information not captured by existing survey measures of social capital. When feasible, researchers may wish to use lost wallet reporting rates from our data, alone or in combination with existing survey measures, when examining the economic outputs of social capital.

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Table 1: Overview of Survey Measures

Measure	Source	No. of Overlapping Countries	Description:
Generalized Trust	WVS, EVS, & Afrobarometer	39	Average response by country 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?" (0 = need to be very careful, 1 = most people can be trusted).
Trust (GPS)	Global Preference Survey	36	Average response by country to the question "I assume that people have only the best intentions." Responses can range from 0 (does not describe me at all) to 10 (describes me perfectly).
Generalized Morality	WVS, EVS	38	Fraction of respondents by country who select "tolerance and respect for other people" as one of their answers to the question "Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important?" Respondents could select up to five qualities from a list of ten.
Universal Moral Values	yourmorals.org	35	Average difference by country between "universal" and "communal" moral values from the Moral Foundations Questionnaire (Graham et al. 2011).
Civic Cooperation	WVS, EVS	37	First principal component (extracted at the country-level) from how justifiable respondents thought it was to (1) claim government benefits to which one is not entitled, (2) avoid paying a fare on public transit, and (3) accepting a bribe in the course of one's duties. Responses could range from 0 (always justifiable) to 10 (never justifiable).
Positive Reciprocity (GPS)	Global Preference Survey	36	Average response by country to (1) a self-assessment of willingness to return a favor to someone else, and (2) a hypothetical choice scenario involving a gift exchange in return for help from another individual. Items were individually z-scored and then given weights of .485 and .515, respectively.
Altruism (GPS)	Global Preference Survey	36	Average response by country to (1) a self-assessment of willingness to give to good causes without expecting anything in return, and (2) a hypothetical donation decision. Items were individually z-scored and then given weights of .365 and .636, respectively.

Table 2: Predictive Value of Wallet Reporting Rates

	Log GDP per capita		Log Productivity (TFP)		Government Effectiveness		Letter Grade Efficiency	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Generalized trust	0.464***	0.220***	0.131**	0.025	0.590***	0.381***	0.077**	−0.013
	(0.093)	(0.067)	(0.049)	(0.053)	(0.077)	(0.084)	(0.041)	(0.040)
Wallets		0.404***		0.182***		0.347***		0.148**
		(0.084)		(0.057)		(0.082)		(0.050)
N	39	39	38	38	39	39	39	39
R^2	0.428	0.634	0.180	0.407	0.574	0.700	0.078	0.263
Trust (GPS)	0.319**	0.308**	0.061	0.050	0.333**	0.321***	−0.016	−0.019
	(0.140)	(0.099)	(0.072)	(0.050)	(0.113)	(0.065)	(0.050)	(0.039)
Wallets		0.496***		0.197***		0.523***		0.133**
		(0.086)		(0.048)		(0.064)		(0.043)
N	36	36	34	34	36	36	36	36
R^2	0.196	0.616	0.035	0.383	0.197	0.628	0.003	0.213
Generalized morality	0.384***	0.147**	0.194***	0.144***	0.590***	0.397***	0.080*	−0.012
	(0.055)	(0.067)	(0.029)	(0.031)	(0.065)	(0.078)	(0.036)	(0.047)
Wallets		0.393***		0.083*		0.320***		0.153**
		(0.099)		(0.040)		(0.087)		(0.056)
N	38	38	37	37	38	38	38	38
R^2	0.366	0.598	0.473	0.522	0.589	0.694	0.083	0.268
Universal moral values	0.263**	0.032	0.179***	0.105	0.165	−0.116	0.118**	0.069
	(0.099)	(0.078)	(0.044)	(0.059)	(0.116)	(0.076)	(0.041)	(0.041)
Wallets		0.522***		0.167***		0.635***		0.111***
		(0.095)		(0.049)		(0.086)		(0.034)
N	35	35	35	35	35	35	35	35
R^2	0.153	0.593	0.335	0.545	0.046	0.540	0.219	0.360
Civic cooperation	0.193*	0.004	0.116***	0.056	0.301**	0.093	0.092*	0.042
	(0.083)	(0.083)	(0.037)	(0.054)	(0.113)	(0.101)	(0.043)	(0.055)
Wallets		0.484***		0.154**		0.530***		0.129**
		(0.080)		(0.051)		(0.074)		(0.052)
N	37	37	36	36	37	37	37	37
R^2	0.090	0.567	0.166	0.396	0.152	0.548	0.109	0.287
Positive reciprocity (GPS)	0.118	0.095	−0.020	−0.027	0.096	0.072	0.009	0.003
	(0.121)	(0.092)	(0.053)	(0.045)	(0.100)	(0.064)	(0.040)	(0.044)
Wallets		0.499***		0.201***		0.527***		0.133**
		(0.102)		(0.047)		(0.084)		(0.044)
N	36	36	34	34	36	36	36	36
R^2	0.027	0.450	0.005	0.367	0.017	0.454	0.001	0.209
Altruism (GPS)	0.051	0.160	−0.009	0.026	0.040	0.155	−0.033	−0.006
	(0.116)	(0.964)	(0.052)	(0.050)	(0.119)	(0.085)	(0.037)	(0.037)
Wallets		0.541***		0.205***		0.566***		0.132**
		(0.108)		(0.049)		(0.075)		(0.043)
N	36	36	34	34	36	36	36	36
R^2	0.005	0.480	0.001	0.366	0.003	0.485	0.015	0.209
Return lost item	0.446***	0.211	0.182***	0.070	0.542***	0.315**	0.091**	0.001
	(0.077)	(0.143)	(0.023)	(0.046)	(0.080)	(0.106)	(0.036)	(0.062)
Wallets		0.366**		0.157**		0.355***		0.142**
		(0.161)		(0.063)		(0.106)		(0.062)
N	39	39	37	37	39	39	39	39
R^2	0.369	0.513	0.351	0.466	0.477	0.594	0.110	0.263

Note: OLS estimates with robust standard errors in parentheses. Outcome variables are log GDP per capita, log total factor productivity (relative to the United States), government effectiveness ratings from the World Bank, and the proportion of incorrectly addressed international mail from a country that is returned to sender (Chong et al. 2014). All explanatory variables are aggregated at the country-level and standardized to have a mean of zero and standard deviation of one. Significance levels after correcting for the false discovery rate (Benjamini and Hochberg 1995; Benjamini and Yekutieli 2001): * $p \leq 0.10$, ** $p \leq 0.05$, *** $p \leq 0.01$.