TRIBES AND DISTRUST:
SOCIAL CAPITAL AS A RESOURCE FOR COMMITTING FRAUD

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Draft: June 11, 2015

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Abstract

This paper demonstrates that principals activate social capital when choosing an agent in an impersonal market, but corrupt agents exploit that same social capital when choosing victims for fraud. The empirical setting is the ethnically diverse and contentious population of investors in Kenya's emerging stock market, where the country's largest stockbroker was found to have defrauded more than 20,000 investors in a two year period. In this impersonal market, investors are more likely to choose a coethnic agent, especially when they live in environments where their ethnic group is threatened. But in contrast to most social scientific work on group-based trust, a corrupt agent is also more likely to victimize coethnic clients, especially when clients live in the threatening environments that make social capital more likely to be activated. Access to the market's electronic databases makes possible an individual-level analysis of all 500,000 investors' choice of stockbroker, a corrupt stockbroker's choice of victims from his 100,000 clients, and the ethnicity of all actors. This paper expands research on the dark side of social capital, which to date has focused largely on efficiency issues, by examining the opportunity space for malfeasance created by the assumed trust fostered by group membership.

[°] I am grateful to Ron Burt, Donald Palmer, Lamar Pierce, Elizabeth Pontikes, Ray Reagans, Chris Rider, Amanda Sharkey, Olav Sorenson and seminar participants at Univ. of Michigan, Univ. of Chicago, UC-Davis, National University of Singapore, INSEAD, Boston University, Harvard Business School, Washington University in St. Louis and the 2013 AOM Annual Meeting for helpful comments on earlier drafts. Jessica Henderson provided excellent research assistance. All remaining errors are my own. This research was supported by a grant from the National Science Foundation (Grant No. 0802469), the University of Chicago Booth School Of Business, the Center for the Study of Economy and Society at Cornell University Dept. of Sociology, and Cornell University's Graduate School. Direct correspondence with the author at cyenkey@chicagobooth.edu.

INTRODUCTION

The idea that social relations, broadly defined, could increase vulnerability to malfeasance is antithetical to most social scientific research on trust. Seminal works in social network theory (Coleman 1990), network-generalized exchange (Bearman 1997; Yamagishi and Cook 1993), social identity theory (Tajfel 1972; Tajfel and Turner 1979), and conflict theory (Pettigrew 1957; Olzak 1992) all predict that trust should be higher within a social group than outside of it. Considerable observational evidence supports these predictions, as higher levels of trust are reported by individuals sharing multiple third-party ties (Coleman 1988; Burt and Knez 1995) and within ethnic groups in enclaves and conflict-prone regions (Portes and Sensenbrenner 1993; Nee and Sanders 2001; Rydgren, Sofi, and Hällsten 2013). Mounting experimental evidence invoking social identities via race, ethnicity, and even randomly assigned groups yields similar results (Foddy, Platow, and Yamagishi 2009; Buchan, Croson, and Dawes 2002; Heap and Zizzo 2009). What follows from these related research streams is a broad prescription to embed economic transactions, particularly those involving heightened risk or uncertainty, within social relations either because trustworthy exchange partners are more easily identified *ex ante* or the greater threat of *ex poste* punishment constrains deviance (Geertz 1978; Greif 1994; DiMaggio and Louch 1998).

Criminologists offer an alternative view. Criminologists have been the most vocal in arguing that pre-existing social relations facilitate victimization because principals are less likely to perform due diligence on socially similar agents before transacting (for a review, see Baker and Faulkner 2004), and are less likely to seek remediation against socially proximate perpetrators (Black 1976; Davis and Henderson 2003; Goudriaan, Wittebrood, and Nieuwbeerta 2006). From the perspective of criminologists, rational fraudsters are "unencumbered with any irrational notions of morality in [their] approach to social interactions" (Manning 2011: 210).

Most research in this area focuses on victimization in pre-meditated frauds such as the pyramid schemes of Charles Ponzi and Bernie Madoff. In these schemes, close-knit relations within South Boston's Catholic neighborhoods signaled trustworthiness to Ponzi's victims and Madoff's earliest client-victims were fellow wealthy Jews who then legitimized the scheme to future client-victims (Arvedlund 2009; Manning 2011). While the use of social similarity in the commission of pre-meditated fraud is well documented, Baker and Faulkner (2003) note that criminologists largely neglect victimization in the more prevalent cases of intermediate fraud, defined as sporadic commission of economic crime by otherwise legitimate businesses (Clinard and Levi 1984). Earlier sociologists pointed to the ubiquity of intermediate fraud among otherwise legitimate businesses (Merton 1968) and white collar crime in general (Sutherland 1940), but empirical analysis of social proximity between victims and perpetrators has been scarce (for key exceptions, see Baker and Faulkner 2003; 2004) despite a fair bit of theoretical interest (Granovetter 1985; Shapiro 1987; Gargiulo and Ertug 2006; Palmer 2012).

The central question addressed in this paper is whether a principal's social similarity to a corrupt agent makes her more or less likely to be victimized in an intermediate fraud. Asking this question does not require us to reject decades of work linking group membership to the production of trust; instead, it requires only that we pay greater attention to the opportunity space for malfeasance created by the assumed trust and reduced monitoring by among group members. Coleman (1990) characterizes social capital as a group-based resource available to further one's interests, a rational choice perspective echoed by sociologists (Burt 1992; Portes 1998; Woolcock 1998; Lin 2002), political scientists (Putnam 1993; Williamson 1993), and multiple areas of economics and finance (Williamson 1985; Knack and Keefer 1997; Guiso, Sapienza, and Zingales 2004; Guiso, Sapienza, and Zingales 2008; Georgarakos and Pasini 2011). Social

capital is valuable precisely because it allows transactions partners to save on the costs of monitoring group members to insure trustworthy behavior (Dyer and Chu 2003; Szulanski, Cappetta, and Jensen 2004), especially in environments where risk and uncertainty are perceived to be higher (Greif 1994; Kollock 1994; Dimaggio and Louch 1998). We do not need to contradict earlier work showing that in-group relations reduce the *likelihood* of deviance in order to justify studying how social relations facilitate the corrupt actions of *known* deviants.

To provide a more comprehensive analysis of how trust derived from social capital is exploited, this paper contrasts principals' activation of social group identity when selecting an agent in an impersonal market with a corrupt agent's exploitation of the same social identity when selecting victims in a large-scale intermediate financial fraud. The theory and empirics both begin in familiar territory by arguing that principals are more likely to select socially similar agents and avoid agents belonging to rival social groups, especially when they live in environments where their group is threatened. From this theoretically comfortable starting point, the paper makes its main contribution by investigating the effect of shared group membership from the opposite perspective, that of a corrupt agent selecting victims from his full population of clients. Next, I link group membership to two additional predictors of victimization and trust studied by criminologists and sociologists: the amount of money available to be stolen from a principal (what criminologists call "yield"), and the level of relational embedding between the two parties. Earlier work argues that yield and relational embedding s reduce the likelihood of victimization, but arguments are made for how social capital can be exploited to reduce their protective effects and increase the fraudster's expected benefits.

The empirical context is an intermediate financial fraud committed by the largest stock brokerage serving Kenya's frontier stock market, the Nairobi Securities Exchange (NSE). In

March 2008, Nyaga Stockbrokerage Ltd was expelled from the market by the state-run regulatory agency because its agents had stolen cash and shares from over 20,000 of its clients' electronic accounts (Gikunju 2008). Access to several NSE databases provides individual-level measures of the ethnic group membership of all NSE investors and their chosen stockbrokers, the identities of victims of the Nyaga fraud, as well as personal and financial background information on all investors. Results from choice models show that investors are more likely to choose coethnic stockbrokers but avoid brokers belonging to rival ethnic groups, especially when they live in areas where their ethnic group is the local minority and in areas prone to inter-ethnic violence. In contrast to the expected protective benefits of embedding the relationship with the ethnic group, all empirical analyses show that the corrupt broker exploits the expected group-based trust. Models predicting victim selection show that the corrupt broker's coethnic clients are the most likely to be victimized, especially when they reside in those ethnically threatening environments where coethnic brokers are preferred. Additionally, the corrupt broker is more likely to steal from wealthier coethnic clients and those with whom the corrupt broker has deeper relational embedding. Empirical support for the proposed mechanism of lowered monitoring and enforcement among coethnic clients is also found, and no evidence is found of biases in victim self-reporting or fraud-prone clients selecting into the corrupt brokerage.

The next section provides theoretical arguments for why principals will activate social identity when choosing an agent in an impersonal market and why corrupt agents will exploit that shared identity in the commission of fraud. A section describing the empirical context is followed by presentations of data and methods and results. A concluding discussion applies the findings to work on the dark side of social capital and economic crime and discusses issues around generalizability, limitations of the empirical analysis, and steps for future research.

GROUP-BASED SOCIAL CAPITAL: ACTIVATED BUT EXPLOITED

In order to provide a more comprehensive understanding of how social capital can be a resource for deviant behavior, the paper begins by considering how principals activate social identity when choosing an agent. Understanding the topography of where a principal is more likely to activate social similarity when selecting an agent, and tying it to seminal work from multiple fields showing how social group membership is activated with the expectation of securing trust, sets the stage for then investigating where the corrupt agent will exploit social capital when choosing victims.

Before theorizing the activation versus exploitation of trust embedded in social capital, it is useful to specify how the term is used here. This paper draws on Yamagishi and Yamagishi's (1994) definition of trust as "expectations of benign behavior based on inferences about a partner's personal traits and intentions (quoted in Molm, Takahashi, and Peterson 2000: 1397). This is consistent with the behavioral definition of trust from Kollock (1994: 319; see also Zand 1972) as an action that results in vulnerability to the actions of another whose behavior is out of one's control. Both of these definitions fit the fraud event studied here.

Principals choosing an agent

Granovetter (1985) famously argued that inter-personal ties were indispensable sources of trust that provided the foundation for economic exchange in market societies. Shortly after, Shapiro (1987) noted that a significant portion of exchange occurs in large, impersonal markets where it is often impossible to embed transactions in interpersonal relations. Shapiro argues that transacting in larger markets paradoxically requires trust to be vested in more distant agents who are less constrained from acting opportunistically by virtue of reduced social proximity. Theory

and evidence from multiple related fields suggests that actors resolve Shapiro's paradox by activating group-level social capital as a substitute for inter-personal ties. Sandefur and Laumann (1998) argue that the social capital is activated with the expectation of increasing control over an agent who might wish to defraud, especially when actors perceive greater risk in the exchange (DiMaggio and Louch 1998) or threat to their group (Rydgren, Sofi, and Hällsten 2013). Summarizing a wide range of rational choice arguments, (Lin 2002: 19) conceptualized social capital as "investment in social relations with expected returns in the marketplace."

Social exchange theory and social identity theory provide a more explicit link between group membership and the social capital benefits of increased trust. Generalized exchange is characterized by actors contributing to each other indirectly by contributing to other members of the group rather than contributing to each other directly (see Emerson 1972 for an early review). Where the group is the interaction space in which exchange occurs, actors prefer to transact with members of their own group, either as a result of greater expectations of reciprocity with in-group exchange (Bearman 1997) or normative expectations of fair play conditioned by historical patterns of participation of in-group members (Portes and Stepick 1994). For example, Portes and Sensenbrenner (1993) argue that ethnic enclave economies are organized in this manner.

A core premise of social identity theory is that actors categorize others based on in- and out-group membership with comparisons made in such a way as to maximize perceived differences between the two (Tajfel et al. 1971). In-group members are perceived to be more helpful than out-group members (Brewer and Silver 1978) and this positive image of in-group members carries over into expectations of more generous and more trustworthy behavior (McAllister 1995). Where membership is knowable to both parties in an exchange, principals tend to follow the heuristic of assuming fair treatment by in-group members; but positive

stereotypes of beneficial behavior by in-group members can persist even when agents are not believed to know the social identity of the principal (Foddy, Platow, and Yamagishi 2009). Specific to the analysis in this paper, group categorizations serve as the foundation for ethnocentrism (Turner et al. 1987; M. Brewer 1981), which often results in feelings of superiority for the in-group (Sumner 1906) and lower expectations of trustworthy behavior for out-group members (Tropp et al. 2006).

Group membership should be particularly salient to a principal's selection of an agent in settings where the principal's social group is threatened. For example, Greif (1994) argues that systems of generalized reciprocity emerge in higher risk environments. Inter-group conflict is one common example of social group threat. Political scientists and institutional economists use the term ethnic fractionalization to describe settings where inter-ethnic fault lines are sufficient to produce violent conflict in the presence of a trigger event (Alesina and Ferrara 2005; Posner 2004). In fractionalized settings, the presence of inter-ethnic violence indicates significant, pre-existing divisions indicative of inter-group distrust sufficient to produce violent conflict (Putnam 1993; Collier and Hoeffler 1998). Beyond physical confrontation, social diversity and the presence of local majority and minority groups are also important predictors of perceived threat to one's social group. Contact theory predicts higher levels of inter-ethnic tensions in heterogeneous areas (Allport 1958; Moody 2001; Rydgren, Sofi, and Hällsten 2013). In settings where one's social group constitutes the majority population, threat to group identity should be reduced. In contrast, if one's social group is in the local minority, then group membership becomes increasingly salient for perceived or actual security and therefore informs decision making about the choice of transaction partner.

Drawing from the above works, we expect that principals are increasingly disposed to trust a socially similar agent in an impersonal market (McKnight, Cummings, and Chervany 1998; Huff and Kelley 2003; Gargiulo and Ertug 2006) , especially if they are located in areas where their group is threatened by violent conflict or minority status:

H1: Principals are more likely to choose an in-group agent and less likely to choose an agent from a rival group;

H2: Preferences for in-group and against rival group agents will increase in areas where the principal's social group is threatened.

A corrupt agent choosing victims

In- group membership does not merely create expectations of positive outcomes, it often delivers real benefits. Examples of positive outcomes abound and need only be briefly highlighted. Coethnic entrepreneurs access less expensive investment capital and better disciplined labor due to the norm enforcement within ethnic enclaves (Zhou 1992; Nee, Sanders, and Sernau 1994). In-group members assist each other even when doing so requires breaking the law, as Gino and Pierce (2010) find behavioral and experimental evidence of actors helping socio-economically similar peers illegally evade regulators. Additional experimental studies find that cooperation and trustworthy behavior among in-group members occurs even with random assignment into ad hoc groups (Buchan, Croson and Dawes 2002; Heap and Zizzo 2009).

Trust arising from social capital lowers transaction costs in an exchange relationship by reducing the need to monitor and enforce pro-social behaviors (Bromiley and Cummings 1995; see Burt 2005: 97-111 for a review of this large literature), a behavior empirically demonstrated by organizational scholars (Dyer and Chu 2003; Szulanski, Cappetta, and Jensen 2004; see Gargiulo and Ertug 2006 for a review). A number of scholars have theorized that this lower monitoring could result in increased risk of malfeasance (Granovetter 1985; Gargiulo and Ertug

2006), but to date Baker and Faulkner (2004) have provided the only empirical test. They find that investors with inter-personal ties to company agents engaged in an intermediate fraud were less likely to be victimized but those with indirect personal ties were not protected. Without rejecting their argument or findings, our paper expands the scope of research in this area by studying the link of social relations to fraud in the context of group membership rather than inter-personal ties, a perspective that better matches the common setting of large, impersonal markets highlighted by Shapiro (1987).

Criminologists provide the most comprehensive evidence that in-group deviants actively exploit social capital in the commission of economic crime. The argument is simple: fraudsters are well aware of the assumed trust that resides in a social group and use this as a resource for choosing victims and avoiding detection. Criminologists argue that expectations of high trust among in-group members reduce due diligence, a critical form of monitoring that occurs prior to entering the relationship. Evidence abounds from case studies of prosecuted pre-meditated frauds (NASAA 2001; Titus, Heinzelmann, and Boyle 1995; cited in Baker and Faulkner 2004).

Anthropologists have documented considerably more gruesome examples of exploitation of social relations for economic gain. Hawthorne (2003) retells an example taken from Almada (1984) where it was at least the occasional practice among the Beafares of present-day Guinea to trick members of their ethnic group whom they did not know personally into slavery. The depicted scheme is for urban households to host a rural Beafare visitor in their home for several days, then suggest that they make a social visit to a ship in the harbor at which time the visitor would be sold into slavery. Institutional economists have linked practices of local populations tricking, kidnapping, or selling members of their own communities into slavery as a historical source of generalized distrust across Africa (Nunn 2007; Nunn and Wantchekon 2011).[1]

Most of the examples linking social capital to victimization discussed so far have focused on pre-meditated crimes, deviant acts where the perpetrator recruits victims into a scheme with the primary intent to defraud. Despite this focus on pre-meditated fraud, sociologists have long argued that that intermediate fraud is much more common (Sutherland 1940; Merton 1968; Baker and Faulkner 2004; Palmer 2012). Despite its regularity, researchers have a less well developed understanding of the role played by social capital in intermediate economic crime. When an agent that operates a legitimate, ongoing business also decides to defraud some but not all of her principals, whom will she target? To be clear, this paper does not theorize which agents are deviant, only which principals will be victimized in the presence of a known deviant.

The rational choice perspective on wrongdoing stipulates that deviants enact corrupt practices according to a cost benefit analysis (for a review, see Palmer 2012: 42-65). Two key components of the costs are the perceived likelihood of detection and the likelihood of punishment if detected, exemplifying monitoring and enforcement respectively. Research from organizational theory confirms that reduced monitoring is a behavioral property of trusting relationships (Dyer and Chu 2003; Szulanski, Cappetta, and Jensen 2004; Gargiulo and Ertug 2006). In such cases, it is unlikely a deviant agent would need to assume lower monitoring by in-group clients. Rather, an agent likely experiences fewer inquiries from socially similar clients while out-group clients, especially those from rival groups, likely account for a disproportionate number of inquiries. All agents, especially those with deviant intentions, are likely sensitive to these regular reminders that homophilous clients are content to let the relationship self-monitor while heterophilous clients are not.

Beyond monitoring, criminologists have studied the factors determining enforcement of pro-social behavior. A central finding in this literature is that the likelihood of victims reporting a

crime to authorities is negatively related to the social proximity between victims and perpetrators (Black 1976; Felson, Messner, and Hoskin 1999). Beyond dyadic social proximity, increased social cohesion in the community in which the crime took place is also negatively related to reporting, net of confidence in local law enforcement (Goudriaan, Wittebrood, and Nieuwbeerta 2006). Affect-driven processes are also found to increase the likelihood of victims reporting crimes, especially anger aroused through victimization (Greenberg et al. 1979; Greenberg and Beach 2004). Given that in-group members are known to associate group membership with a range of benefits that go beyond the deviant's illegitimate act (Lawler 1992), out-group victims should be expected to experience increased anger from victimization. Again, it is less likely that deviant agents have knowledge of past reporting; rather, they likely experience an increased power over in-group principals that suggest they are less likely to take enforcement action.

Collectively, evidence of reduced monitoring and enforcement between socially similar partners gleaned from criminology and organizational studies suggests that social capital is an exploitable resource for a corrupt agent. This dynamic is likely felt more strongly in environments where social groups are under threat. As such, we predict:

H3: Corrupt agents are more likely to victimize in-group principals;

H4: Victimization of in-group principals will increase in areas where the principal's social identity is threatened.

If social capital becomes an exploitable resource for a corrupt agent when choosing victims, we might expect it to combine with other factors that increase his expected benefits relative to costs when committing the fraud. Beyond group membership and the degree of threat in the local environment, prior research has outlined two additional dimensions of principal-agent relationships related to victimization that may be altered by social similarity: the expected

yield of a potential victim as represented by the value of funds available for theft, and the depth of relational embedding between the principal and agent.

Victimization research in criminology and rational choice theories of trust argue that offenders choose victims in a calculative process that balances the expected benefits of theft against costs of detection and punishment to. Criminologists label the expected value of a theft "yield," calculated as the value of the stolen assets themselves balanced against expected costs of detection and punishment (Hough 1987). For example, expectations of detection and severity of punishment for property theft are higher in wealthy neighborhoods making offenders more likely to target lower yield households in low income areas even though the value of stolen assets are lower (Hough and Mayhew 1985). A central finding in the criminology literature is that the value of loss is a key determinant of victims reporting crimes and seeking remediation, a reflection of victims' own rational calculus around the value of pursuing enforcement (for a review of this large literature, see Goudriaan, Lynch, and Nieuwbeerta 2004). If social similarity reduces monitoring and enforcement, then higher wealth clients become increasingly attractive to the corrupt agent because they represent a combination of increased financial value of assets available for theft while reducing expected costs of detection and/or punishment.

A second exploitable attribute of the investor-broker relationship that could be linked to likelihood of fraud victimization, and a central feature in the sociological literature on trust in economic exchange, is the depth of the relational embedding between transaction partners. Relational embedding is a function of the depth of an exchange relationship, which provides repeat exchange partners with more information about the expected behavior of each other resulting in a "widespread preference of all economic actors to deal with those they have dealt with before" (Granovetter 1985: 490). Examples abound, including Geertz's (1978) account of

repeated transactions in early Moroccan bazaars and Uzzi's (1996; 1999; Uzzi and Lancaster 2003) research on repeat exchange across industries. More frequent prior transactions create feelings of familiarity that make expectations of trust between exchange partners an endogenous part of the ongoing relationship (Dore 1983; Dyer and Chu 2000; Gulati and Sytch 2008).

Similar to the expected yield of a given fraud target, we expect that the rational but corrupt agent would combine the exploitable resource of social capital as a dispositional feature of his relationship with his principals with this additional feature of relational embedding (Gargiulo and Ertug 2006), so that together they predict that socially similar principals with deeper relationships with the corrupt agent will be even more likely to be victimized in the fraud. Together, the discussions of victim yield and relational embedding predict:

H5: In-group principals with more valuable assets are more likely to be victimized;

H6: In-group principals with deeper relational embedding with the corrupt agent are more likely to be victimized.

ETHNICITY, TRUST, AND FRAUD IN THE KENYAN CONTEXT

Ethnicity has long been known to play a key role in the formation of social identity in East Africa (M. B. Brewer 1968), exemplified by Brewer's definition of ethnocentrism (1981) as, "a syndrome involving mutually reinforcing interactions among attitudinal, ideological, and behavioral mechanisms that promote in-group integration and out-group hostility." Specific to Kenya, ethnic groups are key social institutions through which economic and political activity is organized, often as the result of out-group distrust. The 2005 Afrobarometer Survey asked a nationally representative sample of Kenyans "To what extent do you trust Kenyans from other ethnic groups?" Less than 10% of respondents expressed strong trust for out-group members, while more than 70 per cent expressed strong or relatively strong distrust. An example is given

by van Ufford and Zaal (2004), who explain the development of a national beef market in Kenya in the 1990s as a product of inter-ethnic distrust. Here, butchers and traders from each group travel to the Tanzanian border to buy directly from producers, preferring to form a closed supply chain within the ethnic group over long distances rather than entrust out-group middle men. Political support is also organized along ethnic lines, as more than 90% of Kenyans voted for coethnic candidates in the 2007 presidential election (Rheault and Tortora 2007).

An in-depth historical account of inter-ethnic tensions in Kenya is beyond the scope of this paper (for historical detail, see Masakhalia 2014); a brief description of inter-ethnic tensions at the time of the stockbroker scandal studied here should suffice. Although Kenya is home to over 40 distinct ethno-linguistic groups, three dominate political and economic life: the Kikuyu, Luo, and Kalenjin. The Kikuyu are the largest, approximately 20% of the national population, and during the period studied here they controlled the executive branch of government as well as the stock exchange governance regime. Since independence, the Luo and Kalenjin, the third and fourth largest groups, have competed with the Kikuyu for political and economic power. The December 2007 presidential election saw a Kikuyu incumbent challenged by a coalition ticket comprised of members of these rival groups. Both campaigns made extensive use of ethnic tensions to mobilize support, and both groups are widely understood to have engaged in vote rigging (Dercon and Gutiérrez-Romero 2012).[1] Exit polls and early vote tallying gave the opposition candidates a narrow lead, but after two weeks of tense vote tallying the Kikuyu candidate was declared the winner by the Kikuyu-controlled Kenya Election Commission and swiftly sworn into office (*The Economist* 2008; Kennedy 2008). Members of the opposition

[1] I operationalize rival ethnic groups as only including Luo and Kalenjin, however observers of Kenyan politics will note that the rival coalition was somewhat supported by Kenya's second largest tribe, the Luhya, even though they did not contribute a candidate. All analyses reported below have been estimated separately including Luhya investors and clients in the rival group, without changing the results.

began violent raids on Kikuyu communities in an organized pattern that suggested preparations had been made ahead of time (Thielke 2007). A number of similarly organized Kikuyu groups retaliated, producing weeks of violent clashes that left approximately 1,300 dead and more than 400,000 internally displaced. Both sets of candidates publicly accused the other of ethnic genocide, and political figures on both sides were indicted by the International Criminal Court for crimes against humanity. Kofi Annan, serving as an UN-sponsored mediator, brokered a power sharing agreement between the two sides on February 27, 2008, that allowed the Kikuyu incumbent to remain President and created a Prime Minister position for the opposition.

It was in this environment of inter-ethnic conflict that the stockbroker scandal studied here unfolded. On March 5, 2008, the state-run regulatory authority, the Capital Markets Authority (CMA) announced that Nyaga Stockbrokers Ltd., a Kikuyu owned and operated brokerage serving one-fifth of all 500,000 Kenyan investors, was placed under statutory management as a result of fraudulent transactions executed on clients' accounts (Gikunju 2008; Gakeri 2012). A forensic audit of the scheme, unavailable publicly but cited in financial press accounts, indicates that the fraud began approximately two years prior to regulatory intervention as Nyaga agents sold clients' shares to either trigger or take advantage of falling prices and then buy back the shares at a lower price but keeping the proceeds, a form of short-selling (Gikunju 2008; Standard Media Group 2009). Over time, the brokerage became undercapitalized and reverted to permanently selling clients' shares and keeping the proceeds as well as stealing cash deposited in clients' accounts in anticipation of future investments (Gikunju 2008). Immediately following the regulator's crackdown in March 2008, Nyaga clients were notified to check their accounts for missing funds, and approximately one-quarter of all clients reported losses.

All Kenyan investors were registered to one of twenty-three stock brokers, as exchange rules stipulate they must go through an intermediary to make a transaction (Capital Markets Authority 2008). Of these, twelve brokerages were Kikuyu owned and operated, three had ethnically mixed management, and the remaining eight had no ethnic affiliation as they were operated by foreign or state-owned interests. Kikuyu were also central to the market's governance regime. Seven of the eleven members of the NSE Board of Directors were Kikuyu, compared to just one representing rival and non-rival ethnic groups (two Board members were foreign nationals), virtually identical to the regulator's Board. Because of the dominant Kikuyu presence in the market, it will be necessary to interpret predictions of the selection of a Kikuyu broker as not only a function of an investor's coethnicity with a broker, but potentially a way for principals to affiliated with an agent from the market's ruling social group. If this is the case, the bias in the empirical analysis is away from finding a homophily effect, as rival and non-rival ethnic groups may select a Kikuyu stockbroker in order to secure access to this insider group.

DATA AND METHODS

Data for estimating the effects of coethnicity on both investors' choice of stockbroker and a corrupt stockbroker's choice of victims in an intermediate fraud comes from NSE back office databases maintained by the Central Depository and Settlement Corporation Ltd (CDSC) merged with records from Kenya's Investor Compensation Fund (ICF). The CDSC is a separate legal entity jointly owned by the NSE, the CMA, and Kenya's Ministry of Finance, and all NSE transactions since November 2004 have been executed through their electronic system. In additional to transaction-level data, which include the stockbroker representing each investor, CDSC registration databases provide personal background data on each investor. Kenya's

Investor Compensation Fund (ICF) was created by the CMA in 2007 to provide pecuniary compensation to investors with verified losses from fraud by corrupt intermediaries. The Nyaga brokerage scandal was the first incident where defrauded investors filed claims with the ICF, and all recorded victims have been subject to a verification process.

Modeling strategy

Conditional logistic regression models estimate each investor's choice of a Kikuyu or non-Kikuyu stockbroker at the time they enter the market, holding constant individual-level attributes. Kikuyu brokers are the outcome of interest because they are the only ethnic group that has sole ownership in brokerages (more information on the outcome variable provided below). The unit of analysis for modeling investors' choice of broker is the dyad in which each investor *i* is at risk of choosing any stockbroker *j,* with explanatory variables measuring the ethnic pairing of *i*'s choice of any *j* from the full set of available *j*'s. Operationalizing the outcome in this way is preferred because the analysis is not concerned with the actual broker selected but instead the pairing of ethnic identities between investors and their broker, with Kikuyu brokers being the only clearly ethnic choice available. This operationalization produces a total sample of 9,346,608 dyads comprised of the 417,651 investors who chose a broker between the start of the CDSC system in 2004 and the regulatory intervention in March 2008 paired with up to twenty-three brokers serving each investor's district of residence. Investors choose only one broker when entering the market, and broker control fixed effects control for unobserved attributes of each.

Linear probability models estimate the likelihood that a client of the corrupt Nyaga brokerage was victimized, as recorded by the Investor Compensation Fund. Same as the above

models of broker selection, the key explanatory variables are the pairing of ethnicities between clients and the corrupt broker.

Both sets of models are first estimated on the full population of investors or clients, and then decomposed into subsamples of districts that differ according to theoretical predictions of ethnic threat, yield, and relational embedding. The capital district of Nairobi is estimated separately because it is one of the most diverse districts in Kenya and the site of several violent clashes following the 2007 presidential election. It is also home to about 65% of all investors and 56% of Nyaga clients, thus any interaction of district-level conditions would yield a Nairobi effect. Using theoretically chosen subsamples avoids issues around multicollinearity of multiple interaction terms. Hypotheses 5 and 6 relating social similarity to victim yield and relational embedding are tested on a subsample of only Nairobi-registered clients. This strategy allows me to hold constant a range of district-level attributes but take advantage of the concentrated population of the 56% of clients residing in the capital district.

Outcome variables

The first set of models estimate the likelihood that an investor selects an in-group, i.e. Kikuyu, stockbroker at the time they enter the market. I code the investor's chosen broker as that which executes its first transaction. Three market insiders (two fund managers and a past member of the CMA Board of Directors, each of different ethnic background) were surveyed, each indicating the ethnicity of all brokerages serving the market since 2004. There was unanimous agreement on which brokerages were operated by Kikuyu, and these were coded as in-group. All respondents agreed that these affiliations are public knowledge. Respondents all

agreed that the agents employed in the Nyaga brokerage were Kikuyu. In the words of one respondent, "You'd be crazy to think that anyone at Nyaga wasn't Kikuyu."

The second set of models estimate the probability that a client of the corrupt Nyaga brokerage is selected as a victim in the fraud. Records provided by the Investor Compensation Fund show verified claims of fraudulent activity in the accounts of 27,200 clients. ICF records indicate a value of verified claims, but because the ICF has a limit of 50,000 Kenyan Shillings reimbursement on each account, it is unclear whether victims who experienced larger losses would have reported them or if ICF clerks would have recorded them. To avoid this unknowable bias, I use a dichotomous outcome variable indicating whether each Nyaga client had a verified claim from the fraud. Thus, victimization is estimated as a categorical not continuous outcome.

Explanatory variables

Membership in in-group, rival, non-rival, and non-Kenyan social groups is measured according to the ethnicity of each investor. Ethnicity of all investors is coded using the family name registered to the account in the CDSC registration database. Eight independent coders, all indigenous Kenyans representing Kenya's six largest ethnic groups, coded a list of the 16,230 most commonly registered family names, capturing 95% of all accounts. Coders chose from the list of Kenya's twelve primary ethnic groups used in the Kenyan Census as well as the categories of South Asian and Anglo. Each coder identified each name as belonging to each group if she/he felt at least 75% confident the name represented that group. Names could be coded as representing more than one ethnic group. Coding was done in two waves. First, the list of 16,230 family names was divided in half and four coders were assigned to each. If coders were not unanimous in identifying the ethnicity of a name, that name was then passed to the second team

of four coders for additional review. 52% of all 16,230 names were coded unanimously in the first wave. Next, the ethnicities assigned to each name from all coders were collapsed into five continuous measures indicating the percentage of coders who identified the name as representing the *in-group*, one of two *rival* groups, one of the eight *non-rival* groups, a *non-Kenyan* group (South Asian or Anglo), or having no identifiable group. This procedure makes it possible for a name to have combined ethnic identities that exceed one. For example, 100% of coders could identify a name as Kikuyu and 20% of coders could also identify the name as Meru, a closely related ethnic group. The five categories are normalized to one using the proportion of codes across all ethnic groups of each. The kappa statistic for inter-rater reliability across the five ethnic groups used in the analysis is exceptionally high (*kappa* = 0.92), demonstrating that ethnic group membership is clearly identifiable with family name.

Hypotheses 2 and 4 predict that coethnicity will be especially salient in environments where inter-ethnic tensions spill over into violent conflict and where rival groups are the local majority. I operationalize these according to attributes of the administrative district in which the investor or client resides. There are sixty-eight administrative districts in Kenya, equivalent to counties in the United States, and investors' location in each is taken from self-reported mailing addresses in the CDSC registration database. Districts where inter-ethnic tensions are sufficient to result in *inter-ethnic violence* are identified using data collected from Ushahidi.com. From the Swahili word meaning "testimony," Ushahidi is a platform created by a Kenyan human rights lawyer and a small group of bloggers and software engineers that collected crowd-sourced data via text message that reported the location of inter-tribal violence following the 2007 presidential election. These data often lack information about the number or identity of combatants, thus I

create a categorical measure of districts where inter-ethnic violence following the contested presidential election suggests particularly high levels of ethnic fractionalization.

Estimates of which of the ethnic groups constitutes each district's *local ethnic majority* were calculated using both populations of investors in the NSE registration database and the Kenyan general population using the 2005 Kenya Integrated Household Budget Survey (KIHBS). Correlations between districts' percentages of investors versus the general population belonging to each group exceed 0.8, and model results do not differ according to which measure is used. Therefore, all models use ethnic majority according to the district's investor population, arguably the more salient population for the corrupt broker.

Hypothesis 5 predicts that in-group clients with more assets are more likely to be victimized. Nyaga agents stole from their clients either by selling their shares and keeping the proceeds or directly stealing cash deposited in their brokerage accounts. Because the actual method of theft is unrecorded, I construct measures that capture both. Each client's *value of previous IPO subscriptions* proxies for the estimated amount of cash deposited with the broker available to be stolen. At the time of the Nyaga fraud, the NSE was preparing for a highly anticipated IPO of a state-owned telecom, making it likely that clients had deposited cash in their brokerage accounts which we assume to be correlated with levels of past IPO subscriptions. *Portfolio value* for each Nyaga client is calculated as the total value of all shares owned, calculated using the average price of each share the day before regulatory intervention. To insure that no particular segment of either distribution drives the linear prediction, quintiles of both yield measures are used in models predicting victimization.

Hypothesis 6 predicts that in-group clients with deeper relational embedding are more likely to be victimized. I use two measures of relational embedding. *Tenure with the corrupt*

broker is measured as the number of months between the client's first transaction with the broker and the regulator's statutory takeover. The *number of past transactions* is calculated as the logged number of all past transactions in a client's account executed by the corrupt broker. Past transactions include all share trades, IPO subscriptions, or transfers to or from other accounts and are recorded in the CSDC clearing and settlement database.

Controls

Conditional logistic regression models of investor's choice of an in-group stockbroker include fixed effect dummies for each stockbroker as well as a control for the *logged number of existing clients* of each broker in each district at the time of the focal investor's choice. The count of investors who previously chose each broker proxies for propinquity effects of choosing nearby brokers or choosing the same broker as proximate investors who entered the market previously.

Linear probability models of victimization by the corrupt stockbroker include several additional controls. *Distance to the nearest Nyaga office* was calculated as geodesic distance, in logged kilometers, between the midpoints of each town and the town containing the nearest Nyaga office.[2] This measure controls for propinquity to the corrupt broker's offices and is measured as the geodesic distance between the midpoint of the client's town to the midpoint of the town where the nearest Nyaga branch office is located taken from a digitized mapping of the 1,595 KNBS-recognized communities. Logged counts of the number of in-group and rival clients in each district control for the corrupt broker's tendency to target or avoid clients co-located in such areas. Fixed effect dummies for each client's *district of registration* capture remaining

[2] The location of branch offices for all other brokerages is not known. Furthermore, for the purposes of client recruitment all brokerages make some use of a sub-contracting sales force that visit towns and villages. The geographic reach of each of these is unknown, thus models of broker selection use the logged number of previously recruited clients to proxy for each broker's geographic reach.

invariant attributes of each district. Dummy variables for *each stock held* indicate whether the client owned shares in each of the fifty-six listed firms which controls for the possibility that the corrupt broker sought to sell shares of particular firms rather than targeting particular clients. Each client's *portfolio diversity* is controlled for by including the logged number of firms' shares held by the client. Client *gender* is included as a control, using accounts registered as non-gendered company investors as the reference category.

RESULTS

Estimates of broker selection in Table 2 and victim selection in Table 4 are estimated on identical district-level subsamples. The same numbering scheme is used for both sets of models, using "B" to stand for "Broker selection" and "V" to stand for "Victim selection."

Investors choosing brokers

Tables 1a and 1b contain summary statistics and correlation matrices for variables used to estimate investors' choice of a stockbroker. Table 2 presents conditional logistic regression estimates of this choice as a function of the ethnic pairing of investors to brokers. Results in all models support Hypotheses 1 and 2, which predicted that investors will choose an in-group agent and avoid agents from rival groups especially in locations where their ethnic group is threatened. Across all models B1-B8, Kikuyu brokers are more likely to be selected by their in-group investors, while investors from ethnic groups who are rivals to the Kikuyu are less likely. In the full sample of all Kenyan investors, in-group investors are about 59% more likely to choose a Kikuyu broker than rival-group investors (B1). The relative likelihood of this choice for in-group versus rival investors grows to 68% in the diverse and contentious capital city of Nairobi (B2).

Model B3 provides a baseline estimate of preferences of in-group and rival investors outside the capital city, which are compared with estimates in models B4-B7 to further test hypothesis 2. Rival group investors their strongest avoidance of Kikuyu brokers in districts where Kikuyu investors are the local majority (B4), with in-group investors being 99% more likely than rival investors to choose an in-group broker. A similar pattern is seen for in-group investors residing in districts where rival investors are the local majority (B5). In these locations, in-group investors show their strongest preference for in-group brokers, being 92% more likely than rival group investors to choose a Kikuyu broker. In districts where non-rival investors are the local majority (B6), in-group investors show only a weak preference for Kikuyu brokers and the relative preferences of in-group and rival investors falls back to the non-Nairobi average of 44%. In districts where ethnic fractionalization is insufficient to produce violent inter-ethnic conflict following the contentious 2007 presidential election, neither in-group nor rival investors show significant preferences for or against Kikuyu brokers (B7). However, in districts that did experience inter-ethnic violence, in-group investors are 62% more likely to choose an in-group broker than rival group investors (B8).

Tables 1a, 1b, and 2 about here

Results presented in Table 2 are strongly consistent with research from multiple fields that predicts principals prefer socially similar agents, especially in environments where their group is under threat. Assuming that Kenyan investors are good judges of when and where their ethnic groups are more at risk, these results provide a diagnostic mapping of areas where group social capital is activated in economic decision making. In the next set of analyses, we compare these patterns of broker selection directly with patterns of victim selection by the corrupt agent.

Corrupt broker choosing victims

The central question of this paper is whether social similarity between the investor and the corrupt broker protects against being victimized in an intermediate fraud or make the client more likely to be victimized. Tables 3A and 3B present summary statistics and correlation matrices for variables used in the estimates of victim selection by the corrupt Nyaga brokerage. Table 4 presents results from linear probability models of the likelihood of a Nyaga client being targeted as a victim, measured as having a verified claim with the Investor Compensation Fund. For easier interpretation of the results Table 5 presents predicted probabilities of victimization for clients in each ethnic group holding all other covariates to their mean values.

Tables 3a, 3b, 4, and 5 about here

In support of hypothesis 3, results from models V1-V8 broadly show that in-group clients are more likely to be victimized while rival group clients are less likely. In relative terms, in-group clients are about 15% more likely than rivals to be victimized in the full population (V1). Broad support for hypothesis 4 is also found, as the likelihood of victimization of in-group relative to rival group clients increases to 17% in the diverse and contentious environment of the capital city of Nairobi (V2) and to more than 21% in districts where inter-ethnic tensions resulted in violent conflict following the 2007 presidential election. No statistically significant differences in victimization across clients groups is found in districts where rival or non-rival group investors are the local majority or in districts where there was no violent inter-ethnic conflict (V5-7, respectively). Curiously, model V4 shows a negative effect for both in-group and rival clients in districts where the in-group is the local majority, but the predicted probabilities in Table 5 indicate these districts have the highest overall likelihood of clients being victimized (results are significant at the $p<.1$ level). This result is consistent with positive and significant

coefficients for the control variable of logged number of in-group clients in a district in models V1 Nd V3, suggesting an additional indirect effect of social similarity on likelihood of victimization that future work may wish to explore further.

Hypothesis 5 predicts that in-group clients with more assets available for theft are more likely to be victimized, a prediction in contrast to criminology theory and evidence suggesting that higher value targets represent disproportionate expected costs of detection and punishment. Results in Table 6 broadly support hypothesis 5, as in-group clients with more valuable assets are more likely to be victimized than lower asset value in-group clients. In-group clients in the lowest quintile of value of previous IPO subscriptions and portfolio values have a 15.5% and 16.1% chance of being victimized, respectively. But those probabilities more than double in the fourth and fifth quintile of both measures. In-group clients in the top two quintiles of portfolio value have predicted probabilities of victimization of 33% and 34%; probabilities in the top quintiles of value of prior IPO subscriptions were 32.4% and 29.6%.

Table 6 about here

Hypothesis 6 predicts that in-group clients with deeper relational embedding to the corrupt broker are more likely to be victimized that less relationally embedded in-group clients, a prediction that reverses sociology's expected trust-producing effect of deeper relations between transaction partners. Results in Table 7 broadly support hypothesis 6, as in-group clients who have been clients of the corrupt broker for longer periods of time and those with greater numbers of past transactions are predicted to be victimized at higher rates. In-group clients who have been with the corrupt broker less than one year are insignificantly associated with being victimized, while in-group investors who have been clients of the corrupt broker 1-2 years and more than 2 years have increasing probabilities of being victimized, 22.8% and 30.1% respectively. In-group

clients with fewer than five total transactions with the corrupt broker have a predicted probability of victimization of 21.7%, while those with five or more transactions have a 37.4% probability of being victimized. Given that the majority of frauds were theft of cash from accounts, we can rule out that fraudulent trades themselves are driving this result. Additional analyses below investigate this point in more depth.

Table 7 about here

It is worth explicitly noting that the in-group clients that are the focus of hypotheses 5 and 6 represent the most proximate set of potential victims for the corrupt broker on multiple dimensions: they share geographic, ethnic, and socio-economic similarity with the corrupt broker, and they are the longest duration and most active clients in the corrupt broker's portfolio. Across all measures of proximity between at-risk clients and the corrupt broker, the deviant increasingly victimizes those closest to him.

A more direct test of the mechanism

The predicted negative effect of social capital on fraud victimization derived from theoretical and empirical work in criminology, sociology, and organization theory all rest on a common mechanism: assumed trust of in-group members reduces monitoring and enforcement. Results presented above are consistent with this interpretation but do not test it directly. In this section, we leverage additional data from the CDSC databases to more directly test this mechanism in two ways. First, following the regulatory shutdown of the Nyaga brokerage, all assets in clients' accounts were frozen until they transferred their accounts to another brokerage. Clients were unable to buy or sell shares or access remaining cash deposits until their account was transferred. The CDSC records the date of each account's transfer to another brokerage,

allowing us to model the reaction time of each affected client. Second, we are able to identify accounts used by the corrupt broker in the illegal short selling scheme described in the empirical context above. It is important to note that these accounts will not necessarily be registered as victims; if the broker bought back the shares that were sold, the client would not show a material loss. However, clients are more likely to observe this irregular trading on their account the more closely they are monitoring their broker, and we assume that observing unauthorized trades of this sort will increase the likelihood that the client would transfer out of the corrupt brokerage.

Table 8 provides estimates of clients' reactions to these events. Model V24 estimates the logged number of days until a client transfers their assets out of the brokerage following regulatory intervention. Results in this model suggest that in-group clients are about 5% slower to transfer their assets out of the corrupt brokerage than rival group clients. The magnitude of the result is small, but it is suggestive of a reduced sense of urgency to secure assets following the brokerage shutdown. This result is consistent with earlier work by criminologists that anger stimulates enforcement action, with rival group clients' faster reaction times interpreted as a greater affective response.

Additional evidence suggestive of reduced monitoring and enforcement by in-group clients is found in models V25 and V26. These models present linear probability estimates of the likelihood of transferring out of the corrupt brokerage *before* the regulatory shutdown for the sample of clients whose trading records show the suspicious pattern of short-selling described in press accounts of the fraud. Model V25 is estimated for the population of 291 accounts that show a client's shares in the same company sold and then repurchased within five business days; model V26 is estimated on the 435 accounts whose shares were repurchased within 10 business days. Neither sample shows evidence of repeated short selling in these accounts. That is, these

are accounts that shorted the market on fewer than five occasions, increasing our confidence that these are fraudulent transactions executed by the corrupt broker rather than more sophisticated investors who regularly engage in short selling. Predicted probabilities in both models are consistent with lower monitoring and enforcement by in-group clients relative to rival group clients. In-group clients with these suspicious trades executed within a one-week period (V25) are predicted to have a 29.9% probability of transferring out of the corrupt brokerage before the regular intervention, while rival groups clients experiencing the same suspicious patterns of trades have a 52.9% probability of transferring. Models using a two-week window (V26) predict a 29% probability of transfer for in-group clients compared to 41.8% for rival group clients. Estimates across all models in Table 8 provide evidence consistent with the proposed mechanism of lower monitoring and enforcement for in-group clients.

Accounting for selection effects

The final component of the analysis considers two possible selection effects that might bias the results presented here. First, ICF records of victimization are based on clients' self-reports of losses, making it possible that the victimization of clients from different ethnic groups is a function of their willingness to self-report rather than actual targeting. Second, clients from different ethnic groups may differ on underlying attributes that make them more or less likely to select into the corrupt Nyaga brokerage, making it possible that variation in victimization across ethnic groups is a function of some attribute of investors from each ethnic group rather than their social similarity with the corrupt broker. No evidence is found for either potential bias, though these issues are sufficiently important they merit explicit attention.

First, we want to be confident that we are estimating actual victimization rather than willingness to self-report victimization. If some types of defrauded clients are less likely to self-report their losses, the estimates reported here are likely to be biased. Theoretically, almost all criminology research suggests that the results reported here *underestimate* victimization by in-group clients. As discussed above, social proximity between victims and perpetrators is known to reduce the likelihood of victims reporting a crime (Black 2010; Goudriaan, Wittebrood, and Nieuwbeerta 2006), a pattern found in studies of property theft (Greenberg and Beach 2004), domestic violence (Felson, Messner, and Hoskin 1999; Felson and Paré 2005), and other crimes (Goudriaan and Nieuwbeerta 2007; Davis and Henderson 2003).

To investigate this possible self-reporting bias, I make use of the population of accounts presented above that experienced fraudulent trades on their accounts in the two years prior to regulatory intervention. These accounts represent a small population of targeted clients observable without self-reporting. Rather than try to estimate selection of these 291-435 accounts within the population of more than 99,000 total clients, descriptive analyses provides no evidence that rival group clients are more likely to be targeted for this fraudulent trading than in-group clients. The ratio of rival group to in-group victims normalized by the total number of clients in each group in the self-reported ICF records is 0.65; the same ratio within victims of the fraudulent trading is 0.33. Stated another way, only four of 3158 rival clients were targeted in the fraudulent trading, while 466 of 3158 rival clients are verified, self-reported victims in the ICF data. This contrasts with 60 out of 18159 in-group clients being targeted in the fraudulent trading, while 4259 are verified, self-reported victims in the ICF data. T-tests of means comparing rivals across both measures of victimization also suggest that rivals are relatively more common in the self-reported ICF data. Together, these simple statistics suggests a pattern

opposite of what we would expect if there was a bias in self-selection: rivals are even less prevalent among clients that experienced the fraudulent trading in the two years prior to regulatory intervention. Hence, we are more comfortable that any bias in the self-reported victimization across ethnic groups is toward underestimating the risks of in-group clients.

Lastly, I consider whether there is a selection effect into being a client of the Nyaga brokerage specifically that differs across ethnic groups, such that investors of particular ethnic groups may exhibit attributes associated with desirable victims for the corrupt broker. That is, we want to insure that "in-group" and "rival" do not signal a meaning other than ethnic identity for clients of the Nyaga brokerage related to their desirability as fraud victims. Table 9 presents Pearson's correlations of investor attributes potentially associated with desirability as a fraud victim for investors in each ethnic group that either selects any Kikuyu broker, the corrupt Nyaga brokerage specifically, or being a victim from among all Nyaga clients. To suggest that such a selection effect is present, attributes would need to be positively correlated with selecting the corrupt broker (or more broadly, selecting a Kikuyu stockbroker) but uncorrelated with selection as a victim. No evidence of such a selection effect is found. It is also worth noting that individual-level correlates in Table 9 are included as controls in models predicting victimization, while district-level attributes are either included or accounted for with district fixed effects.

CONCLUSION

Membership in social groups gives rise to what Portes (1998) calls "internalized norms that make [trustworthy] behaviors possible are then appropriable by others as a resource." Across social science fields we call this resource social capital, and in this paper we have argued that that social capital can be exploited by a corrupt agent in the commission of a fraud. Results from the empirical analysis show that social similarity principals are more likely to be victimized by a

corrupt agent, particularly when the live in areas where threat to their group makes them more likely to seek an in-group member's protection initially, when they hold more assets available to be stolen, and when they have deeper relational embedding. Across eight models of agent selection and 23 models of victim selection, the evidence presented here uniformly confirms that Kenyan investors belonging to the diverse and contentious ethnic groups activate social capital in their selection of a corrupt agent, but in the presence of a known deviant this social capital turns from an asset into a liability. Additional evidence was presented supporting the mechanism proposed by earlier empirical work in criminology and theoretical work in sociology and organizational theory: reduced monitoring and enforcement by in-group members.

For sure, this is not the first analysis of the "dark side" of social relations, but most work to date has focused on questions of efficiency rather than illegality.[3] For example, Portes and Sensenbrenner (1993) find that immigrant entrepreneurs who activate resources from their ethnic communities are subsequently hamstrung by those same contacts, who limit their ability to innovate and grow beyond the enclave community due to leveling pressures and pressure to redistribute profits to needy community members. Gargiulo and Benassi (2000) find that dense social structure is related to a reduced ability to reconfigure work teams as demanded by changes in the competitive environment, and Sorenson and Waguespack (2006) find repeat exchange with network contacts leads to biased performance evaluation of those stable transaction partners and subsequently the continuation of an underperforming exchange relationship (see also Sgourev and Zuckerman 2011). Thus, studies of the dark side of social capital have largely focused on issues of inefficiency that might result from social contacts, leaving relatively unattended the study of its role in fraud.

[3] To be clear, this paper is concerned with issues linking social relations to economic crime. But we recognized that readers interested more in social bases of criminal activity more broadly will know work such as Gould (2000) and Papachristos (2009) that relate social structure to violent crime.

The scarcity of attention to economic crime among sociologists was not always the case. Some forty-five years prior to Granovetter's (1985) warning that the trust assumed in strong relationships also creates an opportunity space for malfeasance, Sutherland (1940) spoke of the ubiquity of white collar crime, which was followed by Merton's argument that most organizations engaging in legitimate business also commit some form of fraud (1968; Baker and Faulkner 2003: 1175). The last several years has seen a resurgence of interest in this area, with a growing recognition among organization theorists and economic sociologists that fraud is a common occurrence within organizations and across exchange relations that warrants our attention (Palmer 2012; Greve, Palmer, and Pozner 2010). Baker and Faulkner (2003; 2004) attempted to revive interest in studying the competing claims of sociologists and criminologists, finding that principals with interpersonal ties to a struggling oil and gas exploration firm were less likely to be defrauded of their investments. The paper presented here expands on this work by studying the role of social group membership rather than inter-personal ties in the commission of an intermediate fraud. Doing so provides a way to also expand on Shapiro's (1987) argument that large, impersonal markets require the use of increasingly distant agents who are better positioned to violate the trust placed in them.

The generalizability of the results presented here is an important issue. Ethnic groups in Kenya perform highly similar if not identical functions as social groups in other contexts. A wide range of research from social psychologists, sociologists, political scientists and economists demonstrates that a wide range of social groups (e.g. ethnic enclaves, work teams, fraternal organizations, civic organizations) stimulate cohesion, trust, and social capital. Studying intermediate fraud in the novel context of Kenya provides an excellent setting for clearly measuring social group identity and known cleavages between groups. The primary issue around

generalization is Kenyan ethnic groups per se but rather the nature of the institutional environment in which they operate. Zucker (1986) clearly demonstrates that informal institutions are expected to take on a primary role in constraining opportunism in settings with weak formal institutions. From this perspective, it might be expected that Kenyan's activation of social group membership would be stronger than that in settings with stronger formal institutions while at the same time ethnic groups would act more strongly to constrain the deviance of in-group members. Ultimately, this is a theoretical and empirical question deserving of additional research. Contracts are almost always incomplete and adjudicating grievances via formal regulatory systems is expensive and inefficient. Earlier work on the activation of social capital for risky behaviors includes examples as routine as finding a house painter (DiMaggio and Louch 1998), suggesting that informal social institutions continue to be important at the local level even in countries with strong legal regulatory regimes. To date, scholars have tended to think of the quality of institutional environments as an attribute of countries; future work should seek to understand variation of institutional environments at the local level as well.

While the individual-level data used in this study are exceptional and rare, some limitations should be noted. First, the timing and therefore the order of victimization is not provided in this data. This limitation will be concerning if patterns in victim targeting differ in periods when the fraudster is operating undetected compared to a possible "smash and grab" approach when he understands prosecution is eminent. Temporal patterns in victimization could relate to fraudster's attempts to maintain sparse structures to impede detection (Simmel 1923; Baker and Faulkner 1993); victimization of in-group members may also vary over the time horizon of a fraud, either being more common early on to avoid detection or later in order to reduce the likelihood of reporting once detected. Second, the data used here do not provide

reliable measures of the severity of loss for victims. Thus, an important remaining question is whether the corrupt agent varied the severity of this theft across different types of clients.

Several important research questions remain to be addressed. In addition to understanding how the exploitation of social capital varies across institutional environments and how victim selection might vary over temporal phases of a fraud and in terms of severity of losses across types of clients, academics studying the theoretical foundations of trust will likely share an interest with policy makers in pushing this research forward by considering the consequences of such frauds as well as their causes. Future work will want to better understand how the social foundations of fraud in nascent markets, settings with historically high levels of corruption, affects further market development. The social foundations of the formation and violation of these new exchange relationships are likely to play important roles in levels of trust and confidence in nascent markets and therefore play a key role in their legitimation and subsequent growth in developing contexts.

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Table 1a: Summary Statistics and Correlation Matrix, Investors Choosing a Stockbroker (Nairobi only)

	Mean	SD	Min	Max	1	2	3	4
1 Broker $_{Kikuyu}$	0.41	0.49	0	1				
2 Investor $_{in\text{-}group}$ - Broker $_{Kikuyu}$	0.15	0.30	0	1	0.59			
3 Investor $_{rival}$ - Broker $_{Kikuyu}$	0.03	0.15	0	1	0.25	-0.07		
4 Investor $_{non\text{-}rival}$ - Broker $_{Kikuyu}$	0.11	0.24	0	1	0.55	0.17	0.03	
5 No. broker's clients in the district (ln)	7.25	1.96	0.69	9.82	0.47	0.28	0.12	0.26

Table 1b: Summary Statistics and Correlation Matrix, Investors Choosing a Stockbroker (Non-Nairobi only)

	Mean	SD	Min	Max	1	2	3	4
1 Broker $_{Kikuyu}$	0.49	0.50	0	1				
2 Investor $_{in\text{-}group}$ - Broker $_{Kikuyu}$	0.22	0.35	0	1	0.64			
3 Investor $_{rival}$ - Broker $_{Kikuyu}$	0.04	0.17	0	1	0.23	-0.11		
4 Investor $_{non\text{-}rival}$ - Broker $_{Kikuyu}$	0.14	0.26	0	1	0.56	0.12	0.00	
5 No. broker's clients in the district (ln)	3.88	1.94	0	8.23	0.23	0.25	-0.04	0.09

Table 2: Conditional Logistic Regression Estimates of Choosing a Stockbroker

				Local ethnic majority			Inter-ethnic violence	
	B1	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**
Control variables	All of Kenya	Nairobi Only	All but Nairobi	In-group	Rival	Non-rival	no	yes
Investor $_{in\text{-}group}$ - Broker $_{Kikuyu}$	1.331***	1.441***	1.145***	1.201***	1.948***	1.084*	1.022	1.263***
	(0.013)	(0.017)	(0.021)	(0.031)	(0.136)	(0.045)	(0.029)	(0.031)
Investor $_{rival}$ - Broker $_{Kikuyu}$	0.839***	0.859***	0.797***	0.603***	1.013	0.754***	0.894	0.779***
	(0.013)	(0.015)	(0.023)	(0.032)	(0.056)	(0.041)	(0.051)	(0.026)
Investor $_{non\text{-}rival}$ - Broker $_{Kikuyu}$	1.017	1.017	0.993	0.957	1.061	1.012	0.967	1.010
	(0.011)	(0.014)	(0.021)	(0.032)	(0.076)	(0.031)	(0.031)	(0.029)
No. broker's clients in the district (ln)	2.709***	2.775***	2.724***	2.806***	2.833***	2.626***	2.686***	2.779***
	(0.007)	(0.017)	(0.009)	(0.013)	(0.035)	(0.017)	(0.012)	(0.014)
Broker fixed effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Log likelihood	-1021,094	-729111	-291615	-195030	-25995	-70293	-149004	-142497
Chi-squared	537101	266438	271398	167102	34713	70169	126624	145003
Deg. of Freedom	29	29	27	27	26	27	27	27
No. obs	9346608	6536854	2809754	1873984	267864	667894	1372314	1437440
Pseudo-R^2	0.208	0.155	0.318	0.3	0.4	0.34	0.298	0.337

Note: Investor ethnicity measured continuously.

Exponentiated coefficients; Standard errors in parentheses

* p<0.05 ** p<0.01 *** p<0.001

Table 3a: Summary Statistics and Correlation Matrix, Victim Selection (Nairobi Only, N=44,701)

	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10
Victim	0.23	0.42	0	1										
Kikuyu client	0.49	0.37	0	1	0.05									
Rival client	0.06	0.21	0	1	-0.03	-0.34								
Non-rival client	0.30	0.30	0	1	-0.02	-0.46	-0.14							
Non-tribal client (Anglo or South Asian)	0.02	0.12	0	1	-0.01	-0.19	-0.04	-0.11						
Gender (0=institutional, 1=Female, 2=Male)	1.64	0.57	0	2	-0.03	0.05	0.04	0.07	-0.02					
Value of prior IPO subscriptions (quintiles)	2.95	1.50	1	5	0.11	0.02	-0.03	-0.02	-0.02	-0.11				
Portfolio value (quintiles)	2.92	1.47	1	5	0.15	0.01	-0.02	0.00	-0.02	-0.07	0.73			
No. past transactions (ln)	1.29	0.68	0.69	8.35	0.16	0.02	-0.02	0.01	-0.01	-0.03	0.48	0.65		
Tenure with the broker	20.17	6.65	6.33	40.30	0.01	0.02	0.00	0.01	-0.01	-0.06	0.55	0.58	0.55	
Portfolio diversity	2.40	2.44	0	51	0.15	0.02	-0.01	0.01	0.00	-0.02	0.42	0.58	0.85	0.50

Table 3b: Summary Statistics, Victim Selection (Non-Nairobi Only, N=35,461)

	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11
Victim	0.27	0.44	0	1											
Kikuyu client	0.58	0.35	0	1	0.03										
Rival client	0.04	0.16	0	1	-0.04	-0.31									
Non-rival client	0.27	0.27	0	1	-0.02	-0.49	-0.11								
Non-tribal client (Anglo or South Asian)	0.02	0.11	0	1	-0.01	-0.21	-0.02	-0.11							
Gender (0=institutional, 1=Female, 2=Male)	1.67	0.56	0	2	-0.03	0.09	0.02	0.07	-0.05						
Inter-tribal violence in district	0.39	0.49	0	1	-0.03	-0.04	0.13	-0.05	-0.03	0.40					
Value of prior IPO subscriptions (quintiles)	2.95	1.38	1	5	0.05	-0.01	0.00	0.00	-0.01	0.03	0.03				
Portfolio value (quintiles)	2.93	1.47	1	5	0.14	-0.01	0.00	0.03	-0.02	0.01	0.03	0.69			
No. past transactions (ln)	1.28	0.68	0.69	6.30	0.21	0.02	-0.02	0.03	-0.01	-0.04	0.00	0.43	0.69		
Tenure with the broker	19.83	6.99	6.97	40.33	-0.07	0.01	0.01	0.03	-0.05	0.03	0.04	0.51	0.54	0.48	
Portfolio diversity	2.39	2.31	0	50	0.19	0.03	-0.02	0.02	0.01	-0.04	-0.01	0.41	0.61	0.86	0.44

Table 4: Linear Probability Estimates of Victim Selection, by Location

				Local tribal majority			Inter-tribal violence	
	V1	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**	**V8**
Control variables	All of Kenya	Nairobi Only	All but Nairobi	Kikuyu	Rival	Non-rival	no	yes
District fixed effects	*yes*	*n/a*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Dummies for each stock held	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Female	-0.027***	-0.023*	-0.030*	-0.028*	0.061	-0.051	-0.045**	-0.013
	(0.008)	(0.010)	(0.012)	(0.013)	(0.054)	(0.049)	(0.017)	(0.017)
Male	-0.051***	-0.043***	-0.057***	-0.055***	0.020	-0.072	-0.073***	-0.040*
	(0.007)	(0.010)	(0.012)	(0.012)	(0.052)	(0.048)	(0.016)	(0.017)
Value of IPO investments: 2nd quintile	0.061***	0.078***	0.028**	0.029**	-0.132**	0.061*	0.023	0.032*
	(0.006)	(0.008)	(0.010)	(0.011)	(0.045)	(0.031)	(0.013)	(0.016)
Value of IPO investments: 3rd quintile	-0.019**	0.006	-0.054***	-0.061***	-0.095	0.023	-0.055***	-0.055**
	(0.007)	(0.009)	(0.011)	(0.012)	(0.049)	(0.033)	(0.014)	(0.018)
Value of IPO investments: 4th quintile	-0.016*	0.009	-0.054***	-0.062***	-0.095	0.013	-0.049**	-0.064***
	(0.008)	(0.010)	(0.012)	(0.013)	(0.053)	(0.034)	(0.015)	(0.019)
Value of IPO investments: 5th quintile	-0.054***	-0.027*	-0.094***	-0.110***	-0.012	0.009	-0.080***	-0.117***
	(0.009)	(0.012)	(0.014)	(0.016)	(0.061)	(0.040)	(0.018)	(0.023)
Portfolio value: 2nd quintile	0.032***	0.027***	0.043***	0.038***	0.097**	0.073**	0.049***	0.034**
	(0.005)	(0.007)	(0.008)	(0.009)	(0.035)	(0.025)	(0.011)	(0.013)
Portfolio value: 3rd quintile	0.061***	0.044***	0.090***	0.092***	0.109**	0.071**	0.102***	0.073***
	(0.006)	(0.007)	(0.009)	(0.009)	(0.036)	(0.026)	(0.011)	(0.014)
Portfolio value: 4th quintile	0.091***	0.086***	0.097***	0.100***	0.090*	0.087**	0.100***	0.094***
	(0.006)	(0.009)	(0.010)	(0.011)	(0.042)	(0.029)	(0.013)	(0.016)
Portfolio value: 5th quintile	0.083***	0.060***	0.108***	0.111***	0.063	0.090*	0.108***	0.103***
	(0.009)	(0.011)	(0.014)	(0.015)	(0.058)	(0.038)	(0.018)	(0.021)
No. past transactions (ln)	0.100***	0.074***	0.126***	0.135***	0.146***	0.058*	0.119***	0.137***
	(0.006)	(0.008)	(0.009)	(0.010)	(0.042)	(0.027)	(0.012)	(0.015)
Tenure with the broker	-0.006***	-0.005***	-0.007***	-0.007***	-0.009***	-0.007***	-0.007***	-0.007***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)	(0.001)	(0.001)
Portfolio diversity	0.048***	0.050***	0.040***	0.044***	0.030	0.012	0.036***	0.051***
	(0.003)	(0.004)	(0.005)	(0.006)	(0.021)	(0.016)	(0.006)	(0.009)
Explanatory variables								
Kikuyu client	0.020***	0.041***	-0.014	-0.022*	0.041	0.035	-0.009	-0.019
	(0.006)	(0.007)	(0.009)	(0.010)	(0.032)	(0.027)	(0.012)	(0.013)
Rival client	-0.025**	-0.019	-0.030	-0.041	0.040	-0.026	0.036	-0.059**
	(0.009)	(0.011)	(0.017)	(0.023)	(0.028)	(0.039)	(0.030)	(0.020)
Non-rival client	-0.003	0.006	-0.018	-0.030*	0.057	0.015	-0.011	-0.026
	(0.007)	(0.008)	(0.011)	(0.013)	(0.035)	(0.021)	(0.014)	(0.016)
Non-tribal client (Anglo, South Asian)	-0.001	0.005	-0.014	-0.021	0.060	0.017	-0.015	-0.012
	(0.013)	(0.017)	(0.021)	(0.025)	(0.070)	(0.047)	(0.029)	(0.032)
Constant	0.134***	0.100***	0.243***	0.241***	0.195	0.092	0.280***	0.213***
	(0.010)	(0.014)	(0.016)	(0.017)	(0.110)	(0.094)	(0.031)	(0.025)
Deg. of Freedom	136	70	133	85	73	94	111	88
No. obs	80642	44966	35676	31167	1305	3204	21735	13941
R-squared	0.098	0.078	0.127	0.123	0.220	0.117	0.122	0.140

Standard errors in parentheses * p<0.05 ** p<0.01 *** p<0.001

Table 5: Predicted Likelihood of Victimization by Corrupt Kikuyu Stockbroker

	Full sample (V1)	Nairobi (V2)	Non-Nairobi (V3)	In-group majority (V4)	Rival majority (V5)	Non-rival majority (V6)	Non-violent area (V7)	Violent area (V8)
Kikuyu	25.6%	25.0%	n/s	27.4%	n/s	n/s	n/s	25.5%
Rivals	22.0%	20.9%	n/s	29.6%	n/s	n/s	n/s	19.6%
Non-Rivals	24.4%	20.9%	n/s	29.6%	n/s	n/s	n/s	25.5%
Kikuyu : Rival	14.8%	19.6%	n/a	-7.4%	n/a	n/a	n/a	23.1%

Sources: Predicted probabilities calculated holding all other covariates at their means. In models where only one tribal group is statistically significant (V2, V4, V8), predicted probabilities for the insignificant groups are calculated as values for non-members of the significant group (all non-Kikuyu in V2 and V4 and non-rival in V8).

Table 6: Linear Probability Estimates of Victim Selection, by asset value

		Value of Previous IPO Subscriptions					Portfolio value				
	V2	**V9**	**V10**	**V11**	**V12**	**V13**	**V14**	**V15**	**V16**	**V17**	**V18**
Control variables	All Nairobi	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Dummies for each stock held	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Female	-0.013	-0.007	0.020	-0.044*	-0.055*	-0.020	0.008	0.008	-0.016	-0.080***	0.014
	(0.009)	(0.019)	(0.017)	(0.022)	(0.022)	(0.022)	(0.031)	(0.017)	(0.019)	(0.018)	(0.020)
Male	-0.037***	-0.043*	-0.008	-0.056**	-0.065**	-0.034	-0.005	-0.017	-0.036*	-0.096***	-0.002
	(0.009)	(0.018)	(0.016)	(0.021)	(0.021)	(0.021)	(0.029)	(0.015)	(0.018)	(0.017)	(0.019)
Value of IPO investments: 2nd quintile	-0.036***						-0.046	-0.102***	0.062***	-0.054***	0.036
	(0.007)						(0.028)	(0.021)	(0.014)	(0.014)	(0.024)
Value of IPO investments: 3rd quintile	0.014*						-0.033	-0.060*	0.028*	0.085***	0.108***
	(0.007)						(0.028)	(0.024)	(0.014)	(0.015)	(0.021)
Value of IPO investments: 4th quintile	0.012						-0.070	-0.122***	0.006	0.056***	0.045*
	(0.008)						(0.036)	(0.032)	(0.018)	(0.013)	(0.018)
Value of IPO investments: 5th quintile	-0.016						-0.044	-0.080	-0.031	0.019	0.019
	(0.009)						(0.042)	(0.045)	(0.033)	(0.016)	(0.017)
Portfolio value: 2nd quintile	0.026*	0.066**	-0.012	-0.043	0.018	0.045					
	(0.012)	(0.023)	(0.018)	(0.036)	(0.052)	(0.074)					
Portfolio value: 3rd quintile	0.044***	0.008	0.119***	0.002	0.085	0.019					
	(0.012)	(0.021)	(0.021)	(0.035)	(0.049)	(0.067)					
Portfolio value: 4th quintile	0.042***	-0.013	-0.057**	0.040	0.125**	0.083					
	(0.012)	(0.021)	(0.022)	(0.039)	(0.048)	(0.060)					
Portfolio value: 5th quintile	0.045***	0.001	-0.052	0.012	0.083	0.077					
	(0.013)	(0.023)	(0.031)	(0.044)	(0.051)	(0.060)					
No. past transactions (ln)	0.083***	0.034**	0.179***	0.016	0.098***	0.054***	-0.019	-0.126***	0.038	0.103***	0.061***
	(0.007)	(0.013)	(0.022)	(0.022)	(0.018)	(0.014)	(0.035)	(0.026)	(0.023)	(0.016)	(0.011)
Tenure with the broker	-0.006***	-0.008***	-0.002*	-0.005***	-0.004***	-0.003*	-0.005***	-0.005***	-0.009***	-0.005***	-0.007***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Portfolio diversity	0.053***	0.057***	0.110***	0.052***	0.049***	0.044***		0.048*	0.099***	0.088***	0.045***
	(0.004)	(0.012)	(0.011)	(0.013)	(0.009)	(0.005)		(0.020)	(0.015)	(0.009)	(0.005)
Explanatory variables											
In-group client	0.042***	0.041**	0.039***	0.018	0.042**	0.060***	-0.003	0.037**	0.034**	0.037**	0.054***
	(0.006)	(0.014)	(0.011)	(0.016)	(0.015)	(0.017)	(0.023)	(0.012)	(0.013)	(0.012)	(0.015)
Rival client	-0.022*	-0.040*	-0.027	-0.043	0.019	-0.014	-0.066*	-0.041*	-0.018	-0.003	-0.030
	(0.010)	(0.020)	(0.015)	(0.025)	(0.024)	(0.027)	(0.033)	(0.018)	(0.019)	(0.018)	(0.024)
Non-rival client	0.006	0.007	-0.002	-0.009	0.035*	-0.004	0.001	-0.012	0.008	0.022	0.001
	(0.007)	(0.016)	(0.012)	(0.018)	(0.018)	(0.019)	(0.026)	(0.014)	(0.015)	(0.013)	(0.017)
Non-Kenyan client	-0.001	-0.022	0.044	0.006	-0.023	-0.027	-0.057	0.019	-0.006	0.044	-0.051
	(0.015)	(0.033)	(0.024)	(0.041)	(0.038)	(0.039)	(0.052)	(0.028)	(0.033)	(0.030)	(0.034)
Constant	0.142***	0.250***	-0.066	0.201***	0.029	0.056	0.209***	0.287***	0.168***	0.120***	0.189***
	(0.016)	(0.028)	(0.045)	(0.048)	(0.055)	(0.066)	(0.049)	(0.030)	(0.025)	(0.023)	(0.026)
Deg. of Freedom	70	65	59	62	64	66	49	48	59	60	66
No. obs	52876	8175	13219	10086	11361	10035	1468	11709	12027	15843	11829
R-squared	0.074	0.089	0.072	0.108	0.064	0.052	0.061	0.072	0.094	0.097	0.060

Standard errors in parentheses * p<0.05 ** p<0.01 *** p<0.001

Note: Models estimated on Nairobi-registered clients only

Table 7: Linear Probability Estimates of Victim Selection, by relational embedding

	Tenure			No. past transactions	
	V19	**V20**	**V21**	**V22**	**V23**
Control variables	< 1 yr	1-2 yrs	>2 yrs	< 5	> 4
Dummies for each stock held	*yes*	*yes*	*yes*	*yes*	*yes*
Female	-0.040	-0.019	0.018	-0.017	-0.029
	(0.028)	(0.011)	(0.023)	(0.009)	(0.027)
Male	-0.056*	-0.037***	-0.007	-0.039***	-0.039
	(0.025)	(0.010)	(0.022)	(0.009)	(0.026)
Value of IPO investments: 2nd quintile		-0.012	0.024	-0.017*	0.046
		(0.008)	(0.020)	(0.008)	(0.026)
Value of IPO investments: 3rd quintile	-0.001	0.011	0.091***	0.005	0.112***
	(0.032)	(0.009)	(0.023)	(0.008)	(0.023)
Value of IPO investments: 4th quintile	-0.084*	0.016	0.091***	0.016	0.055*
	(0.035)	(0.010)	(0.023)	(0.009)	(0.021)
Value of IPO investments: 5th quintile	-0.092	-0.008	0.050	0.005	0.029
	(0.053)	(0.011)	(0.025)	(0.011)	(0.023)
Portfolio value: 2nd quintile	-0.023	0.005	0.006	-0.025	0.029
	(0.051)	(0.014)	(0.040)	(0.013)	(0.079)
Portfolio value: 3rd quintile	-0.001	0.024	-0.012	-0.026	0.029
	(0.052)	(0.014)	(0.034)	(0.014)	(0.070)
Portfolio value: 4th quintile	-0.036	0.009	0.023	-0.063***	0.079
	(0.054)	(0.014)	(0.032)	(0.014)	(0.067)
Portfolio value: 5th quintile	-0.033	0.000	0.020	-0.075***	0.081
	(0.060)	(0.016)	(0.033)	(0.016)	(0.067)
No. past transactions (ln)	-0.007	0.091***	0.032**	0.025*	-0.011
	(0.027)	(0.009)	(0.012)	(0.012)	(0.015)
Tenure with the broker	-0.024***	-0.003**	-0.003**	-0.006***	-0.006***
	(0.004)	(0.001)	(0.001)	(0.000)	(0.001)
Portfolio diversity	0.120***	0.083***	0.032***	0.098***	0.037***
	(0.028)	(0.005)	(0.005)	(0.008)	(0.005)
Explanatory variables					
In-group client	0.031	0.037***	0.058***	0.035***	0.057**
	(0.022)	(0.007)	(0.017)	(0.007)	(0.018)
Rival client	-0.105**	-0.017	-0.007	-0.030**	0.011
	(0.036)	(0.011)	(0.026)	(0.010)	(0.028)
Non-rival client	-0.038	0.006	0.031	0.001	0.020
	(0.026)	(0.008)	(0.019)	(0.008)	(0.020)
Non-Kenyan client	-0.036	0.006	0.001	0.003	-0.003
	(0.054)	(0.017)	(0.038)	(0.016)	(0.041)
Constant	0.409***	0.082***	0.105*	0.193***	0.273***
	(0.062)	(0.025)	(0.050)	(0.018)	(0.077)
Deg. of Freedom	55	65	70	68	69
No. obs	5735	39484	7959	42667	10209
R-squared	0.075	0.079	0.078	0.080	0.045

Standard errors in parentheses * p<0.05 ** p<0.01 *** p<0.001

Note: Models estimated on Nairobi-registered clients only

Table 8: Estimates of Reaction to Victimization, time to transfer for all all clients post-collapse and probability of transferring for accounts with fraudulent trades pre-collapse

	All clients	Clients with fraud trades	
		7 day	14 day
Control variables	**V24***	**V25**	**V26**
District fixed effects	*yes*	*yes*	*yes*
Dummies for each stock held	*yes*	*no*	*no*
Female	-0.155***	-0.142	-0.101
	(0.013)	(0.124)	(0.098)
Male	-0.168***	-0.131	-0.101
	(0.013)	(0.114)	(0.090)
Portfolio value (continuous quiintiles)		0.040	0.009
		(0.046)	(0.031)
Value of IPO investments: 2nd quintile	0.024*		
	(0.010)		
Value of IPO investments: 3rd quintile	-0.001		
	(0.009)		
Value of IPO investments: 4th quintile	0.017		
	(0.010)		
Value of IPO investments: 5th quintile	0.012		
	(0.012)		
Portfolio value: 2nd quintile	0.131***		
	(0.037)		
Portfolio value: 3rd quintile	0.189***		
	(0.037)		
Portfolio value: 4th quintile	0.241***		
	(0.037)		
Portfolio value: 5th quintile	0.298***		
	(0.038)		
No. past transactions (ln)	-0.039***		
	(0.009)		
Tenure with the broker	0.003***		
	(0.000)		
Portfolio diversity	-0.003		
	(0.005)		
Distance to Nairobi (km, ln)	-0.026*		
	(0.012)		
Verified fraud victim	0.259***		
	(0.007)		
Distance to nearest Nyaga office (km, ln)		0.005	0.014
		(0.023)	(0.019)
No. fraudulent trades (ln)		-0.041	-0.029
		(0.030)	(0.025)
No. non-fraudulent trades (ln)		0.075**	0.081***
		(0.026)	(0.022)
Explanatory variables			
In-group client	0.046***	0.200*	0.202*
	(0.010)	(0.101)	(0.080)
Rival client	-0.004	0.344+	0.366*
	(0.017)	(0.182)	(0.171)
Non-rival client	0.016	0.163	0.111
	(0.012)	(0.117)	(0.092)
Non-Kenyan client	0.017	0.040	-0.018
	(0.024)	(0.272)	(0.209)
Constant	4.241***	-0.227	-0.099
	(0.041)	(0.217)	(0.148)
Deg. of Freedom	132	27	31
No. obs	99300	291	435
R-squared		0.128	0.105

Standard errors in parentheses + p<.1 * p<0.05 ** p<0.01 *** p<0.001

*A first stage probit controls for likelihood of the account's assets being transferred.

Table 9: Correlates of Selecting the Corrupt Stockbroker and Selection as a Victim

	Client of any Kikuyu broker		Nyaga client		Nyaga victims	
	Kikuyu	**Rivals**	**Kikuyu**	**Rivals**	**Kikuyu**	**Rivals**
Male	0.12	0.05	0.01	0.03	0.04	0.02
Female	0.10	0.01	0.06	-0.01	0.06	-0.01
Company registration	-0.28	-0.07	-0.15	-0.03	-0.20	-0.03
No. Nyaga clients in the district (ln)	-0.02	-0.02	0.02	-0.02	0.01	0.00
District's co-tribal investors previously chose same broker (ln)	0.13	-0.15	0.22	-0.14	0.21	-0.12
Tribal diversity of district's investors/clients (1-Herfindahl Index)	-0.25	0.12	-0.18	0.14	-0.14	0.12
District's distrust of formal financial organizations	0.09	0.02	0.04	0.02	0.03	0.02
Inter-tribal violence in district	-0.15	0.08	-0.10	0.10	-0.07	0.08
% low SES households in district	0.12	-0.03	0.05	-0.03	0.04	-0.04
% medium SES households in district	0.12	-0.05	0.13	-0.06	0.11	-0.06
% high SES households in district	-0.16	0.05	-0.11	0.06	-0.09	0.07
Distance to Nairobi	-0.06	0.04	-0.06	0.07	-0.03	0.04
Distance to nearest Nyaga branch office	-0.13	0.04	-0.13	0.07	-0.11	0.05
Value of IPO investments (ln)	-0.09	-0.04	-0.01	-0.02	-0.01	0.00
Portfolio value (ln)	0.00	-0.02	0.01	-0.02	0.00	0.00
No. past transactions (ln)	0.04	-0.01	0.02	-0.02	0.03	-0.01
Tenure with the broker	0.02	-0.01	0.01	0.00	0.02	0.01
Portfolio diversity	0.04	-0.01	0.02	-0.01	0.03	-0.01

Note: Pearson's correlation coefficient shown. All correlations are significant at the 5% level except those in shaded cells.