The Impact of Violence on Individual Risk Preferences: Evidence from a Natural Experiment

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Abstract

We estimate the impact of Kenya's post-election violence on individual risk preferences. Because the crisis interrupted a longitudinal survey of more than five thousand Kenyan youth, this timing creates plausibly exogenous variation in exposure to civil conflict by the time of the survey. We measure individual risk preferences using hypothetical lottery choice questions which we validate by showing that they predict migration and entrepreneurship in the cross-section. Our results indicate that the post-election violence increased individual risk aversion significantly. Findings remain robust when we use an IV estimation strategy that exploits random assignment of respondents to waves of surveying.

JEL codes: C91, C93, D01, D74, D81

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1 Introduction

Armed conflict is a source of untold human suffering. Since 1989, more than one million people have been killed in civil and interstate conflicts (Pettersson and Wallensteen 2015). The majority of these episodes are civil wars in low- and middle-income countries; because the scourge of war falls disproportionately on the poorest nations, armed conflict also perpetuates disparities in human and economic development among the living.

The short-term costs of civil conflict are obvious: in addition to the lives lost, war damages or destroys physical capital and deters investment. There is also evidence that war and violence limit the accumulation of human capital (Blattman and Annan 2010) and erode trust (Nunn and Wantchekon 2011). This has led some scholars to refer to civil war as "development in reverse" (Collier, Elliott, Hegre, Hoeffler, Reynal-Querol, and Sambanis 2003). Yet, though the short-term human and economic costs of conflict are indisputable, many conflict-affected countries — Rwanda and Uganda, for example — have experienced extremely rapid growth in the wake of civil war, and a number of recent papers have challenged the notion that conflict leads to slower growth and development over the long-term (cf. Miguel and Roland 2011). In fact, several studies have found that exposure to civil conflict increases political engagement (Bellows and Miguel 2009, Blattman 2009), enhances cooperation and pro-sociality (Voors, Nillesen, Verwimp, Bulte, Lensink, and Van Soest 2012), and makes people more willing to bear profitable risks (Voors, Nillesen, Verwimp, Bulte, Lensink, and Van Soest 2012, Callen, Isaqzadeh, Long, and Sprenger 2014).

These studies share a common empirical approach. First, they take seriously the idea that exposure to conflict is endogenous, and employ a variety of strategies designed to isolate plausibly exogenous variation in victimization and involvement in violence. Second, given their focus on within-conflict variation in exposure and victimization, these papers empirically frame civilians who lived through civil war but were not victimized (or were less exposed to violence) as a comparison group. This strategy enhances the credibility of the estimated treatment effects, but has an obvious drawback: this approach can generate credible estimates of the marginal impact of greater conflict victimization or exposure, but cannot be used to assess the overall impact of conflict unless one assumes that violence has no impact on the relatively less victimized. If everyone who lives through a period of conflict — regardless of their victim status — is affected, estimates of the marginal impact of greater conflict exposure may present a biased assessment of the overall social cost of violence.

In this paper, we estimate the impact of a specific episode of civil conflict, Kenya's post-election crisis, on the risk preferences of a broad sample of young adults who lived through it. The post-election crisis was a months-long period of protests, rioting, and ethnic violence that began immediately after a disputed presidential election. The election, in which ethnic Luo Raila Odinga challenged incumbent and ethnic Kikuyu Mwai Kibaki, took place on December 27, 2007. Amidst allegations of electoral fraud by observers, and after three days of uncertainty following the national polls, the incumbent president was both declared the winner and sworn into office on December 30, 2007. Ethnic tensions rose, and rioting ensued. The following two months of civil conflict left more than a thousand people dead and hundreds of thousands more internally displaced. The crisis largely ended when, on February 28, 2008, the two candidates signed a power-sharing agreement.[1]

We estimate the impact of Kenya's post-election violence on individual risk preferences, which we measure using lottery choice questions embedded in a longitudinal survey. The Kenyan Life Panel Survey (hereafter KLPS2) is a survey of more than 5,000 young adults who were enrolled in rural primary schools in 1998. The second round of the survey was administered between August of 2007 and December of 2009. 1,180 respondents (23.3 percent) were interviewed prior to the crisis, while the remainder were surveyed after experiencing the period of civil conflict. Thus, Kenya's post-election violence interacted with the timing of the survey to create a natural experiment in exposure to conflict.

We employ two complementary identification strategies to estimate the impact of the crisis on risk aversion. First, we estimate the impact of the crisis in straightforward linear and nonlinear frameworks, using several strategies to control for any time trends or seasonal shocks. Second, we exploit the fact that survey respondents were randomly assigned to one of two waves of interviews; Kenya's election crisis interrupted the first wave of surveys, allowing us to instrument for conflict exposure (pre-survey) using the randomly-assigned survey waves. Both approaches yield similar

[1] This description of Kenya's 2007-2008 post-election crisis draws upon several sources: World Bank (2006), World Bank (2008), World Bank (2009), World Bank (2010a), World Bank (2010b), World Bank (2011), World Bank (2012), Van Praag (2010), Waki (2008), McCrummen (2007), BBC (2008a), and BBC (2008b).

results: we find that Kenya's post-election crisis had a large and significant positive impact on individual risk aversion. Specifically, the crisis led to an 11 percentage point increase in the likelihood that a subject always chose the safest, lowest expected value alternative (i.e. lottery) available — this effect constitutes more than an 80 percent increase in the rate of extreme risk aversion. We also observe a 5.7 percentage point (or roughly 26 percent) decrease in the fraction of subjects who are classified as either risk neutral or risk loving. Such substantial impacts highlight an important channel through which civil conflict might affect growth and development: increased risk aversion might lead individuals in post-conflict settings to avoid high-risk, high-return activities (e.g. entrepreneurship) that contribute to economic growth.

The key strength of our study is that we are able to estimate the impact of civil conflict on the risk preferences of the general population, as opposed to the specific (marginal) effect of being victimized or more exposed to violence. Very few KLPS2 respondents were themselves victims of violence during the unrest: more than three quarters of respondents were temporarily deprived of basic necessities because it was not safe to visit markets or other public places, but less than 4 percent indicated that anyone in their household was physically assaulted during the crisis. Thus, KLPS2 respondents experienced the conflict, but were not, by and large, among the most impacted Kenyans; they therefore provide an important window into the impacts of civil conflicts on the preferences of the general population. Understanding these overall impacts is of critical importance as we seek to characterize the ways that conflict may change a country's overall growth trajectory.

This paper contributes to several strands of literature. First, most obviously, we add to the evidence on the impacts of conflict. As discussed above, this literature has expanded rapidly in recent years as increasingly high-quality micro data from post-conflict settings has become available.[2] Second, we contribute to a growing body of evidence that individual preferences, one of the key determinants of individual behavior in all economic domains, are not as immutable as has long been assumed (cf. Stigler and Becker 1977); instead, individual preferences appear to be shaped by life experiences. For example, Malmendier and Nagel (2011) and Fisman, Jakiela, and

[2]Humphreys and Weinstein (2006), Bellows and Miguel (2009), and Blattman and Annan (2010) are prominent examples. See Blattman and Miguel (2010) for discussion.

Kariv (2015) show that exposure to economic downturns makes people more risk averse and more efficiency-focused, respectively; while Eckel, El-Gamal, and Wilson (2009), Cameron and Shah (2013), and Hanaoka, Shigeoka, and Watanabe (2015) estimate the impact of natural disasters on individual risk preferences (and arrive at different conclusions). As discussed above, several papers (cf. Voors, Nillesen, Verwimp, Bulte, Lensink, and Van Soest 2012) have estimated the impact of conflict on the preferences of those most affected, but, to our knowledge, no work to date has estimated the impact of violence on the risk preferences of the general population.

Finally, our study contributes to the growing body of evidence documenting the validity and predictive power of laboratory and lab-style measures of individual preferences. Though some scholars have questioned whether individual decisions in choice experiments predicts behavior outside of the lab (cf. Levitt and List 2007, Voors, Turley, Kontoleon, Bulte, and List 2012), numerous studies document the explanatory power of experimental measures of risk, time, and social preferences (cf. Fisman, Jakiela, and Kariv 2014). For example, Liu (2013) and Liu and Huang (2013) show that experimental measures of risk preferences predict the crop choice and investment decisions of Chinese farmers. In the domain of time preferences, Meier and Sprenger (2012) show that experimental measures of patience predict creditworthiness. Fisman, Jakiela, and Kariv (2014) show that experimental measures of equality-efficiency tradeoffs predict the voting behavior of adult Americans, while Jing (2015) shows that experimental measures of fair-mindedness predict medical students' choices regarding field of specialization. To date, the majority of work linking choices in decision experiments to behavior outside the lab has used incentivized measures of individual preferences, but there are notable exceptions (cf. Ashraf, Karlan, and Yin 2006). Existing evidence suggests the use of incentives shifts individual responses toward greater risk aversion (cf. Camerer and Hogarth 1999, Holt and Laury 2002), leading many to question the broad applicability of hypothetical approaches to risk preference elicitation. We contribute to this literature by demonstrating that hypothetical measures of risk preferences, interpreted as an ordinal index of risk tolerance, predict real world behaviors in an internally consistent way.

The rest of this paper is organized as follows. In Section 2, we describe the KLPS2 data collection effort and Kenya's post-election crisis. In Section 3, we describe our measure of risk preferences and assess the extent to which our hypothetical lottery choice questions predict behaviors likely to depend on risk aversion. In Section 4, we explain our analytic approach and present our main results. Section 5 concludes.

2 Research Design

2.1 The Kenyan Life Panel Survey

We measure the risk preferences of a large and heterogeneous sample of young Kenyans by embedding a series of non-incentivized decision problems in the second round of the Kenyan Life Panel Survey (KLPS2), which was administered to more than 5,000 individuals who were enrolled in primary schools in Kenya's Western Province in the late 1990s.[3] KLPS2 was administered in person, through one-on-one interviews, between August of 2007 and December of 2009. The survey covers a broad range of topics including educational attainment, labor market and entrepreneurial activities, household composition and wealth, migration, and fertility.

Our subject pool includes 5,049 Kenyan youths aged 14 to 31. Summary statistics characterizing our sample are reported in the Online Appendix. 49.0 percent of subjects are female. As of 2007, subjects had completed an average of 8.5 years of schooling; 69.6 percent had completed primary school, and 14.4 percent had completed secondary school. 23.2 percent of subjects were still enrolled in school at the time that they were surveyed.

2.2 Kenya's Post-Election Crisis

The 2008 post-election crisis was a period of violence and political instability following the Kenyan presidential election of December 27, 2007. The two leading candidates in the election were Raila Odinga (a member of the Luo ethnic group and the son of Kenya's first vice president), and the incumbent president, Mwai Kibaki (a member of the Kikuyu ethnic group and himself a former vice president). For several months preceding the election, opinion polls placed the opposition candidate, Odinga, ahead of Kibaki (World Bank 2008, Munene and Otieno 2007). As election day

[3] KLPS2 was a long-term follow-up of the Primary School Deworming Project (PSDP) that was implemented in Busia District, in Kenya's Western Province, between 1998 and 2001. All KLPS2 respondents were enrolled in public primary schools in the project area in 1998. See Miguel and Kremer (2004) for discussion of the PSDP and Baird, Blattman, Casaburi, Evans, Hamory, Kremer, Miguel, Ozier, Siegel, Wafula, and Yeh (2007) for a description of the KLPS data collection effort.

neared, the polling gap between Odinga and Kibaki narrowed to what, in some polls, appeared to be a statistical dead heat (World Bank 2008, Agina 2007, Otieno 2007, Standard Team 2007). At the time of the elections, both international observers and members of the opposition made allegations of electoral irregularities; however, after a few days, Kibaki was declared the winner and sworn into office (World Bank 2008, Waki 2008, McCrummen 2007, BBC News 2007). Opposition supporters organized protests; rioting and violent clashes with police ensued, and the violence soon escalated and took on a strong ethnic dimension (World Bank 2008, World Bank 2010b, Van Praag 2010, Waki 2008, BBC News 2007). By the time Kibaki and Odinga signed a power-sharing agreement at the end of February, 2008, more than one thousand people had been killed, and hundreds of thousands had been internally displaced (World Bank 2008, World Bank 2009, World Bank 2010a, World Bank 2012, BBC 2008a, BBC 2008b).

As discussed above, all KLPS2 respondents were residing in Busia District, in Kenya's Western Province near the Ugandan border, in 1998; 73 percent were still living in Busia District at the time of the KLPS2 survey, and many others happened to be there during the post-election crisis (because they had returned to their family homes to celebrate the Christmas holiday or to vote). As a result, most were spared the worst of the post-election violence: though protests, riots, and assaults took place throughout Kenya, the most affected areas were Rift Valley Province and the more urban districts across the country. According to the official report of the Commission of Inquiry on Post Election Violence, only 98 of the 1,133 deaths occurred in Western Province (Waki 2008). The majority of conflict deaths in Western Province occurred in districts that bordered Rift Valley Province; only 9 deaths were documented in Busia District (Waki 2008). In addition, most KLPS2 respondents (90.0 percent) are members of the Luhya ethnic group, the majority ethnic group in Western Province; as such, they were somewhat less likely to be singled out as clearly aligned with either the incumbent Mwai Kibaki (a member of the Kikuyu ethnic group) or the opposition candidate Raila Odinga (a Luo).[4] Thus, though KLPS2 survey respondents lived through the crisis, both their physical locations and their ethnic identities helped to shield most of them from the worst of the violence.

[4] Western Province was an opposition stronghold, and Raila Odinga received 64.6 percent of the votes cast there in the presidential election; thus, individuals perceived as likely supporters of the incumbent were the most at risk.

This pattern is borne out in the data. The second wave of the survey included questions on exposure to violence during the post-election crisis; it documents the fact that very few respondents were, themselves, the victims of physical attacks.[5] 76.3 percent of KLPS2 Wave 2 respondents reported that the crisis prevented them from going to local markets to obtain basic necessities, but only 3.7 percent indicated that someone in their household was physically assaulted during the crisis. Similarly low numbers of respondents had property stolen (5.8 percent) or burned (2.1 percent) during the crisis. Thus, though many of our subjects were directly affected by the crisis because businesses and markets were closed and people were confined to their homes during periods of rioting and insecurity, relatively few were, themselves, victims of violence. Our estimates should therefore be seen as both a lower bound on the impact of civil conflict on risk preferences, and a natural complement to studies which estimate the impact of violence on those individuals and households who were most victimized.

3 Measuring Risk Preferences

We elicit risk preferences by confronting survey respondents with a series of hypothetical decision problems; each decision was a choice between two or three lotteries involving two equally likely potential payoffs. The sequence of decision problems was designed to start with choices that were extremely simple and to build slowly toward more complicated choice problems. For example, the first decision problem involved a choice between a degenerate lottery which paid 100 Kenyan shillings with certainty and a lottery involving a 50 percent chance of receiving 100 shillings and a 50 percent chance of receiving 120 shillings.[6] In contrast, the final decision problem was a choice between three non-degenerate lotteries.

This sequencing of choice problems from least to most complex served two purposes. First, the gradual increase in complexity was intended to help address the concern that respondents might not exert sufficient cognitive effort (for example, to calculate expected payoffs) when facing

[5] As discussed above, KLPS2 respondents were randomly assigned to one of two waves of surveying. The post-election violence interrupted the first wave of surveying. The additional survey were included only in Wave 2, so responses can be seen as representative of the entire respondent population.

[6] The average US dollar value of 100 Kenyan shillings was 1.36 over the period during which the KLPS2 survey was in the field, from August 2007 to December 2009.

non-incentivized choice problems.[7] Respondents first considered options that could be evaluated with minimal cognitive effort, easing into the process of evaluating the expected utility of financial lotteries. Second, we wished to maximize the level of comprehension by subjects with low levels of numeracy. For this reason, we also limited each decision problem to a maximum of three lottery options, included only three easily understood probabilities (0, 0.5, and 1), and only considered lotteries over financial gains (rather than losses).[8] Our experimental instructions do not assume any familiarity with probabilities, averages, or expected values; lotteries are explained in terms of payoffs and uncertain but equally likely events.

When administering our experiment, survey enumerators began by presenting two practice decision problems which introduced the structure of the lottery choice questions to the respondent.[9] The first practice problem contained only degenerate lotteries — the respondent was asked to choose between 100 Kenyan shillings and 150 shillings; the second practice problem introduced the (non-degenerate) lottery concept in a setting with a clear "correct" answer: one lottery first-order stochastically dominated the other, and both involved risk. Enumerators asked respondents to choose between the lotteries presented in the practice decision problems, and then followed a script which made sure that each respondent fully understood the nature of the choices they were facing.

After completing the practice decision problems, each subject made six choices between lotteries which differed in riskiness. Each choice was presented on a laminated card which depicted either two or three options. Like the practice problems, the first question (described above) provided a test of monotonicity, allowing us to identify subjects who are either not expected utility maximizers (cf. Andreoni and Sprenger 2010) or who simply could not grasp the nature of the choice problems. The second decision problem offered an extremely simple test of risk preferences, and one which should have been easily understood by almost all subjects: subjects were asked whether they preferred to

[7] There is some debate about the extent to which non-incentivized lottery choice questions correctly measure individual risk preferences. See Camerer (1995) for an overview, and Binswanger (1980) and Holt and Laury (2002) for seminal contributions. Existing evidence suggests that financial incentives induce greater risk aversion (Camerer and Hogarth 1999). Embedding non-incentivized decision problems in surveys has nonetheless proven successful in a number of field settings in developing countries, when conducting incentivized experiments at scale is not feasible (cf. Callen, Isaqzadeh, Long, and Sprenger 2014).

[8] Our risk preference elicitation method builds on those of Binswanger (1980), Eckel and Grossman (2008), Barr and Genicot (2008), Tanaka, Camerer, and Nguyen (2010), and Liu (2013), among others, but differs in its exclusive focus on extremely simple lottery structures and limited choice sets.

[9] Complete experimental instructions including images of the cards depicting lottery choice questions are included in the Online Appendix.

receive 100 shillings with certainty, or a fifty percent chance of 400 shillings. The remaining four decision problems presented lottery choices of increasing complexity. Without any functional form assumptions (but assuming subjects are maximizing a well-defined utility function), these decisions can be used to classify subjects into risk preference categories: risk loving, risk neutral, moderately risk averse, and most risk averse (always choosing the lotteries with the lowest expected value and payoff spread). If we assume that consistent preferences can be represented by a utility function of the constant relative risk aversion (CRRA) form, the risk cards were calibrated to distinguish a wide range of coefficients in the neighborhood of 1.[10] The payouts for the lotteries in all the choice problems included in our experiment are described in the Online Appendix.

3.1 Individual Choices

Histograms of individual choices in all six decision problems are presented in the Online Appendix. Very few respondents (only 4.14 percent) indicated that they preferred the degenerate lottery which paid 100 Kenyan shillings with certainty to a non-degenerate lottery which paid either 100 or 120 Kenyan shillings, each with probability 0.5. We interpret this as evidence that most subjects understood the nature of the decision problems, at least those that involved relatively simple payoff calculations.[11]

Using data from the other five decision problems allows us to assign respondents to distinct risk preference categories. We classify a subject as **risk neutral** if she always chose the lottery with

[10] The CRRA utility function takes the form: $u(x) = x^{1-\rho}/(1-\rho)$ where ρ indicates the level of risk aversion. Higher values of ρ indicate greater risk aversion. When $\rho = 0$, the agent is risk neutral; the indifference curves represented by the CRRA utility function approach log utility as ρ approaches 1. Even if relative risk aversion is not constant, constant relative risk aversion is a reasonable approximation over the relatively small range of payoffs considered in our experiment. The CRRA form is also used in this setting in Jakiela and Ozier (2012).

[11] We also asked enumerators to indicate whether they believed that respondents fully understood the lottery choice questions; these responses suggest that 99.6 percent of subjects fully comprehended the choices that they were making. There are, of course, several reasons that subjects who understood the decision problem might prefer a degenerate lottery to a stochastically dominant one involving risk. One possibility is that some respondents have preferences which are not monotonic. Several non-expected utility models of risk preferences suggest that individuals may prefer to avoid increases in payoff variance, even when the higher variance lottery stochastically dominates the lower variance alternative. For example, specifications of the non-linear probability weighting component of prospect theory typically assume sub-additivity (Kahneman and Tversky 1979); the models of risk attitudes proposed by Kőszegi and Rabin (2006) and Andreoni and Sprenger (2010) are also consistent with a preference for the risk-free Option A over the stochastically dominant Option B. We interpret the overwhelming tendency to choose the stochastically dominant lottery as evidence against strongly non-monotonic preferences. One plausible interpretation of the observed choice patterns is that respondents have monotonic preferences which they implement with error (Hey and Orme 1994, Loomes 2005, Von Gaudecker, van Soest, and Wengström 2011, Choi, Kariv, Müller, and Silverman 2014).

the highest expected value. We classify a subject as **risk loving** is she made risk neutral choices in all except in the last decision problem, and then chose the lottery which paid 10 and 200 shillings with equal probability over the lottery which paid 70 and 160 shillings with equal probability. We classify those subjects who always opted for the lowest variance, lowest expected value lottery as the **most risk averse**. The three categories most risk averse, risk neutral, and risk loving account for 22.5, 2.4, and 15.7 percent of subjects, respectively.

Offering subjects a series of choices also allows us to test whether individual decisions are consistent with a CRRA utility representation. There are 162 possible combinations of responses to the last 5 lottery choice problems, only 10 of which are consistent with a CRRA utility representation. 44.6 percent of subjects made choices which were consistent with the maximization of a CRRA utility function. If subjects were choosing lotteries at random, only 6.2 percent would make CRRA-consistent choices. However, only 4 percent of subjects made consistent choices that were not classified as either most risk averse, risk neutral, and risk loving. Figure 1 presents the fraction of respondents falling into each of five different categories: most risk averse, risk neutral, risk loving, other types of consistent choices (suggesting intermediate levels of risk aversion), and inconsistent choices. The figure demonstrates that patterns of choices which are inconsistent with the maximization of a CRRA utility function occur substantially less frequently than we would expect if subjects were selecting lotteries at random, but that only the first three types of consistent behavior (extreme risk aversion, risk neutrality, and risk loving behavior) occur more frequently than random choice would suggest.

3.2 Instrument Validity

To address concerns about the validity of hypothetical measures of risk aversion, we test whether individual responses to our hypothetical lottery choice questions explain observed variation in behaviors that we might expect to be driven (at least in part) by risk attitudes. We focus on two such behaviors suggested by the literature: entrepreneurship (Schumpeter 1934, Schumpeter 1939, Skriabikova, Dohmen, and Kriechel 2014) and migration in search of employment (Jaeger, Dohmen, Falk, Huffman, Sunde, and Bonin 2010, Bryan, Chowdhury, and Mobarak 2014). Both of these actions can be seen through the lens of risk tolerance: for an unemployed or underemployed young adult residing in a rural area, operating one's one business and migrating are two high risk but potentially profitable strategies for improving one's long-term income prospects. Both behaviors are also relatively uncommon: only 12.4 percent of KLPS2 respondents were operating their own business at the time of the survey, and only 3.5 percent had ever moved for a job or in search of work.

To explore the association between these risky but potentially profitable activities and responses to our lottery choice questions, we construct a simple index of risk tolerance: a count of the number of times (out of five lottery choice questions) that a subject chose the riskiest and highest expected value lottery.[12] This index has two important strengths. First, it obviates the need to impose functional form assumptions on the structure of risk preferences. In the decision problems included in our study, all lotteries involving risk have two equally likely outcomes and the highest expected value lottery always has the highest variance and the lowest minimum payoff (i.e. the lowest payoff in the bad state),[13] so any parametric restriction that permits an ordering of utility functions in terms of risk aversion would predict that relatively more risk averse individuals will be less likely to choose the highest variance lotteries. Second, constructing a measure of risk aversion that does not rely on functional form assumptions allows us to use data from all subjects, including those whose choices were not perfectly consistent with a specific utility representation.

We estimate probit regressions of indicators for operating one's own business and having ever migrated seeking work on our index of risk aversion: the number of times (out of five) that a respondent chose the riskiest (highest expected value) lottery. Results are reported in Table 1. In all specifications, the number of times a respondent opted for the riskiest lottery is significantly associated with the likelihood of operating one's own business or migrating for work. After controlling for gender, education level, age, the month in which the survey took place, and the survey

[12] Focusing on the number of risky choices allows us to include those subjects whose decisions were not consistent with a CRRA utility representation in our analysis. As discussed in Loomes (2005) and Choi, Kariv, Müller, and Silverman (2014), most subjects implement their choices with error — and we would expect relatively high levels of error in our sample because of the relatively low level of formal schooling attained by our subjects. Importantly, if the likelihood of making consistent choices is associated with risk aversion, omitting the inconsistent subjects could bias our results. However, all of our findings are robust to the omission of the inconsistent types from the analysis.

[13] The one exception to this is that the final lottery choice question included one alternative designed to distinguish between risk loving and risk neutral types. In this choice problem, we classify both the highest expected value lottery and the highest variance lottery as risky, though we obtain similar results of we do not classify the highest expected value lottery as a risky alternative.

enumerator who administered the lottery choice module, an additional risky choice is associated with a 0.5 percentage point (4.3 percent) increase in the likelihood of operating a business and a 0.2 percentage point (6.7 percent) increase in the likelihood of having ever migrated for work. Given the many factors underlying occupational choices, we interpret these robust associations as clear evidence that our lottery choice measure does predict outcomes associated with risk aversion in the cross-section.

4 Analysis

4.1 Empirical Approach

We exploit the fact that Kenya's post-election crisis occurred in the middle of the KLPS2 data collection effort to estimate the impact of the violence on measured risk preferences. The KLPS2 survey was launched in August of 2007, and 1,180 respondents were surveyed in 2007 prior to the elections. The crisis led to a two-month suspension of survey activities, which resumed in March of 2008 and continued through the end of 2009. We employ two complementary identification strategies. First, we estimate the impact of the crisis in a straightforward linear framework, controlling for month-of-the-year fixed effects. In these specifications, we also include enumerator fixed effects and controls for sociodemographic characteristics such as respondent age, educational attainment, and marital status that we expect to change over time.[14] Thus, we estimate OLS regressions of the form:

$$Y_{ijm} = \alpha + \beta Post_i + \delta X_i + \eta_j + \lambda_m + \varepsilon_{ijm} \tag{1}$$

where Y_{ijm} denotes the risk aversion index of respondent i surveyed by enumerator j in month m, $Post_i$ is an indicator variable equal to one if respondent i was surveyed after the post-election crisis, η_j is an enumerator fixed effect, λ_m is a month (of the year) fixed effect, and ε_{ijm} is a conditionally mean-zero error term. We also report OLS specifications that replace the month fixed effects with separate linear time trends for the pre- and post- crisis periods.[15] As a robustness check, we also

[14] With the exception of age, these characteristics might also be impacted by the crisis. To address concerns about the potential for a bad controls problem, we also report specifications that omit all sociodemographic controls.

[15] While it is tempting to view our research design as analogous to a regression discontinuity approach, our natural experiment does not create a valid discontinuity. First, because the post-election crisis halted surveying for more

take a nonlinear approach, and report analogous ordered logit specifications which account for the ordered nature of our outcome variable, the number of times a respondent chose the riskiest, highest expected value lottery.

We also report complementary instrumental variables estimates of the impact of the post-election crisis on individual risk preferences, exploiting the fact that KLPS2 respondents were randomly assigned to one of two waves of surveying. Wave 1 began in August of 2007 and continued through November 2008, while Wave 2 started in November 2008 and concluded in December of 2009. As discussed above, Kenya's post-election crisis occurred approximately halfway through the first wave of surveys: 1,180 Wave 1 surveys were completed before the crisis, and 1,289 were completed afterward. This enables us to use random assignment to Wave 2 as an instrument for being surveyed after the crisis. Within each wave, participant characteristics may be associated with how quickly an individual was surveyed — for example, subjects who were still residing with their parents in their home villages might have been surveyed earlier because they were easier to locate. However, random assignment to survey wave creates exogenous variation in exposure to civil conflict prior to the survey. Thus, our 2SLS regressions are of the form:

$$Y_{ijm} = \alpha_1 + \beta_1 Post_i + \delta_1 X_i + \eta_{1j} + \lambda_{1m} + \zeta_{1ijm} \tag{2}$$

$$Post_i = \alpha_2 + \gamma_2 Wave2_i + \delta_2 X_i + \eta_{2j} + \lambda_{2m} + \zeta_{2ijm} \tag{3}$$

where all variables are as before, β_1 is the coefficient of interest, $Wave2_i$ is an indicator variable for the randomized survey timing instrument, and both ζ_{1ijm} and ζ_{2ijm} are conditionally mean-zero

than two months, sociodemographic characteristics such as age do jump discontinuously at the moment of the crisis. Second, because the crisis lasted months, the limit-based notion of regression discontinuity is not directly applicable to this setting; a discontinuity would involve choosing a single point in time during the crisis, and at any such point, data from this survey would not be immediately adjacent on both sides. Third, there is some evidence that neither the onset nor the conclusion of the crisis were, in fact, instantaneous and completely unexpected. Though opposition candidate Raila Odinga held a convincing lead in opinion polls several months before the election, incumbent Mwai Kibabki caught up with Odinga in the month prior to the election, potentially raising fears that one of the candidates might try to manipulate a close election. The official report Commission of Inquiry also documents several minor clashes in Rift Valley in late November and early December, most of which appeared be connected to attempts by political candidates to rally support by playing off of underlying ethnic tensions and disagreements over land ownership (Waki 2008). There was also a period of uncertainty in the wake of the crisis, between February 28, 2008, when the power-sharing agreement was signed, and April 12 when — after sometimes tense negotiations between the two political parties — Raila Odinga was sworn in as Prime Minister and the new coalition government officially took power.

error terms. The variable $Wave2_i$ takes the value 1 for individuals assigned to be surveyed in Wave 2 (which is entirely post-crisis), and 0 for those assigned to be surveyed in Wave 1 (which includes both pre- and post-crisis observations).

4.2 Results

We begin with a graphical presentation of our key result: Figure 2 plots the average proportion of hypothetical questions in which the respondent chose the riskiest, highest expected value lottery, as a function of the month and year in which the survey was administered. The figure highlights the marked drop in the tendency to choose risky lotteries after the violence: respondents chose the riskiest lottery an average of 2.6 times in 5 decision problems prior to the post-election violence; this figure drops to 1.9 times out of 5 after the violence. The average rate of risky lottery choice is higher in all 5 pre-crisis months than in any of the following 18 months.

We now proceed to estimate the impact of exposure to the post-election crisis on the risk preferences by estimating Equation 1. Our dependent variable is the number of times a respondent chose the riskiest, highest expected value lottery (over the course of 5 decision problems). Results are reported in Table 2. In Column 1, we include only the indicator for being surveyed after the post-election crisis. In Column 2, we control for gender, age, education level, and marital status at the time of the survey. We add survey enumerator fixed effects in Column 3, and include controls for both the survey enumerator and respondent demographic characteristics in Column 4. Columns 5 through 8 replicate 1 through 4 but include fixed effects for the month of the year in which the survey took place.

In all eight OLS specifications reported in Table 2, the post-election coefficient is negative and significant at at least the 99 percent confidence level, suggesting that experiencing the crisis lowered the number of risky choices a respondent made by between 0.561 and 0.798 choices. In the pre-crisis period, the average number of risky choices was only 2.566 out of five, so the change observed after the crisis represents a dramatic drop in the willingness to bear profitable risk. Adding controls for gender, education level, age, and marital status has almost no impact on the estimated coefficient. In Table 3, we estimate analogous ordered logit specifications which account for the discrete but ordered nature of the outcome, the number of risky choices. Again we find that the indicator for being surveyed after the post-election violence is negative and significant (at at least the 99 percent confidence level) in all specifications. In Table 4, we take an alternative approach to controlling for time effects by including separate linear time trends in the pre- and post- crisis period. Columns 1 through 4 report OLS specifications, and Columns 5 through 8 report ordered logit results. Again, the indicator for being surveyed in the post-crisis period is negative and significant in all specifications.

As an additional set of robustness checks, we consider alternative formulations of the outcome variable in Table 5. In the first column, the outcome is an indicator for systematically always choosing either the risk neutral or risk loving option; in the second, the outcome is an indicator for systematically choosing the most risk averse option. Columns 3 through 7 report the results when the outcomes are discrete representations of the choices on a single decision problem, ordered by degree of risk. We find that the post-election violence led to a 5.7 percentage point (26 percent) decrease in the likelihood of making risk neutral or risk loving choices, and an 11 percentage point (82 percent) increase in the probability of always choosing the lowest variance (and lowest expected return) lottery option. Moreover, the post-election violence led to a significant decline in the likelihood of choosing the riskiest, highest expected value lottery in each individual lottery choices question included in the survey. Thus, our main result is robust to a wide range of alternative specifications.

Next, we employ a complementary identification strategy, exploiting the fact that KLPS2 respondents were randomly assigned to one of two waves of surveying to generate instrumental variables (IV) estimates of the impact of the post-election violence on measured risk aversion.[16] IV regression results are reported in Table 6. In Column 1, we include only controls for gender, age, education level, and marital status. Coefficient estimates indicate that the post-election crisis

[16] Before proceeding to our IV analysis, we check whether the random assignment of respondents to survey waves generated groups that were comparable in terms of observable characteristics at the start of the survey. We focus on fixed traits and outcomes that were recorded in the survey for specific points in time. For example, the survey collects detailed information about school participation in each year between 1998 and the moment of the interview; this allows us to generate a variable indicating the number of years of schooling that a respondent had completed at the start of 2007, regardless of the year in which a respondent was actually surveyed. Results are reported in the Online Appendix. We find no statistically significant differences between the survey waves in terms of proportion female, age in 2007, proportion from the local-majority Luhya ethnic group, years of schooling completed by 2007, and the proportion that were married by 2007. Thus, the randomization appears to have succeeded in creating groups of respondents that are similar in terms of observable characteristics.

had a large and statistically significant impact on measured risk preferences, reducing the number of times (out of five) that respondents opted for the riskiest, highest expected value lottery by approximately one full question. Again, relative to a mean number of risky choices of about 2.5 in the pre-crisis period, this is an extremely large effect. In Columns 2 through 4 we include additional controls for the identity of the survey enumerator and the month in which the interview took place. Coefficient estimates are consistently negative and significant. Thus, our IV estimates are consistent with our un-instrumented results: Kenya's post-election crisis appears to have made survey respondents substantially more risk averse.

5 Conclusion

We measure the impact of Kenya's post-election violence on individual risk preferences. We find that experiencing the post-election crisis appears to have increased measured risk aversion significantly. Point estimates suggest that exposure to the crisis decreased the likelihood of making risk neutral or risk loving choices by 5.7 percentage points (26 percent), and increase the likelihood of always choosing the lowest variance, lowest expected value lottery by 11 percentage points (82 percent). Our results are robust to a range of controls and the use of entirely distinct identification strategies. Thus, the evidence suggests that exposure to the post-election crisis led to a statistically and economically significant decrease in the willingness to take profitable risks.

In relation to existing studies of the determinants of individual preferences, our results corroborate a growing body of evidence that preferences are impacted by major life events such as conflict, disasters, and economic downturns. Identification of the impacts of such major events is always challenging since exogenous variation in exposure to historical shocks is rare. This paper may be unique in the timing of data collection in relation to the event in question: we are aware of no other study of risk preferences with data collection ongoing in the immediate run-up to and aftermath of a major event of this kind.

Existing studies of the impact of conflict on individual preferences estimate the marginal impact of greater exposure to violence, implicitly treating less-exposed survivors as a comparison group. We are able to expand this literature because our identification strategies enable us to measure the effect of civil conflict on the general population. Relatively more conflict-affected individuals may become more pro-social or less risk averse (Bellows and Miguel 2009, Blattman 2009, Voors, Nillesen, Verwimp, Bulte, Lensink, and Van Soest 2012, Callen, Isaqzadeh, Long, and Sprenger 2014), but the overall impact on the population as a whole is a shift toward less willingness to take profitable risks. Our results therefore suggest that conflict may have long-lasting impacts on economic development through channels such as reduced entrepreneurship. That our findings differ from some earlier studies suggests that the impacts of conflict at the scale of affected individuals and villages may not generalize to the scale of a district, or that of a nation.

References

Agina, B. (2007): "Raila's third win," *The Standard*, Online: `https://web.archive.org/web/20071113172711/http://www.eastandard.net/news/?id=1143976568`, Accessed on July 29, 2015.

Andreoni, J., and C. Sprenger (2010): "Certain and Uncertain Utility: The Allais Paradox and Five Decision Theory Phenomena," working paper.

Ashraf, N., D. Karlan, and W. Yin (2006): "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines," *Quarterly Journal of Economics*, 121(2), 635–672.

Baird, S., C. Blattman, L. Casaburi, D. K. Evans, J. Hamory, M. Kremer, E. Miguel, O. Ozier, S. Y. Siegel, P. Wafula, and E. Yeh (2007): "The Kenyan Life Panel Survey (KLPS) Round 1: Survey Data Users Guide," Discussion paper.

Barr, A., and G. Genicot (2008): "Risk Pooling, Commitment and Information: An Experimental Test," *Journal of the European Economic Association*, 6(6), 1151–1185.

BBC (2008a): "Deal to end Kenyan crisis agreed," *BBC News*, Online: `http://news.bbc.co.uk/2/hi/africa/7344816.stm`, Accessed on July 24, 2015.

——— (2008b): "Kenya rivals agree to share power," *BBC News*, Online: `http://news.bbc.co.uk/2/hi/africa/7268903.stm`, Accessed on July 28, 2015.

BBC News (2007): "Odinga rejects Kenya poll result," *BBC News*, Online: `http://news.bbc.co.uk/2/hi/africa/7165406.stm`, Accessed on July 29, 2015.

Bellows, J., and E. Miguel (2009): "War and Local Collective Action in Sierra Leone," *Journal of Public Economics*, 93(11), 1144–1157.

Binswanger, H. P. (1980): "Attitudes toward Risk: Experimental Measurement in Rural India," *American Journal of Agricultural Economics*, 62(3), 395–407.

Blattman, C. (2009): "From Violence to Voting: War and Political Participation in Uganda," *American Political Science Review*, 103(02), 231–247.

Blattman, C., and J. Annan (2010): "The Consequences of Child Soldiering," *The Review of Economics and Statistics*, 92(4), 882–898.

Blattman, C., and E. Miguel (2010): "Civil War," *Journal of Economic Literature*, 48(1), 3–57.

Bryan, G., S. Chowdhury, and A. M. Mobarak (2014): "Underinvestment in a Profitable Technology: The Case of Seasonal Migration in Bangladesh," *Econometrica*, 82(5), 1671–1748.

Callen, M., M. Isaqzadeh, J. D. Long, and C. Sprenger (2014): "Violence and Risk Preference: Experimental Evidence from Afghanistan," *The American Economic Review*, 104(1), 123–148.

Camerer, C. (1995): "Individual Decision Making," in *The Handbook of Experimental Economics*, ed. by J. Kagel, and A. Roth, pp. 587–673. Princeton University Press, Princeton.

Camerer, C. F., and R. M. Hogarth (1999): "The Effects of Financial Incentives in Experiments: A Review and Capital-Labor-Production Framework," *Journal of Risk and Uncertainty*, 19(1-3), 7–42.

Cameron, L., and M. Shah (2013): "Risk-Taking Behavior in the Wake of Natural Disasters," NBER Working Paper 19534, National Bureau of Economic Research.

Choi, S., S. Kariv, W. Müller, and D. Silverman (2014): "Who Is (More) Rational?," *American Economic Review*, 104(6), 1518–1550.

Collier, P., V. Elliott, H. Hegre, A. Hoeffler, M. Reynal-Querol, and N. Sambanis (2003): "Breaking the Conflict Trap: Civil War and Development Policy," .

Eckel, C. C., M. A. El-Gamal, and R. K. Wilson (2009): "Risk Loving After the Storm: A Bayesian-Network Study of Hurricane Katrina Evacuees," *Journal of Economic Behavior & Organization*, 69(2), 110–124.

Eckel, C. C., and P. J. Grossman (2008): "Forecasting risk attitudes: An experimental study using actual and forecast gamble choices," *Journal of Economic Behavior and Organization*, 68(1), 1–17.

Fisman, R., P. Jakiela, and S. Kariv (2014): "The Distributional Preferences of Americans," NBER working paper no. 20145.

——— (2015): "How Did Distributional Preferences Change During the Great Recession?," *Journal of Public Economics*, 128, 84–95.

Hanaoka, C., H. Shigeoka, and Y. Watanabe (2015): "Do Risk Preferences Change? Evidence from Panel Data Before and After the Great East Japan Earthquake," NBER Working Paper 21400, National Bureau of Economic Research.

Hey, J. D., and C. Orme (1994): "Investigating Generalizations of Expected Utility Theory Using Experimental Data," *Econometrica*, 62(6), 1291–1326.

Holt, C. A., and S. K. Laury (2002): "Risk Aversion and Incentive Effects," *American Economic Review*, 92(5), 1644–1655.

Humphreys, M., and J. M. Weinstein (2006): "Handling and Manhandling Civilians in Civil War," *American Political Science Review*, 100(3), 429–447.

Jaeger, D. A., T. Dohmen, A. Falk, D. Huffman, U. Sunde, and H. Bonin (2010): "Direct Evidence on Risk Attitudes and Migration," *The Review of Economics and Statistics*, 92(3), 684–689.

Jakiela, P., and O. Ozier (2012): "Does Africa Need a Rotten Kin Theorem? Experimental Evidence from Village Economies," Policy Research Working Paper 6085, The World Bank.

Jing, L. (2015): "Plastic Surgery or Primary Care? Altruistic Preferences and Expected Specialty Choice of U.S. Medical Students," working paper.

KAHNEMAN, D., AND A. TVERSKY (1979): "Prospect theory: An analysis of decision under risk," *Econometrics*, 47(2), 263–291.

KŐSEGI, B., AND M. RABIN (2006): "A Model of Reference-Dependent Preferences," *Quarterly Journal of Economics*, 121(4), 1133–1166.

LEVITT, S. D., AND J. A. LIST (2007): "What Do Laboratory Experiments Measuring Social Preferences Tell Us About the Real World?," *Journal of Economic Perspectives*, 21(2), 153–174.

LIU, E. M. (2013): "Time to Change What to Sow: Risk Preferences and Technology Adoption Decisions of Cotton Farmers in China," *Review of Economics and Statistics*, 95(4), 1386–1403.

LIU, E. M., AND J. HUANG (2013): "Risk Preferences and Pesticide Use by Cotton Farmers in China," *Journal of Development Economics*, 103, 202–215.

LOOMES, G. (2005): "Modelling the Stochastic Component of Behaviour in Experiments: Some Issues for the Interpretation of Data," *Experimental Economics*, 8(4), 301–323.

MALMENDIER, U., AND S. NAGEL (2011): "Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking?," *Quarterly Journal of Economics*, 126(1), 373–416.

MCCRUMMEN, S. (2007): "Incumbent declared winner in Kenya's disputed election," *Washington Post*, Online: `http://www.washingtonpost.com/wp-dyn/content/article/2007/12/30/AR2007123002506_pf.html`, Accessed on July 24, 2015.

MEIER, S., AND C. SPRENGER (2012): "Time Discounting Predicts Creditworthiness," *Psychological Science*, 23(1), 56–58.

MIGUEL, E., AND M. KREMER (2004): "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities," *Econometrica*, 72(1), 159–217.

MIGUEL, E., AND G. ROLAND (2011): "The Long-Run Impact of Bombing Vietnam," *Journal of Development Economics*, 96(1), 1–15.

MUNENE, M., AND J. OTIENO (2007): "Kenya: Raila Tops Table," *Daily Nation*, Online: `http://allafrica.com/stories/200709281185.html`, Accessed on July 29, 2015.

NUNN, N., AND L. WANTCHEKON (2011): "The Slave Trade and the Origins of Mistrust in Africa," *The American Economic Review*, 101(7), 3221–3252.

OTIENO, J. (2007): "New Poll Predicts Close Race," *Daily Nation*, Online: `https://web.archive.org/web/20080212172025/http://politics.nationmedia.com/inner.asp?pcat=NEWS&cat=TOP&sid=908`, Accessed on July 29, 2015.

PETTERSSON, T., AND P. WALLENSTEEN (2015): "Armed Conflicts, 1946–2014," *Journal of Peace Research*, 52(4), 536–550.

SCHUMPETER, J. A. (1934): *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, vol. 55. Transaction Publishers.

——— (1939): *Business Cycles*, vol. 1. Cambridge University Press.

Skriabikova, O. J., T. Dohmen, and B. Kriechel (2014): "New Evidence on the Relationship between Risk Attitudes and Self-Employment," *Labour Economics*, 30, 176–184.

Standard Team (2007): "Last Poll, Last Push," *The Standard*, Online: `https://web.archive.org/web/20071220153404/http://www.eastandard.net/news/?id=1143979128`, Accessed on July 29, 2015.

Stigler, G. J., and G. S. Becker (1977): "De Gustibus Non Est Disputandum," *American Economic Review*, 67(2), 76–90.

Tanaka, T., C. F. Camerer, and Q. Nguyen (2010): "Risk and Time Preferences: Linking Experimental and Household Survey Data from Vietnam," *American Economic Review*, 100(1), 557–571.

Van Praag, N. (2010): "View from the bottom: the conspiracy of violence in Nairobi's slums," *World Bank Conflict and Development Blog*, Online: `http://blogs.worldbank.org/conflict/slums-in-mathare-kenya`, Accessed on July 24, 2015.

Von Gaudecker, H.-M., A. van Soest, and E. Wengström (2011): "Heterogeneity in Risky Choice Behavior in a Broad Population," *American Economic Review*, 101(2), 664–694.

Voors, M., T. Turley, A. Kontoleon, E. Bulte, and J. A. List (2012): "Exploring whether Behavior in Context-Free Experiments is Predictive of Behavior in the Field: Evidence from Lab and Field Experiments in Rural Sierra Leone," *Economics Letters*, 114(3), 308–311.

Voors, M. J., E. E. Nillesen, P. Verwimp, E. H. Bulte, R. Lensink, and D. P. Van Soest (2012): "Violent Conflict and Behavior: a Field Experiment in Burundi," *The American Economic Review*, 102(2), 941–964.

Waki, P. N. (2008): *Report of the Commission of Inquiry into Post Election Violence (CIPEV)*. Government Printer.

World Bank (2006): "Kenya Governance Draft Report/Note," Report 38196, The World Bank.

——— (2008): "Cities of Hope? Governance, economic and human challenges of Kenya's five largest cities," Report 46988, World Bank Water and Urban Unit 1, Africa Region.

——— (2009): "Kenya Economic Development, Police Oversight, and Accountability," Report 44515-KE, The World Bank Public Sector Reform and Capacity Building Unit, Africa Region.

——— (2010a): "Country Partnership Strategy for the Republic of Kenya for the period FY2010-13," Report 52521-KE, The International Development Association, The International Finance Corporation, and the Multilateral Investment Guarantee Agency.

——— (2010b): "Public Sentinel: News Media and Governance Reform," Report 51842, The World Bank.

——— (2011): "Kenya Economic Update Edition 5: Navigating the storm, Delivering the promise," Report 66308, World Bank Poverty Reduction and Economic Management Unit, Africa Region.

——— (2012): "Kenya Economic Update Edition 7: Kenya at work," Report 7, World Bank Kenya Country Office.

Table 1: Probit Regressions of Self-Employment and Migration on Risk Index

Dependent Variable:	Self-Employed (1)	Self-Employed (2)	Migrated Seeking Work (3)	Migrated Seeking Work (4)
Times respondent chose riskiest lottery	0.006***	0.005**	0.003**	0.002*
	(0.002)	(0.003)	(0.001)	(0.001)
Demographic controls	No	Yes	No	Yes
Interviewer controls	No	Yes	No	Yes
Month controls	No	Yes	No	Yes
Observations	5049	5047	5047	5005
Pseudo R^2	0.002	0.095	0.004	0.195

Robust standard errors in parentheses. Marginal effects reported. Even-numbered columns include controls for gender, age, education level, marital status, and month and interviewer fixed effects. Independent variable is the number of times a respondent chose the riskiest lottery (out of five).

Table 2: OLS Regressions of the Impact of the Post-Election Crisis on Risk Preferences

Specification:	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	OLS (6)	OLS (7)	OLS (8)
Surveyed after post-election violence	-0.683***	-0.686***	-0.798***	-0.79***	-0.561***	-0.571***	-0.735***	-0.734***
	(0.116)	(0.113)	(0.118)	(0.116)	(0.084)	(0.09)	(0.086)	(0.088)
Demographic controls	No	Yes	No	Yes	No	Yes	No	Yes
Interviewer controls	No	No	Yes	Yes	No	No	Yes	Yes
Month controls	No	No	No	No	Yes	Yes	Yes	Yes
Observations	5049	5049	5047	5047	5049	5049	5047	5047
R^2	0.023	0.029	0.151	0.155	0.028	0.032	0.153	0.157

Robust standard errors clustered at the month level in all specifications. Outcome variable is the number of times a respondent chose the riskiest lottery (out of five). Even-numbered columns include controls for gender, age, education level, and marital status (at the time of the survey).

Table 3: Ordered Logit Regressions of the Impact of the Post-Election Crisis on Risk Preferences

Specification:	Ordered Logit (1)	Ordered Logit (2)	Ordered Logit (3)	Ordered Logit (4)	Ordered Logit (5)	Ordered Logit (6)	Ordered Logit (7)	Ordered Logit (8)
Surveyed after post-election violence	-0.641***	-0.641***	-0.787***	-0.773***	-0.54***	-0.546***	-0.749***	-0.742***
	(0.104)	(0.101)	(0.12)	(0.116)	(0.088)	(0.097)	(0.098)	(0.102)
Demographic controls	No	Yes	No	Yes	No	Yes	No	Yes
Interviewer controls	No	No	Yes	Yes	No	No	Yes	Yes
Month controls	No	No	No	No	Yes	Yes	Yes	Yes
Observations	5049	5049	5047	5047	5049	5049	5047	5047
Pseudo R^2	0.007	0.009	0.045	0.047	0.008	0.01	0.046	0.048

Robust standard errors clustered at the month level in all specifications. Outcome variable is the number of times a respondent chose the riskiest lottery (out of five). Even-numbered columns include controls for gender, age, education level, and marital status (at the time of the survey).

Table 4: Regressions of the Impact of the Post-Election Crisis on Risk Preferences

Specification:	OLS (1)	OLS (2)	OLS (3)	OLS (4)	Ordered Logit (5)	Ordered Logit (6)	Ordered Logit (7)	Ordered Logit (8)
Surveyed after post-election violence	-0.607***	-0.686***	-0.359**	-0.79***	-0.531***	-0.54***	-0.297*	-0.315*
	(0.184)	(0.113)	(0.164)	(0.116)	(0.173)	(0.164)	(0.171)	(0.169)
Demographic controls	No	Yes	No	Yes	No	Yes	No	Yes
Interviewer controls	No	No	Yes	Yes	No	No	Yes	Yes
Linear time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5049	5049	5047	5047	5049	5049	5047	5047
R^2	0.024	0.029	0.162	0.155	.	.	.	.
Pseudo R^2	.	.	.	.	0.007	0.01	0.05	0.052

Robust standard errors clustered at the month level in all specifications. Outcome variable is the number of times a respondent chose the riskiest lottery (out of five). Even-numbered columns include controls for gender, age, education level, and marital status (at the time of the survey).

Table 5: Robustness Checks: OLS Regressions of the Impact of the Post Election Violence on Alternate Measures of Risk Aversion

Dependent Variable:	Risk neutral or loving	Most risk averse	— Choice on decision number... —				
			2	3	4	5	6
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Surveyed after post-election violence	-0.057***	0.11***	-0.114***	-0.234***	-0.296***	-0.29***	-0.26***
	(0.017)	(0.023)	(0.027)	(0.045)	(0.06)	(0.03)	(0.053)
Observations	5049	5049	5049	5049	5049	5049	5049
R^2	0.007	0.033	0.015	0.017	0.027	0.023	0.025

Robust standard errors clustered at the month level in all specifications. All specifications include controls for gender, age, education level, and marital status (at the time of the survey). Thus, the specifications in this table mirror those in Table 2, Column 2. Here, the outcome variables vary by column. The outcome in Column 1 is an indicator for making risk neutral or risk loving choices. Column 2 is an indicator for making the most risk averse choice on every card, so its sign is opposite those in other columns and tables. Columns 3 through 7 use discrete representations of the separate decision cards as outcomes, ordered by risk aversion; thus, the first two of these are indicator variables for taking the riskier option, while the remaining three are variables that take on the values 1, 2, and 3, with 1 being least risky, and 3 being riskiest.

Table 6: IV Regressions of the Impact of the Post-Election Crisis on Risk Preferences

	(1)	(2)	(3)	(4)
Surveyed after post-election violence	-1.050***	-1.779***	-1.085***	-1.988***
	(0.223)	(0.5)	(0.257)	(0.588)
First Stage F-stat	9.210	8.050	13.660	11.560
Demographic controls	Yes	Yes	Yes	Yes
Interviewer controls	No	Yes	No	Yes
Month controls	No	No	Yes	Yes
Observations	5049	5047	5049	5047
R^2	0.022	0.118	0.024	0.117

Robust standard errors clustered by survey month in all specifications. Outcome variable is the number of times a respondent chose the riskiest lottery (out of five).

Figure 1: Histogram of Patterns of Responses to Lottery Choice Questions

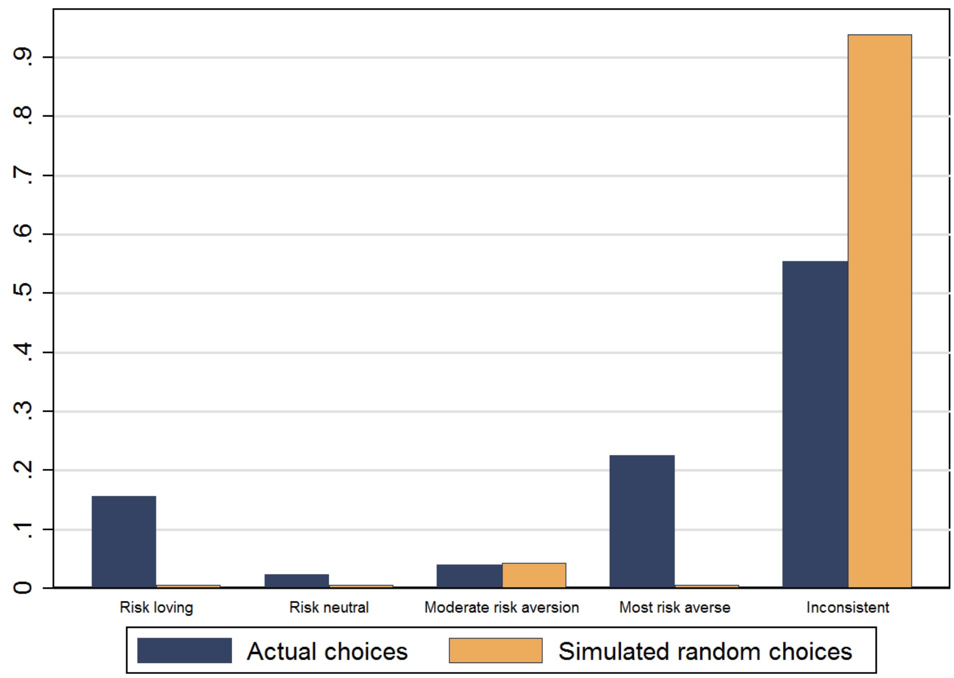
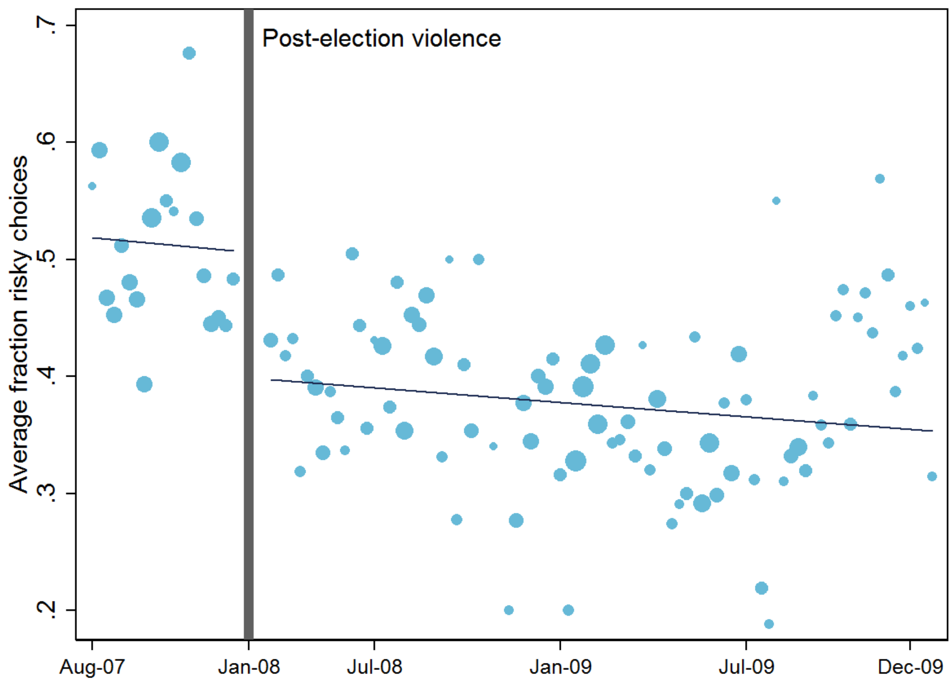


Figure 2: Measured Risk Preferences Before and After Kenya's Post-Election Violence



Online Appendix: not for print publication

Table 7: Decision Problems Embedded in Kenyan Life Panel Survey 2

	Option A		**Option B**		**Option C**	
	Heads	**Tails**	**Heads**	**Tails**	**Heads**	**Tails**
Practice Decision Problem 1	100	100	150	150	-	-
Practice Decision Problem 2	100	150	200	250	-	-
Decision Problem 1	100	100	100	120	-	-
Decision Problem 2	100	100	0	400	-	-
Decision Problem 3	30	340	100	100	0	400
Decision Problem 4	100	100	55	240	30	340
Decision Problem 5	30	230	60	170	90	110
Decision Problem 6	10	200	70	160	90	110

All payouts in Kenyan shillings.

Table 8: Balance Check: KLPS2 Wave1 vs. Wave 2 Comparison

Variable	Wave 1	Wave 2	Difference
Number of observations	2469	2580	
Female	0.49	0.49	0.00
	(0.01)	(0.01)	(0.01)
Age in 2007	21.13	21.21	0.09
	(0.05)	(0.05)	(0.07)
Highest grade completed by 2006	8.56	8.48	-0.08
	(0.04)	(0.04)	(0.06)
Married by 2006	0.31	0.30	-0.01
	(0.01)	(0.01)	(0.01)

Standard errors in parentheses.

Figure 3: Histograms of Individual Choices in Each Decision Problem