State Repression, Exit, and Voice: Living in the Shadow of Cambodia's Killing Fields*

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Abstract

How does state repression influence the way citizens exercise political power? We address this question using evidence from Khmer Rouge's state-led genocide in Cambodia to estimate the effect of political violence on political behavior. To identify causal effects, we rely on the regime's desire to create an agrarian society, moving forced labor to areas experiencing higher yields. Using rainfall-induced productivity shocks, we show that more people died in the productive areas. Higher productivity under the Khmer Rouge leads to more votes in favor of the opposition over the authoritarian incumbent and increased support for democratic principles four decades later. At the same time, citizens become more cautious in their interactions with the local community as captured by lower participation in community organizations and less trust. The findings are consistent with a model where voice and exit are complements: repression increases people's preferences for opposing views but also makes them more careful in expressing these beliefs. Together our results show that the legacy of state violence can have a persistent effect on society, leading to a more competitive and less personal political environment.

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1 Introduction

How does state repression influence the way citizens exercise political power? Over the last century, political mass killings have cost the lives of millions, and several more have suffered from various forms of political persecution.[1] Although the immediate effect of state-sponsored political violence is to quell popular dissent, it is unclear how repression shapes political participation in society once the violence ends.

The exposure to state repression can affect political preferences by increasing the support for strong authoritarian leaders that promise stability and social order or, alternatively, make people more likely to embrace pluralism to avoid the concentration of power that may have caused repression in the first place. At the same time, the experience of political violence may also lead to a culture of silence and disstrust, making people more cautious in voicing their political beliefs having observed the cost of dissent first hand, with government coercion leading to generations of politically passive citizens. Understanding whether and how state repression influences the way citizens exercise political power is particularly important as the threat of government coercion still matters in many post-conflict societies.[2]

In this paper, we examine the political legacy of state repression. Using evidence from one of history's most severe episodes of state-led repression, the genocide in Cambodia under the Khmer Rouge, we estimate the effects of political violence on political behavior in Cambodia four decades later. During their four-year rule, 1975-1979, the Khmer Rouge killed between 1.7-3 million people or over 20 percent of the population (Kiernan, 2008). Forty years after the genocide, Cambodia is a democracy but power has been in the hands of the same party, the Cambodia People's Party (CPP), and leader, Hun Sen, since the introduction of multiparty elections in 1993. The CPP often refers to its role as the guarantor of stability, keeping Cambodia from slipping back into the abyss of violence (Strangio, 2014; Giry, 2015). However, corruption is widespread and key elements of democracy such as civil liberties, a free press, and rule of law, have been repeatedly compromised since the multiparty elections were introduced

[1] The estimated deaths following China's Cultural Revolution, Stalin's terror in the Soviet Union, the genocide in Cambodia, the Rwandan genocide, the Holocaust, and the massacre of suspected communists in Indonesia, together exceed 11 million. Moreover, the number of surviving victims affected by repression during the Cultural Revolution alone accounts for over 22 million people (Walder, 2014).

[2] One-sided political violence should be distinguished from civil war and two-sided violence between insurgents (Besley and Persson, 2011). Whereas civil war is an act of mutual aggression, the victims (the citizens) of state repression are unable to deter the act of the perpetrator (the state). While the political consequences of two-sided violence have received growing attention, work on the political effects of one-sided state repression is still in its infancy (see Bauer et al., 2016 for an overview).

(Norén-Nilsson, 2016a).[3] Despite the scale of suffering caused by the genocide, there is no systematic evidence quantifying the effects of the Khmer Rouge's repressive regime on subsequent political outcomes.

To understand how repressive state behavior affects the exercise of political power, we develop a simple model inspired by Hirschman's (1970) work on exit and voice. Voters have preferences over pluralism, where more pluralism is illustrated by their support for the opposition over the long-term authoritarian incumbent. To capture that milder forms of repression are present in contemporary Cambodia, we assume that it is costly to openly express preferences against the incumbent. Voters can take two political actions, vote and engage in local civil society, with the important difference that preferences remain anonymous when citizens vote but are revealed when they participate in civil society. In the model, the median voter decreases her local civic engagement and exits civil society if the experience of state repression raises the expected cost of dissent.[4] If repression also changes the voter's preferences in favor of more pluralism, exit and voice become complements: she engages less in civil society but is more likely to vote for the opposition. The underlying mechanism is that voters express preferences for pluralism in elections because they do not run the risk of detection; stating these preferences openly in civil society is, however, costly. In short, the experience of political violence makes voters more convinced about the need for opposing views but more cautious in expressing them.

A challenge when estimating the effect of state repression is that political violence most often occurs nationwide without any credible counterfactual. Even if the intensity of coercion varies, selective targeting of specific regions or groups based on pre-war political views may confound estimates of post-repression beliefs and behavior. We address this problem by relying on the Khmer Rouge's desire to create an agrarian socialist society, where the regime displaced large parts of the population to labor camps to increase rice production. Many areas close to the camps became known as Killing Fields as laborers were executed or died of starvation and overwork (Chandler, 2008; Kiernan, 2008). We investigate how these Killing Fields affect the local population today. To establish causality, we explore the movement of forced labor to areas experiencing higher agricultural productivity. Local rainfall variation during the Khmer Rouge era generates exogenous variation in rice productivity and, hence, variation in the size of camps

[3]Cambodia ranks as one of the most corrupt country in the world (161 of 180) according to Transparency International latest corruption perceptions' index (`www.transparency.org`, accessed February, 2019).

[4]While Hirschman (1970) interpreted exit more literally, in the sense of physically leaving a location, we follow recent work where exit can take the form of abstaining from different political activities (see Herbst, 1990; Scott, 2009; Clark et al., 2017).

and the subsequent casualties. Conditional on the likelihood of rain, rainfall is a random event, arguably uncorrelated with other factors that affect political behavior in today's Cambodia.

We assemble unique commune- and individual-level data from Cambodia using information from a large number of historical and contemporary sources to measure the influence of the atrocities under the Khmer Rouge. We first show that significantly more people died in communes experiencing higher productivity during the Khmer Rouge era using geo-coded data on genocide casualties. We then estimate the effect of higher productivity under Khmer Rouge on a range of political outcomes to examine our hypotheses on citizens' use of exit and voice.

The results show that state repression leads to the use of voice in the form of political mobilization and stronger preferences in support of pluralism. Communes with higher productivity and more killings during the Khmer Rouge experience larger turnout, primarily favoring the opposition parties compared to the authoritarian incumbent in the three most recent elections. In particular, an increase of 1,000 people killed (0.25 standard deviation) is associated with a 11.7 percentage point increase in the opposition vote share. These communes also exhibit higher levels of political competition. Using election survey data, we corroborate the findings by showing that individuals living in these communes are more supportive of democratic principles and more politically informed.

At the same time, our analysis indicates that repression increases the use of exit from civil society as citizens are more cautious in their interactions with the local community. The individual-level survey data shows a decline in measures capturing membership and participation in local community organizations as well as a display of lower trust in communes with higher productivity under the Khmer Rouge era. In terms of magnitude, a one standard deviation increase in violence corresponds to a one standard deviation decrease in participation and trust. We also present evidence that people in these places are less supportive of the local state and more likely to avoid local state interactions, as captured by lower local tax contributions and a lower likelihood of being a state employee. Therefore, our overall results show that state repression has made politics less personal and more competitive. Also, while some effects are more pronounced for people that were alive under the Khmer Rouge, we cannot statistically separate the difference for those born later suggesting that the legacy of political violence can have a persistent impact on society.

We conduct a number of robustness tests to assess the sensitivity of our identification strategy. Using US Army maps from the early 1970's, we show that Khmer Rouge era rainfall is orthogonal to important predetermined characteristics such as population density, geographic proximity, and state infrastructure. We also use variation in rainfall to assess the statistical

significance of our results. Comparing the effect of rainfall during months that matter for rice production under Khmer Rouge to the distribution of placebo estimates of rainfall in the same months in all other three-year periods in 1951-2017, shows that our findings are clear outliers. We further address concerns regarding statistical inference (following Anderson, 2008), given that we test multiple hypotheses with our individual-level survey data. Together with several other tests, these findings demonstrate the reliability and significance of the results.

What are the underlying channels behind our findings? We contrast three possible explanations. First, people residing in areas exposed to the atrocities during the Khmer Rouge are more likely to have been directly affected by the killings, suffering, and breakdown of trust, and also have parents, relatives, and neighbors with similar experiences. In addition, the memory of the violence is kept salient by annual ceremonies at some of the grave sites and by the use of these sites for political meetings during election years (Bennett, 2015). Second, political violence could have changed the demographics of the survivors resulting in compositional differences in population, age, gender, and education explaining some of the results. Related to this, differential migration patterns subsequent to the Khmer Rouge regime might also play a role. Third, assets, land, and earnings could have changed directly as an outcome of the labor camps, or indirectly, following post-Khmer Rouge investments in public infrastructure in places experiencing more political violence.

To investigate these hypotheses, we examine if contemporary population, age structure, gender ratios, assets, consumption, poverty indicators, market access, and public infrastructure are driven by productivity differences during the Khmer Rouge era. We further study if there is evidence of differential migration just after the genocide. None of these characteristics turn out to be systematically and significantly explained by our measure of productivity. These findings are corroborated by historical evidence. While the Khmer Rouge singled out previous government supporters, suspected Khmer Rouge dissidents, and more educated individuals, the selection occurred across Cambodia's communes. Many people had to relocate, forcibly moving from one cooperative to the other (Rice and Tyner, 2017; Tyner, 2017a). Following the genocide, a majority returned to the villages they had occupied before 1975 (Desbarats, 1995). As victims came from across Cambodia, people residing near the Killing Fields today are more likely to have experienced the atrocities up close since a significant fraction of people were allowed to remain in their villages. Using our data, we also find that areas experiencing more violence, as captured by higher productivity during the Khmer Rouge, are more likely to have constructed war memorials to commemorate the political violence, further facilitating the persistence of beliefs at the local level. Together, this suggest that our evidence is more

consistent with the first hypothesis, where people's political preferences and behavior change as a result of experiencing state repression and because of the Killing Fields' presence today, acting as salient markers of past violence.

This paper advances economic research on state repression. In recent years, there has been some progress in our understanding of the causes of one-sided mass violence, where the state represses its citizens (Besley and Persson, 2011; Yanagizawa-Drott, 2014).[5] However, we know less about the political consequences of government coercion and political violence. Existing literature focuses on the effects of civil war and two-sided violence between insurgents (see e.g. Bellows and Miguel (2009); Blattman (2009); Voors et al. (2012); and Bauer et al. (2016) for an overview). A central finding of this work is that two-sided violence fosters cooperation as a result of increased pro-sociality toward in-group members. We contribute to this literature by showing how violence, in the absence of a group-cohesion component, can lead to less cooperation within civil society while still increasing political engagement in elections.[6] The result that state repression and one-sided violence induces withdrawal from local civic community interactions aligns with other examples from South-East Asia, where citizens purposely avoid relations with a coercive state (Scott, 2009).

Our paper adds to work examining the long-term consequences of conflict on trust (Nunn and Wantchekon, 2011), anti-Semitism (Voigtländer and Voth, 2012), and on social structure (Acemoglu et al., 2011). More broadly, it connects to papers emphasizing the persistence of political preferences and behavior generated via the experience of political ideology (Alesina and Fuchs-Schündeln, 2007), economic fluctuations (Giuliano and Spilimbergo, 2014), stock market participation (Malmendier and Nagel, 2011), and patriotic events (Madestam and Yanagizawa-Drott, 2011).

Section 2 provides background information on the Khmer Rouge era and the contemporary political setting in Cambodia and Section 3 presents a theoretical framework. Section 4 introduces our data and 5 deals with the empirical strategy. Section 6 discusses our results and robustness tests with Section 7 discussing alternative hypotheses. Section 8 concludes.

[5] There is more work examining the determinants of civil war, see Blattman and Miguel (2010) for an overview.

[6] We also share the link between the climate and conflict literature insofar that our rainfall-induced productivity measure predicts more deaths (see e.g. Burke et al., 2009; Ciccone, 2013; Dell, 2012; Harari and Ferrara, 2018; Hsiang et al., 2013; Miguel et al., 2004).

2 Historical Background

This section provides a brief overview of the Khmer Rouge era, the contemporary political situation, and the presence of the Killing Fields in Cambodia today.

2.1 The Khmer Rouge

Cambodia gained independence in 1953, with King Norodom Sihanouk dominating political life until the late 1960s (Chandler, 1988). In 1970, Sihanouk was removed through a coup by General Lon Nol. Nol in turn lost his power to the Khmer Rouge in April 1975, after a civil war where the US had supported the Nol regime via heavy carpet bombings of the country.[7] The four years to follow marks history's worst genocide, with 1.7-3 million or over 20 percent of the population dying, an era that ended when Vietnam invaded Cambodia and defeated the Khmer Rouge in early 1979 (Kiernan, 2008).[8]

Immediately after taking power, the Khmer Rouge set out to create an agrarian socialist society, collectivizing the economy by banning money, markets, and private property (Chandler, 2008). The aim was to leapfrog development through successive "four-year plans" that increased the national production of rice, allowing the regime to generate a surplus that could finance industrialization (Chandler et al., 1988; Twining, 1988).[9] To succeed, the Khmer Rouge displaced large parts of the population and forced people to live and work in labor camps across the country. In these camps, supporters of the old regime, former state officials, Khmer Rouge dissidents, and the educated were labelled "new" people whereas farmers who had lived in the insurgency areas made up the "base". While base people initially enjoyed better conditions (seen as more loyal and trustworthy), both groups worked together in the camps (Twining, 1988; Kiernan, 2008). The cooperatives included several villages up to entire communes and laborers were organized into work groups, "*kemlang ping*" (full strength) and "*kemlang ksaoy*" (weak strength), where the former consisted mostly of adults and the latter of small children and the elderly (Tyner, 2017a).

[7] Chandler (2008) argues that the bombings were the most important factor explaining the rise of the Khmer Rouge. From 1965 until 1973, the US dropped 2.7 million tons of ordnance on Cambodia, more than the Allies dropped during the entire WW2 (Owen and Kiernan, 2006).

[8] There is some disagreement over the exact number of people that died during the Khmer Rouge regime. Kiernan (2008) estimates a national toll of between 1.67 and 1.87 million people whereas other estimates reach as high as 3 million dead (see discussion in Heuveline, 1998).

[9] Internal party documents reveal detailed accounts of how agriculture would lead the transformation of the economy. Specifically, the documents show an obsession with raising productivity, with Khmer Rouge cadre repeating the mantra of increasing rice production to "three tons per hectare". By comparison, pre-Khmer rouge productivity averaged one ton per hectare (Chandler et al., 1988).

The country in general, and camps in specific, was governed through a hierarchical military command (Heder and Tittemore, 2001). Each province, district, and commune had committees in charge of political, security, and economic decisions, respectively. Internal Khmer Rouge documents describe how provincial committees were responsible for organizing production, focusing on places where productivity was higher: "...attack wherever [we are] strongest" (Chandler et al., 1988, p. 20). To achieve this goal, special mobile work committees were responsible for the deployment of mobile work brigades to undertake specific projects, such as harvesting the fields (Rice and Tyner, 2017; Tyner, 2017a). The committees governed every aspect of life. People were required to attend "livelihood meetings" that served as a propaganda sessions about communist ideals and as confessions, with people admitting past political and ideological sins and informing on other camp members. People who either expressed the wrong ideas or were accused of differing opinion ran the risk of being escorted from the camp and executed later on (Chandler, 1988; Thion, 1993). Children were also targeted by the Khmer Rouge to spy on their parents, creating a system where neighbors were rewarded for informing on neighbors, friends for informing on friends, and children for informing on parents (Yimsut, 2011; Bennett, 2015).

Despite the rigorous planning, rice production remained low. One reason was that the Khmer Rouge cadres lacked farming experience and were unfamiliar with the local conditions (Vickery, 1999; Ledgerwood and Vijghen, 2002). As the harvests failed, people were pushed even harder leading to further purges, not only of labors but also of local Khmer Rouge cadre for failing to meet production targets. By the end of 1978, the explosion of violence had completely upended collectivized agriculture across Cambodia (Hiebert, 2017). When Vietnam defeated the Khmer Rouge in early 1979, people who had been displaced returned back to the villages they had occupied before 1975 (Desbarats, 1995; Kiernan, 2008). Left in the rice fields were the remains of those who had been executed or died of starvation and overwork (Chandler, 1988; Kiernan, 2008).

2.2 Contemporary Cambodia

Cambodia has been an electoral democracy since 1993. In the country's first multi-party elections, the current incumbent party, Cambodian People's Party (CPP), shared power with the Royalist party, FUNCINPEC. However, in 1997 the CPP ousted the FUNCINPEC's Prime Minister and has won all subsequent elections after that. The CPP has been headed by the same leader, Hun Sen, since 1985, making him the longest serving Prime Minister in Asia (Baaz and Lilja, 2014; Strangio, 2014; Norén-Nilsson, 2016b).

CPP and Hun Sen were part of the Vietnamese coalition that liberated Cambodia from the Khmer Rouge in 1979 and CPP often refer to its role as the guarantor of stability, keeping Cambodia from slipping back into the abyss of violence (Strangio, 2014; Giry, 2015). Hun Sen explicitly refers to the horrors of the Khmer Rouge during electoral campaigns. In the 2013 elections, CPP trucks drove around Cambodia showing films including documentary footage of the Khmer Rouge era as well as the 1984 Hollywood-blockbuster "The Killing Fields" (Norén-Nilsson, 2016a).

While the economy has grown at almost 7% annually since the mid-1990s, corruption is common with Cambodia ranking as one of the most corrupt countries in the world and political patronage governs business, military, and state relations with CPP at the center of power (Un, 2015; Norén-Nilsson, 2016b).[10] Moreover, key elements of democracy such as civil liberties, a free press, and rule of law have been repeatedly compromised since multiparty elections were introduced (Norén-Nilsson, 2016b). Partly in response to Hun Sen's authoritarian rule, the two largest opposition parties formed an alliance, Cambodia National Rescue Party (CNRP), in 2012. While the policy platforms of CPP and CNRP share many elements, the CNRP has made stronger appeals to combat corruption and improve the legal system. At the same time, CNRP also resorts to a strong nationalist anti-Vietnamese rhetoric (Norén-Nilsson, 2016a). In the analysis that follows, we will focus on the electoral outcomes involving the CPP and CNRP in the three most recent election taking place in 2012, 2013, and 2017.[11]

2.3 The Killing Fields today

Mass graves tracing back to the Khmer Rouge are still an important part of the landscape in contemporary Cambodia. Figure 2a shows the location of more than 300 known sites spread across the country. Not only are they physically present but the sites have also shaped post-Khmer Rouge political culture. Annual ceremonies are held at the grave sites to remember the violence and CPP used the sites frequently during 1980s to legitimize the new government. Hun Sen has stated that "...the remains of those killed during Democratic Kampuchea will not be cremated because they remain the only evidence of the Khmer Rouge regime" (Bennett, 2015, p. 224). More recently, the sites have been used for political meetings, by the CPP and the opposition, during election years (Bennett, 2015; Tyner, 2017b). In many locations, memorials

[10] See also http://www.worldbank.org/en/country/cambodia/overview and https://www.transparency.org/news/feature/corruption_perceptions_index_2017, accessed on September 2018.

[11] The CNRP was dissolved by Cambodia's Supreme Court in November 2017, leading the CPP to capture all 125 seats in the National Assembly in the national election in July 2018. In the subsequent analysis, we focus on the three most recent elections where CNRP candidates were allowed to stand for office.

have also been constructed to commemorate the dead, leaving them as salient markers of past violence.

3 Theoretical Framework

In his seminal work, Hirschman (1970, 1978) suggests that in democracies, dissatisfied citizens have two options to voice their discontent. Either, they participate in civic society and actively try to change politics, or use elections to elect a new leader. In oppressive regimes, however, taking political actions might result in persecution. Here, citizens with opposing views are left with the choice to either exit civic society and decrease the possibility of being detected, or use the veil of anonymity and vote against the incumbent. In this section we describe a model that conceptualizes our findings in the spirit of 'exit' and 'voice' in oppressive regimes. Specifically, we contrast an observable action, civic participation, and an unobservable action, casting a vote, to differentiate the effects of state repression on preferences for pluralism and the expected cost of dissent. In contrast to the looming memory of Killing Fields increasing the cost of dissent, changed preferences might generate persistent effects across generations. More educated and informed voters likely increase the competitiveness of elections and elect more competent leaders. Politicians then find their ability to extract rents restricted, leading to better policies being implemented (Ades and Di Tella, 1999; Besley et al., 2010).

Individual preferences θ_i are uniformly distributed over an interval $[\theta_L, \theta_H]$, where higher values of θ indicate stronger support for pluralism. Every individual obtains a benefit from voting $B(\theta)$ with $B'(\theta) > 0$. Individuals with positions close to the authoritarian incumbent θ_L have weaker preferences for democracy, and hence obtain less utility from voting. At the other extreme, voters obtain large benefits when signaling their preferences for democracy. In autocratic regimes, individual preferences are revealed to the authority with probability $f(\theta)$ capturing the idea that extreme positions are easier to observe than nuanced differences in preferences.[12] Given that preferences are revealed, a voter faces a cost of dissent c which are uncertain at the beginning of a period. Given the expectation of the cost of dissent $\mathbb{E}[c]$, a voter decides whether to conduct an unobservable action V or to participate in civic society P.

To analyze the impacts of state repression we simplify the entire distribution of voters in relation to the cutoff where voters are indifferent:

[12] Both $B(\theta)$ and $f(\theta)$ are continuous and increasing in their arguments. To generate interesting cases we can assume $\frac{\partial^2 B(\theta)}{\partial\theta\partial\theta} < 0$ and $\frac{\partial^2 f(\theta)}{\partial\theta\partial\theta} = 0$. Then, both benefits and probability of detection increase with θ, but with decreasing rates for the benefits and constant rates for the probability we obtain a θ^P such that $f(\theta)\mathbb{E}[c] = B(\theta)$. Here, individuals with $\theta < \theta^P$ exit civic society.

$$\max_{V \in [0,1]} \quad V \times [B(\theta) - \gamma f(\theta) \mathbb{E}[c]] \quad \text{s.t.} \quad \mu_V(1 - V) = 0 \tag{1}$$

$$\max_{P \in [0,1]} \quad P \times [B(\theta) - f(\theta) \mathbb{E}[c]] \quad \text{s.t.} \quad \mu_P(1 - P) = 0 \tag{2}$$

Here, the Kuhn-Tucker-conditions μ_V and μ_P allow for absence from the ballot box $\mu_V = 0$ or civic society $\mu_P = 0$. This maximization defines two cutoffs $\{\theta^P, \theta^V\}$ where voters are indifferent between participation θ^P and voting for the opposition θ^V. Since $\gamma \in [0, 1]$ captures that casting a vote is less observable than civic participation, we know that every participant is also voting $\theta^V < \theta^P$. We derive three testable hypotheses from this setup that allow us to estimate the impact of state repression on preferences θ and the expected costs of dissent $\mathbb{E}[c]$.

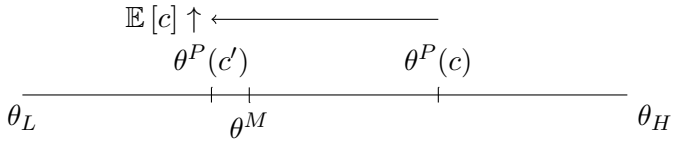
State repression and the cost of dissent In the first hypothesis, individuals who suffered under state repression have more accurate expectations about the cost of dissent $\mathbb{E}[c]$. In our model, this is reflected by an increased cost of dissent $c' > c$ which unambiguously decreases the respective cutoffs for voting $\theta^V(c') < \theta^V(c)$ and participation $\theta^P(c') < \theta^P(c)$.[13] Given unchanged preferences, every voter faces higher costs of detection which leads to exit from civic participation and fewer votes for the opposition. This shift is shown graphically in Figure 1a, where we depict the location of the median voter θ^M on the spectrum of preferences $[\theta_L, \theta_H]$. Initially, the median voter takes part in civic society as the expected cost of detection is lower than the benefit $B(\theta^M) \geq f(\theta)\mathbb{E}[c]$. As the cost of dissent increase to c', only voters with preferences close to θ^L remain in civic society, as for all others the cost outweigh the benefits.

Given that for voting $\gamma \approx 0$, we expect to see no changes in the voting behavior as preferences are unchanged, but strong responses in exiting local civic society due to the increased cost of detection.

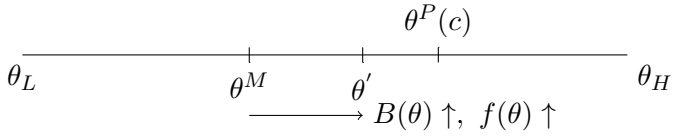
Hypothesis 1 'Exit': *If state repression increases the cost of dissent, vote shares for the opposition are unaffected and people exit local civic society.*

State repression and support for pluralism The second hypothesis captures the idea that individuals who suffered under state repression have stronger preferences for pluralism. In this case the cutoffs θ^V and θ^P remain unchanged and we can focus on the decisions of voters. If voting is less detectable $\gamma < 1$ and autocratic regimes allow for some voters to remain

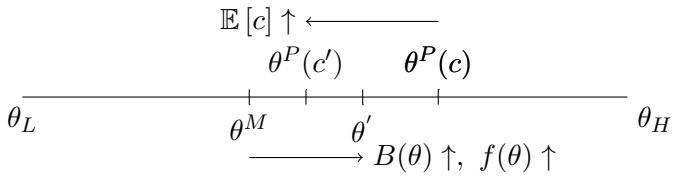
[13] The same prediction holds with concave utility functions if the variance of $\mathbb{E}[c]$ is decreasing, that is, individuals have a more precise idea of the cost of dissent.



(a) Increased expected cost of dissent



(b) Stronger support for pluralism



(c) Stronger support for pluralism and increased cost of detection

Figure 1: Mechanisms for participation in our model. An increase in the cost of dissent moves the cutoff for participation to $\theta^P(c')$ and hence the median voter at θ^M exits local civic society (a). An increase in the support for pluralism increases the benefits from participation, but also the risk of detection $f(\theta)$. Hence, the median voter is only continuing to participate if $\theta^{'} \leq \theta^P(c)$ (b). Combining the two effects in (c), the median voter exits civic participation due to the increased expected cost of detection.

$\theta^V > \theta_L$, voting for the opposition increases. The effect for the observable action is ambiguous and depends on functional form assumptions. If the expected benefits of participation increase slower than the expected cost of participation $\frac{\partial B(\theta)}{\partial \theta} d\theta \leq \frac{\partial f(\theta)}{\partial \theta} d\theta$, previously indifferent voters exit local civic society.[14] In Figure 1b we show the case for the median voter, who remains active in the civic society as the increased risk of detection does not outweigh the increased benefits from participation. Hence, the predictions from an increase in preferences depend on the position of the median voter and the functional form assumptions on the benefits and detection probability.

Hypothesis 2 'Voice': *If state repression increases the support for pluralism in autocratic societies, vote shares for the opposition increase and the effects on local civic participation are ambiguous.*

[14] It is important to note, that our aggregate predictions hold unambiguously for a uniform distribution of θ. If the distribution of voters is extreme value distributed, calculations of the average effect need to take into account the density of voters. Standard probabilistic voting models however assume uniform distributions which encourage us to make these aggregate predictions.

State repression, the cost of dissent, and support for pluralism If state repression affects both the expected cost of dissent $\mathbb{E}[c]$ and voters preferences θ, two countervailing forces are at work. The increase of the cost of dissent decreases voting and participation which is partially offset by the increase in preferences. If votes are unobservable ($\gamma \approx 0$), vote shares unambiguously increase while previously indifferent voters exit local civic society if benefits increase less than costs $\frac{\partial B(\theta)}{\partial \theta} d\theta \leq \mathbb{E}[c] \frac{\partial f(\theta)}{\partial \theta} d\theta + \theta \frac{\partial \mathbb{E}[c]}{\partial c} dc$. As the benefits from participation increase, they are offset by an increase in the probability of detection due to increased preferences and the increasing cost of dissent making the voter less likely to participate. In Figure 1c, the increased benefits move the position of the median voter to θ' where she continues to participate in the civic society. However, as the cost of dissent is increasing to c', the expected cost of detection are larger than the benefits, the cutoff moves to $\theta^P(c')$ and she exits civic society.

Hypothesis 3 'Exit and Voice': *If state repression affects both the preferences for pluralism and the cost of dissent, unobservable vote shares for the opposition increase, while local civic participation decreases.*

Combining the hypotheses, our model yields clear predictions for the channels at work. If state repression only increases the cost of dissent and votes are undetectable, vote shares are unaffected and people exit local civic society. If state repression increases preferences for pluralism, vote shares for the opposition increase and depending on the position of the median voter, she exits or continues to participate in local civic society. If both forces are affected by state repression, we should observe strong effects on vote shares and decreased local civic participation.

4 Data

We combine high resolution data on the genocide, electoral outcomes, and individual data to differentiate the hypotheses from our model. At first, we use data on genocide intensity to establish a first stage identifying communes that suffered more under the Khmer Rouge regime. Second, we use electoral outcomes to estimate the impact of genocide intensity on the preferences for pluralism. We then combine data from electoral surveys and large repeated cross-sectional surveys to identify individuals' preferences, local state avoidance, as well as potential confounding hypotheses.

Cambodia Genocide Project We use data from the Cambodian Genocide Program database to measure the intensity of violence and capture pre-genocide characteristics. First, the database

contains 309 locations with 18,953 mass graves containing 974,734 bodies, which we combine with current commune boundaries to identify treated communes (Figure 2a). Second, we digitize commune characteristics from the US Army map series L7016 covering the entire country of Cambodia in 1970. These maps were used during the American bombing campaign and are of exceptional detail, containing relevant information on population density, temples, post offices, telephones, and agricultural productivity.[15] We calculate the area of each commune that is covered by forests, rice fields or is partially inundated, to capture the underlying productivity of each commune before the Khmer Rouge intervened. Third, the database contains 113,716 sites of bombing during the 1965–1973 campaign with a total volume of 2.7 million tons of explosives. Such bombings were targeted and likely indicate areas of stronger support for the Khmer Rouge. As we are interested in estimating a differential impact on preferences, we use this data to establish pre-treatment similarity of communes and argue for a causal effect of our instrument. Jointly, this database provides the most accurate description of violence in Cambodia and 13 pre-genocide characteristics that might have influenced the placement of labor camps (Table 1).

Election results Information on the national election in 2013 was obtained from Open Development Cambodia and constitutes our base map of communes. Information on communal elections in 2012 and 2017 were digitized from the official website of the national election office. Since the Cambodian National Rescue Party [CNRP] was formed in 2013 to unify the opposition, we aggregate votes of the 'Sam Rainsy Party' and 'Human Rights Party' in the 2012 commune elections to match the coalition from the 2013 national election.

Survey of the electorate The Asia Foundation conducted limited surveys on the political preferences of 2,008 individuals in 2003 and 2013 which we use to test the hypotheses from our model. We identify 24 questions that unambiguously identify voter informedness, support for democracy, local civic participation, or trust. Only questions that speak strongly in favor of these channels and clearly distinguish an supporter of the Cambodians Peoples Party [CPP] from an CNRP supporter are included.[16] We exclude questions that aim at current beliefs about the direction of Cambodia or the commune.[17] The full set of selected questions is provided in Appendix C and their summary statistics in Table A.7. Following Anderson (2008), we stan-

[15] In Figure 3 we show that the maps are strongly correlated with aerial photographs from the same time.

[16] Sample question: 'How interested are you in politics?' or 'How often do you discuss politics with friends?' as both questions could be equally applicable to either supporters.

[17] Sample question: 'Now let's talk about the commune where you live. Generally speaking, do you think things in your commune today are going in the right direction, or do you think they are going in the wrong direction?'

dardize each question in our four categories and sum the standardized outcomes weighting each outcome by the inverse of the covariance matrix of the standardized outcomes.[18] These four indexes help reducing the threat of multiple hypothesis testing and capture changes in preferences that individual questions only measure imperfectly. We follow Cantoni et al. (2017) and provide the results on the individual questions with the estimated p-values and FDR adjusted p-values in Table A.7.[19]

Cambodia Socio-Economic Survey We provide additional evidence on our mechanisms and test competing theories using repeated cross-sectional information on 393,607 individuals from 12 surveys in the years 1996–2014. This survey contains measures of local state avoidance based on paying local property taxes and working for the government. Additionally, the individual data allows us to reject alternative mechanisms based on population, age, education, migration, and assets. The village questionnaires from these surveys enable us to estimate the impacts on illegal rent extraction of deforestation and reject hypotheses based on differential state investment or public infrastructure.

School Census To further address competing theories based on differential education investments by the government, we use the school census 1997–2002. It contains school-level information about classes, teachers, students, and parents, which we aggregate to the commune level. Conceived to inform a policy change towards free education, this data additionally contains data on school income and measures of inequality at the commune level which we use to reject a Malthusian hypothesis based on income differences.

5 Empirical Strategy

The Khmer Rouge strategically placed labor camps around the country. This procedure might introduce an upward bias if these camps were placed in communes with larger initial dissent. Conversely, a downward bias arises if labor camps were built in areas with stronger support for the Khmer Rouge. Our identification strategy is thus based on temporal productivity differences during the Khmer Rouge that influence the size and location of labor camps. We argue that tem-

[18] By taking into account the covariance between individual questions we obtain a more accurate measure than alternative standardizations that use an equally-weighted average. With the exception of our election results, we present standardized scores for all outcome categories where single regressions are significant. This procedure excludes results on competing hypotheses, which we present individually for disclosure.

[19] P-values adjusted for False Discovery Rates (FDR) are computed using the procedure outlined in Anderson (2008).

poral productivity differences during the Khmer Rouge regime are uncorrelated to confounding factors and hence identify a causal effect on genocide intensity as well as preferences.

Our empirical strategy exploits the regime's desire to create an agricultural empire in the spirit of the great Angkor. Internal leadership documents reveal an extensive plan to increase productivity across Cambodia and sell the excess rice for foreign currency (Chandler et al., 1988). The central party ordered a three ton per hectare yield in all communes (Figure 4) and gave considerable freedom to provincial commanders who were instructed to "attack wherever the opportunities are greatest" and "attack in places where we are strong" (Chandler et al., 1988, p.20). This explicitly included using additional labor as failure was linked to "a lack of forces" (Chandler et al., 1988, p.15).

In order to determine which communes were more productive during the Khmer Rouge regime, we use temporal variation in rainfall to predict productivity. We combine historical precipitation data from Aphrodite at a 0.25 degree resolution covering the periods 1951–2007 with data from NOAA for the years 2002–2017 to obtain a long panel of precipitation in Cambodia. To account for commune specific variation in rainfall, we standardize the average rainfall of the three harvest seasons during the Khmer Rouge regime using the historical mean and standard deviation for each commune.[20] As excessive rain during the harvest season drowns the crop, we document a negative relationship between the standardized harvest season rainfall and rice yields using contemporaneous data in Figure 5. In a final step, we exploit the Khmer Rouge's decision to allow provincial leaders to allocate labor inside their provinces to relatively more productive areas. To match this strategy, we calculate the average productivity in every province and identify above average productive communes as our treated sample.[21] Formally,

$$\text{Productive during KR}_c = \mathbb{I}\left[\frac{\text{Rain during KR}_c - \mu_c}{\sigma_c} \leq \mu_p^{KR}\right] \tag{3}$$

where μ_c and σ_c is the communes historical mean and standard deviation used to standardize the rainfall in the commune during the Khmer Rouge period. Our binary treatment then defines productive communes as experiencing rainfall below the province mean. Although loosing potentially interesting continuous variation, this procedure is closest to the leaderships

[20] The harvest season is defined as September, October, and the first two weeks of November according to Nesbitt (1997).

[21] Our procedure is a two-step standardization. First, we use the historical mean and standard deviation of each commune to determine how productive this commune was relative to its history. Then, we standardize again using the mean and standard deviation of all communes in a given province during the Khmer Rouge period, and define treated observations as those who were more productive relative to its own mean and the mean of its surrounding communes.

plan which we aim to recreate and retains a considerable amount of variation across Cambodia (Figure 2b).[22]

We estimate the impact of being productive during the genocide using ordinary least squares, controlling for a second-order polynomial in latitude and longitude and pre-genocide commune characteristics:

$$Y_c = \beta \text{ Productive during KR}_c + \Gamma_c + X_c + \varepsilon_p \tag{4}$$

We report standard errors clustered at the province level as well as corrected for spatial correlation for all results to account for spatially correlated rainfall. β identifies the causal effect of state repression on preferences if the temporary production shock during the genocide is uncorrelated with observable characteristics at the time. In the last column of Table 1 we show that all pre-determined commune characteristics are uncorrelated with being relatively more productive during the Khmer Rouge regime. We document large p-values for all variables including the area of rice fields as an indicator of productivity, suggesting that underlying productiveness is uncorrelated to our instrument. Moreover, large p-values for population density and having a school as proxies for social capital suggest no pre-existing differences in preferences between productive and non-productive communes before the Khmer Rouge came to power. We thus argue that our production shock identifies a causal effect of state repression and test the hypothesis of exit and voice.

6 Results

State repression likely affects voters preferences for pluralism and democratic values as well as the perceived cost of dissent. Our model predicts that increasing democratic values strongly affect voting outcomes, while an increase in the perceived cost of dissent actively discourages voters to participate in local society. Only when both, preferences and cost of dissent, are affected by state repression do we expect more exit from civic society and more votes for the opposition in arguably free elections.

In this section, we present a sequence of results providing evidence for a causal effect of state repression on exit and voice in the Cambodian context. First, having established that

[22] In the appendix we document the robustness of our results to three additional definitions. First, we calculate the standard deviation within each province σ_p and define the continuous, within province productivity $R_{KR,c,p}$ as the standardized version of (3). Second, we use this continuous version and define more productive communes as $R_{KR,c,p} < -0.5$ and less productive as $R_{KR,c,p} > 0.5$. Third, we only use the standardized rainfall using the historical rainfall of the commune: $\frac{\text{Rain during KR}_c - \mu_c}{\sigma_c}$. The results are robust in all specifications of our productivity shock.

our rain instrument predicts productivity, we show that more productive communes during 1975–1978 are not statistically different in any pre-genocide characteristic that could predict differential preferences. Second, we provide evidence that despite being similar prior to the genocide, more productive communes have been differentially targeted by the Khmer Rouge and have significantly higher rates of mass murder as measured by the death count in mass graves. Third, using data on recent election outcomes, we show how individuals from historically more productive communes use democratic institutions to voice their discontent at the voting booth. We corroborate this finding with results from various individual surveys that suggest differential preferences, more informedness about the political process, and exit from civic society in a fourth step. We conclude this section by arguing that the combination of results is consistent with our model of exit and voice. Voters have stronger preferences for democracy and are more informed about the political process, reducing the possibility of legal and illegal rent extraction for individuals and state officials alike.

State Repression To identify exogenous variation in state repression, we first establish that contemporaneous yields correlate negatively with excessive rainfall during the harvest season (Figure 5). We thus define a commune to be productive during the Khmer Rouge, if it experienced below average rainfall during the period 1975-1977 compared to other communes in the same province. In Table A.2 we show that our instrument for productivity increases standardized yields by 0.08 standard deviations or 0.213 tons per hectare in our preferred specification.[23] Importantly, the qualitative relationship is robust in all alternative specifications and shock definitions validating our identification of the Khmer Rouge's targeting of communes during the genocide.

In the next step, we provide evidence that more productive communes are not statistically different in terms of pre-genocide characteristics (Table 1). Our instrument is uncorrelated with important productivity characteristics such as the size of rice fields in 1970 or the FAO estimate of productivity 1960-1990 for low-input rain-fed rice.[24] Productiveness during the genocide is also uncorrelated with measures of market access such as the distance to Phnom Penh or roads,

[23] Our data suggest that in 1970, Cambodia had about 2.6 million hectares of rice which is corroborated by other sources that give a figure of 2.4 million hectares (http://ricepedia.org/cambodia, accessed April, 2018). Today, Cambodia has 3.1 million hectares of land producing 9.3 million tons of rice and a 0.2 ton increase in production is worth about 260 million USD in March 2018 prices.

[24] In addition, we report the balance test for individual characteristics we include in our individual regressions in the same Table 1. Except for interview circumstance (p=0.074), non are remotely significant with p-values above 0.253.

as well as the total bomb load of the American bombing campaign which could indicate areas of stronger support for the Khmer Rogue regime (Kiernan, 2008).

In a final step, we document the relationship between productiveness during the Khmer Rouge and indicators of violence in Table 2. Controlling for commune characteristics, a more productive commune has 387 more dead bodies in 8 more mass graves and a 62% higher probability of having a war memorial marking a Killing Field. Since increased violence indicates larger labor camps, these outcomes are indicative of increased state repression during the Khmer Rouge's reign. By the same token, these measures are highly correlated and to mitigate concerns of multiple hypotheses testing we standardize each violence measure and sum the standardized outcomes weighting each outcome by the inverse of the covariance matrix of the standadized outcomes (Anderson, 2008). The results in column (7) and (8), suggest that our instrument increases violence by 0.135 standard deviations.

The advantage of using precipitation as an instrument for productivity is that the same data can be used to validate the identification assumption. We argue that rainfall during the harvest season 1975–1977 affected the movement of people across Cambodia and ultimately the size and location of Killing Fields. Then, rainfall in any other period should be uncorrelated with measures of violence, except for chance. To test our identification, we employ two methods of randomization inference in Figure 6. Since our rainfall data only allows for 66 placebo harvest seasons, we first randomly allocate productiveness within each province. The point estimates from 1,000 repeated draws are shown in the left panel of Figure 6. Here, p-values for two-tailed tests range from 0.008 for the standardized violence measure to 0.051 for the probability of having a war memorial. Instead, using the 66 placebo years in the right panel of Figure 6, we obtain p-values in a range of 0.014 and 0.044 suggesting a highly significant first stage estimate.[25]

Having identified that productiveness during the Khmer Rouge is highly predictive of violence, we continue and establish the robustness of this result in different specifications and dependent variables in Table A.3. Here, we vary the definition of our shock in rows, and the dependent variable in columns. All measures, including per-capita or per-square-kilometer as well as log transformations of bodies and mass graves are robustly predicted by all shock definitions. Moreover, even though we show that our instrument is uncorrelated with population density, violence measures are likely to be positively correlated with population. Hence, we document

[25] In an additional step, we verify in Table A.1 that growing season shocks are not correlated with our measures of violence.

that our point estimates remain unchanged if we omit the first, fifth, or tenth percentile of largest communes in 1970 (Table A.4).

In summary, our rainfall instrument strongly predicts productivity of rice fields and indicators of violence during the genocide. We document the robustness of this relationship using methods of randomization inference using random assignment of treatment, placebo estimates in any three-year period from 1951–2017, and varying shock definitions. As violence indicators are correlated with state repression, we argue that we have identified exogenous variation in state repression to test the implications of our model in terms of exit and voice.

Voice In our model, we hypothesize that increased preferences for pluralism lead to more people turning up to vote for the opposition party if this action is unobservable to the incumbent or society as a whole. We test this hypothesis using election results from the national election in 2013 and two communal elections in 2013 and 2017 (Table 3). In columns (1)-(6) of the upper panel, we document a strong relationship between our instrument, vote shares for the opposition (β: 4.766, s.e.: 1.049) and voter turnout (β: 2.939, s.e.: 1.292). We identify a similar, albeit smaller, effect in the communal elections suggesting that voters' party preferences have changed systematically in response to the memory of state repression.

Changed preferences for pluralism also affect the competitiveness of elections, as the likelihood of obtaining an absolute majority decreases significantly (column 8). To obtain a measure of competitiveness, we follow Besley et al. (2010) and show that since our instrument decreases the absolute win margin of the incumbent, both communal and national elections are more competitive in historically more productive communes (column 10).

To solidify the link to state repression during the Khmer Rouge era, we present the placebo estimates for all outcomes and elections in Figures 7-9. Vote shares for the opposition in the, arguable most free, national election 2013 are an extreme outlier with no other placebo or randomly selected treatment having a greater effect. The placebo p-values from the communal elections are slightly lower for two reasons. First, in the communal election of 2012, the opposition parties were not united and we sum their vote shares for comparability. During the second communal election cycle, CNRP and its representatives faced serious pressure and defamation likely decreasing their appeal for many voters.[26] For completeness, we report the robustness of

[26]Pressure included, amongst others, suggesting that the opposition was bought by Vietnam, their leader is even more corrupt, and violent threats by Hun Sen himself: *"Words can cause war if the CPP loses patience and goes to your homes and burns down your homes."* https://www.ft.com/content/3894454c-4681-11e7-8519-9f94ee97d996, accessed April, 2018. For the 2018 national election, the main opposition party CNRP has been dissolved as the supreme court banned the party and more than 100 CNRP lawmakers from politics.

our results in alternative shock definitions in Table A.5 and without large communes in Table A.6.

We conclude that state repression during the Khmer Rouge reign had a strong effect on voters' tendency to use voice as their political action. In line with our model, this result suggests that preferences for pluralism and democratic values were positively affected in response to a period of severe state repression.

Exit In our model, voters choice to exit from civic society depends on preferences and the expected cost of being detected as a dissident. The second hypothesis predicts that voters unambiguously reduce their participation in society if they face higher costs of being detected as a dissident. We address this 'exit'-hypothesis using two distinct data sets. First, we use a survey of the electorate from the Asia Foundation covering questions directly related to preferences, informedness, local civic participation, and trust. Second, we employ the Cambodian Socio-Economic Survey [CSES] and use the principle of revealed preferences which predicts changes in the decisions taken by individuals.

As multiple questions are targeted to elicit correlated information, we construct a standardized index accounting for the correlation between the variables in each category to avoid false discovery rates [FDR] due to multiple hypothesis testing. Following Cantoni et al. (2017), we additionally provide the results on the individual questions in each category together with FDR adjusted p-values in Table A.7. We present our main estimates using the standardized scores on voter informedness, support for democratic values, civic participation and trust from the survey of the electorate in Table 4 and Figure 10. Voters in our sample are significantly more informed and show more support for democracy, corroborating our hypothesis that as preferences change, voters increasingly voice their discontent at the voting booth. As individuals develop stronger preferences for democracy, they inform themselves and vote for a more democratic party. The results on civic participation and trust suggest that voters additionally retreat from civic society. According to our hypothesis, this is unambiguously true if the memory of state repression increases the cost of openly voicing discontent.

Again, the results are highly robust using all placebo years (Figure 11) and various shock definitions (Table A.8). As the sample size is decreased to only 189 communes in 24 provinces, we report all estimates with zone fixed effects that split the provinces of Cambodia into four, roughly geographical, zones. However, the results using province fixed effects remain unchanged (Table A.9). Splitting the results by age group in Figure 10, it is clear that the average effect is driven by the cohort who survived the genocide, but important factors such as trust, informedness, and support for democracy are transmitted across generations.

In the second part, we use the CSES to estimate the effect of state repression on revealed preferences for paying local property taxes and working for the government (Table 5). Both are straightforward choices to identify 'exit' in general surveys as property taxes are easily observable and locally collected taxes and government employment directly measures daily interactions with the government. Across all generations, people living in communes that were historically more productive are paying less property tax in total, as a share of consumption, or per square-meter of housing. Standardizing these variables, the effect is about 0.03 standard deviations, with the effect being more pronounced for cohorts born after the genocide. Similarly, people are less likely to work for the government (column 10) and are more likely to be self employed (column 12).[27]

Combining the results from electoral results on voters voicing discontent under the anonymity of elections, and results from electoral surveys as well as the CSES on local civic participation, our findings suggest that voters use exit and voice as a result of state repression. In our model, these findings support our third hypothesis that state repression affects both preferences for pluralism and democratic values, as well as the expected cost of dissent. We do find direct evidence supporting this hypotheses as voters report a shift in preferences towards more democratic values in our election surveys. While shifting preferences can affect a voter's decision to participate in local civic society, the strong results we report on exit are indicative of an increase of an individual's perceived cost of dissent. In short, our findings suggest that the experience of political violence makes voters more convinced about the need for opposing views, but more cautious in expressing them.

Rent Extraction The combination of a more informed electorate with stronger democratic values and a low trust environment likely has implications for the ability to extract rents for politicians in developing countries (Pande, 2011). As voters become more informed about the political process, they likely elect more competent leaders who find their possibilities to legally extract rents restricted.[28] Additionally, the low trust environment could affect the possibility to coordinate between individuals to illegally extract rents.

[27]The findings from revealed preferences using the CSES are again robust using all placebo years and various shock definitions (Figure 12 and Table A.10). In Table A.13 we use the 2008 census to show that while there is no detectable difference in the number of establishments, people in historically more productive communes tend to work in manufacturing, suggesting a sectoral shift away from agriculture.

[28]In Appendix B we extend our framework to incorporate this idea. The more informed a politician is about the median voters preferences for democratic values, the lower are her chances of reelection and extracting rents at the same time.

In developing countries, rents are most commonly extracted by legally or illegally selling timber from rain forests. As a case in point, Cambodia had the worlds third largest deforestation rate between 2000 and 2005 with 29.4% of primary forest lost.[29] In Table 6, we combine data using the Hansen et al. (2013) deforestation measures between 2000 and 2014, data on land concessions for mining, and village level data on illegal logging and overuse from the CSES. Controlling for the size of forests in 1970 as calculated by the US Army maps, historically more productive communes have drastically lower rates of deforestation. The point estimate suggest about a 50% reduction in deforestation, a result highly significant in the placebo distribution (Figure 13a). Similarly, land concessions in affected communes decrease by 15% and illegal activities contributing to deforestation decrease by 12.6 and 15% in columns (4), (6), and (8).[30] Importantly, while the first two measures of rent extraction can be directly linked to a politician or party, the latter two suggest that the decreased trust observed in the election surveys affected extractive cooperation of citizens.

Jointly, the results suggest that individuals who suffered from state repression both exit civic society and voice their discontent if votes are undetectable. We establish in our model, that for this result both preferences for pluralism and democratic values, as well as the cost of dissent need to be affected by traumatic experiences during the genocide. Using electoral outcomes and individual surveys we suggest that the observed increased vote share for the opponent has its roots in more informed, more democratic, voters. The same voters, however, shun civic society and report lower levels of trust that appear to affect local cooperation, as we observe fewer illegal activities and decreased rates of deforestation. We observe that communes with larger vote shares for the more democratic opposition have significantly less deforestation and land concession, which suggests that politicians are less able to extract rents from office.

7 Alternative Hypotheses

Up until this point we presented evidence consistent with our third hypothesis of changed preference and cost of dissent. The traumatic experience of state repression during the Khmer Rouge's reign over Cambodia led people to exit civil society and voice their discontent at the voting booth if that action is unobservable. Arguably, our findings could be explained exclusively by changes in preferences which then allows for alternative hypotheses. In this

[29] https://news.mongabay.com/2005/11/nigeria-has-worst-deforestation-rate-fao-revises-figures/, accessed April, 2018.

[30] All measures are robust to alternative shock definitions and dropping large communes (Tables A.11 and A.12).

section, we provide evidence against hypotheses based on differential survival rates, incomes, migration rates, and state investments influencing preferences.

Differential survival Differential survival rates between productive and non-productive communes could partially explain our results, since higher population density, younger voters, or more educated voters likely have stronger preferences for pluralism. Moreover, if these differences exist contemporaneously, preferences might have been different before the genocide, and are only imperfectly captured by our commune characteristics from the US Army maps. To address this potential channel, we combine census data from 1962, 1998, and 2008 with data from the CSES to provide evidence against systematic differences between productive and non-productive communes.

We digitized the 1962 census that allows us to compute the age distribution of Cambodia prior to the genocide.[31] In Figure 14 we contrast the resulting distribution with the computed distribution from the CSES in productive and non-productive communes. While it is apparent that many prime aged citizens lost their lives during the genocide (40-60 today), there appears to be no correlation with productive communes. In fact, testing the differences between the distributions in Figure 15, we document no systematic difference between productive and non-productive communes today.[32] This result is corroborated in Table 7, where census data from 1998 and 2008 reveals no significant differences between productive and non-productive communes in the upper panel. Population sizes across various cohorts and population density is uncorrelated to our rain instrument in both census waves. Using data from the CSES, we group ages into decades to increase power and again find no systematic differences in any age group. Finally, using the information on educational achievements in the bottom panel, we find no systematic differences in educational attainment between productive and non-productive communes.

While compared to the 1962 distribution of age in the population, prime aged citizens seem to have disproportionately suffered under the Khmer Rouge's regime. Census and survey data, however, show no contemporaneous differences in population, age, or education that could explain our results. While we reject the hypothesis of differential survival rates, we continue and investigate whether the observed death rates among the prime age population influenced the asset distribution in productive communes.

[31] Unfortunately, the data is only available at the country level as the commune data only contains names and provinces which are nearly impossible to match to contemporaneous communes.

[32] The same result is seen in Figure A.1 when estimating the differences in distributions for men and women separately.

Income and wealth A classical Malthusian argument provides a second explanation for our findings on vote shares and turnout. People dying on the Killing Fields, or potentially even the sole presence of labor camps, likely changed the asset distribution in communes. Hence, people in productive communes likely have different consumption possibilities and assets than their non-productive counterparts.

In Table 8, we use the CSES survey data for household heads and test for systematic differences between communes. We find no differential endowments of house sizes or farm values and sizes between productive and non-productive communes. Further, households in productive communes do not spend more on durable or non-durable consumption goods. Importantly, consumption of alcohol and tobacco products, which are likely correlated to post traumatic stress disorders, also show no significant differences. Here, as asset or consumption differences might be pre-existing or build up in the years after the genocide, we report the differences for the average in the upper panel, and the differences for the subset of residents that never moved from their current village. However, even for the subset of individuals that lived their entire lives under the shadow of the nearby killings, we do not find significant differences in consumption behavior or assets.

To provide additional evidence against a Malthusian argument, we extend our analysis of income differences towards income inequality in Table 9. If non-productive communes are more unequal, they might favor leaders that offer quick solutions for their economic problems. However, no measure of poverty or inequality is correlated to our rainfall instrument. Thus, we argue that differences in income, assets, or inequality are unlikely to explain our findings.

Migration Using information on migration status from the CSES we are able to identify differential population movements just after the genocide. If people would systematically move to either type of communes, such migration streams could be indicative of differential income expectations which could explain our results.

In Table 10 we focus on individuals who were alive during the Khmer Rouge reign and provide evidence against differential migration rates. People do not systematically migrate out of communes with labor camps in 1979 or 1980 (columns 2 and 4). Moreover, for the 6% of individuals who willingly respond to have returned in 1979 after having been displaced by the Khmer Rouge, there exists no differential movement between communes.

By confining our sample to the survey from 1996, we can also identify the district of origin for every migrant in our sample. By collapsing our instrument to the district level, we show in Figure A.2 that people who returned just after the genocide in 1979 or 1980, disproportionately arrive from districts that were more productive during the genocide. While in later years

between 40 and 50% came from non-productive districts, more than 80% of migrants in 1979 came from districts that were targeted by the Khmer Rouge.

In short, migration destinations in 1979 are uncorrelated to our rain instrument suggesting that the Khmer Rouge forced people from all over Cambodia to migrate to labor camps. Notably, in our sample of adults, 20% of the people alive during the genocide moved in 1979 and then stayed in the commune and 42% did not move during the genocide. Hence, while we observe high migration rates two facts stand out. First, 62% of the population did not move since 1979 and second, 41% of those who migrated between 1979 and today did so immediately after the genocide. Moreover, we show that the source districts of people who migrated in 1979 are disproportionately more likely to have been productive during the genocide. Taken together, these findings provide additional evidence for our identification assumption, as well as evidence against the hypothesis of differential migration.

State investment The last alternative hypothesis we explore is the possibility of differential investment into communes. As governments distribute funds, communes benefit differentially from programs that increase access to food, capital, or health. If, in return, voters cast their ballot for the incumbent, we should expect to see such investments in communes with a larger CPP share. However, as these investments could also be used to persuade potential CNRP voters, both positive and negative correlations with productivity during the Khmer Rouge era are possible.

Using data from village survey part of the CSES, we show no significant correlation between productiveness and market access or public infrastructure (upper panel of Table 11). Additionally, we use the EMIS data from 1997-2002 to capture potential education programs, and show that neither school characteristics nor class characteristics are correlated to productiveness during the genocide. We complement the evidence with null results using recent data on night time lights, the number of food markets, health centers, and access to information in Table A.14.

In this section we have explored, and provided evidence against, four competing hypotheses that could explain our results. We have shown that while the population of Cambodia as a whole was affected by the killings of more than 1.5 million people during the genocide, citizens were not differentially affected as population, education, income, assets, and migration is balanced across productive and non-productive communes today. Moreover, we find no evidence for differential investments into communes that would bias our estimates. Reviewing our evidence in its entirety we conclude that our model of changing preferences and costs of dissent is in line with our empirical findings.

8 Conclusion

We show that state repression makes politics less personal and more competitive. Using evidence from history's most severe episode of political violence, the genocide in Cambodia under the Khmer Rouge, we find that state coercion leads to more votes in favor of the opposition over the authoritarian incumbent and increased support for democratic principles 4 decades after the genocide. At the same time, citizens become more cautious in their interactions with the local community as captured by lower participation in community organizations and less trust. While the results are more pronounced for people that were alive under the Khmer Rouge, effects persist across generations suggesting that the legacy of political violence can have a long-term impact on society. In addition, we also provide evidence that the changes in people's political preferences and behavior are driven by experiences of state repression rather than altered demographics of the survivors or direct economic effects.

The results are relevant for the policy debate on democratic development, contributing to our understanding of political participation in post-conflict societies where citizens still live under the threat of political violence. Even in authoritarian states, such as Cambodia, elections matter as a source of legitimacy and corrective feedback (Magaloni, 2006; Brownlee, 2007) or as a way to allow for a credible power sharing among the elites (Bidner et al., 2015). Our findings also open up for additional questions. First, do prisons or labor camps induce similar effects on preferences and behavior in other contexts, such as Nazi Germany's concentration camps or the US WW2 internment of Japanese Americans? Second, given our findings on the link between state repression and political competition, more research in needed to understand the implications for the theory of electoral competition in political economics.

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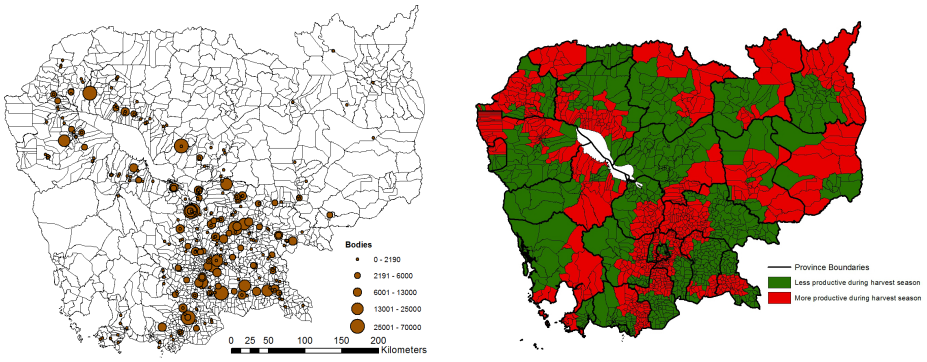
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9 Figures and Tables

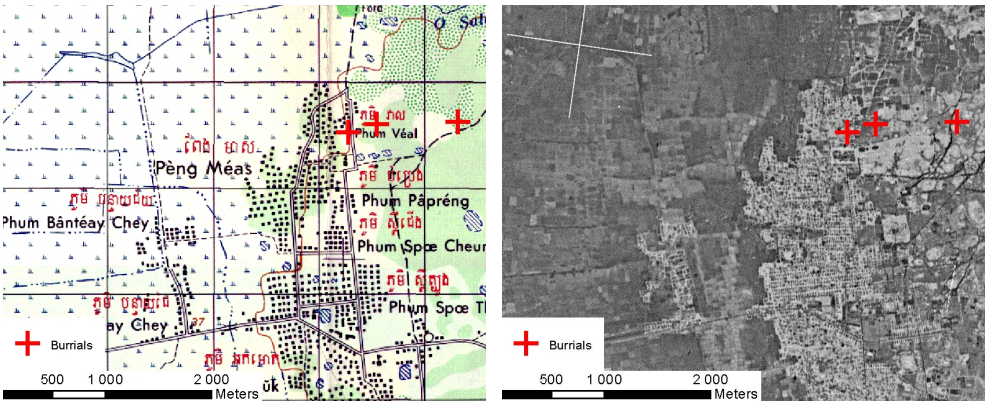
Figure 2: Killing fields in Cambodia



(a) Cambodia's Killing Fields, 309 sites with mean no. of killed: 3,154

(b) More and less productive communes during the genocide

Figure 3: Pre-genocide covariates from US Army L7016



(a) Example of L7016 map

(b) Aerial photography 1976

Figure 4: Production plans of the Khmer Rouge leadership

TABLE 3

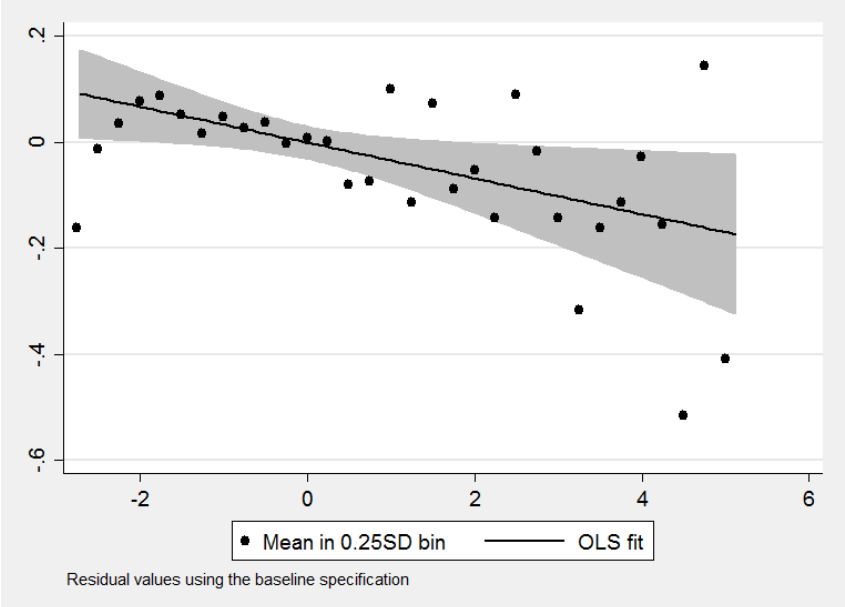
PLAN FOR RICE PRODUCTION THROUGHOUT THE COUNTRY DURING THE PERIOD 1977 - 1980

Zone and Region	1977	1978	1979	1980	Total For Four Years
1. NW	1,620,000T	1,900,000T	2,250,000T	2,600,000T	8,370,000T
2. East	1,290,000T	1,410,000T	1,510,000T	1,620,000T	5,830,000T
3. SW	1,140,000T	1,210,000T	1,320,000T	1,440,000T	5,110,000T
4. North	695,000T	758,000T	935,000T	812,000T	3,200,000T
5. West	432,000T	450,000T	480,000T	510,000T	1,872,000T
6. NE	73,000T	78,000T	84,000T	90,000T	335,000T
7. Region 106	306,000T	336,000T	366,000T	384,000T	1,392,000T
8. Region 103	42,000T	48,000T	54,000T	60,000T	204,000T
9. Centre Armed Forces	18,000T	24,000T	30,000T	36,000T	108,000T
10. Zone Armed Forces	39,000T	54,000T	66,000T	90,000T	249,000T
Total:	5,555,000T	6,268,000T	6,995,000T	7,742,000T	26,560,000T[a]

[a] Total rice produced. Total production for fields harvested twice per year is figured as 6 tons per hectare; ordinary fields harvested once per year is estimated at 3 tons per hectare.

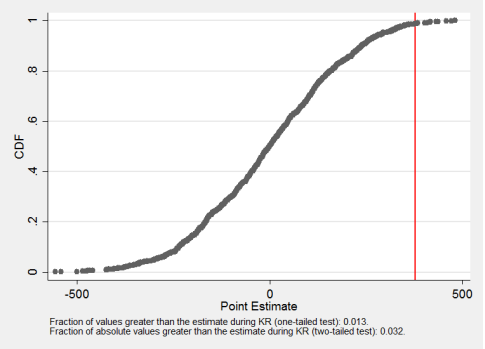
Example of a production plans across different regions of Cambodia (Chandler et al., 1988).

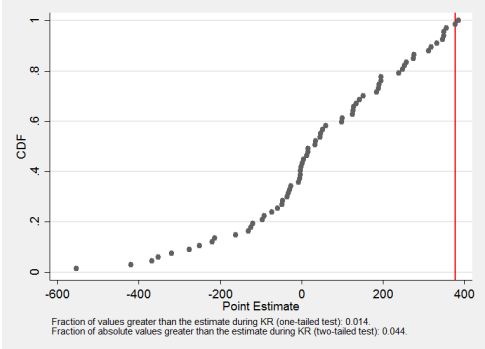
Figure 5: Rice yields



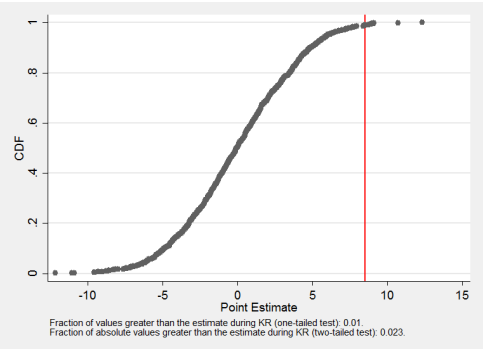
Rice yields as a function of standardized rainfall during the harvest season. Data taken from the Cambodian socio economic survey 1996–2014. More rain is associated with lower yields as it drowns the rice. 95% confidence intervals shown. Province fixed effects and a second-degree polynomial in latitude in longitude included in the regression. Commune characteristics included and defined in Table 1.

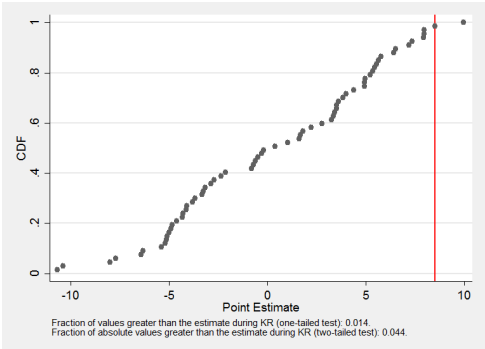
Figure 6: Placebo estimates for violence



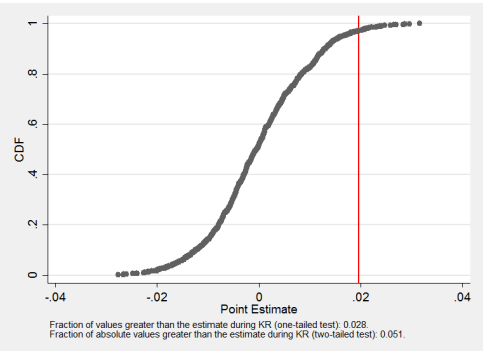


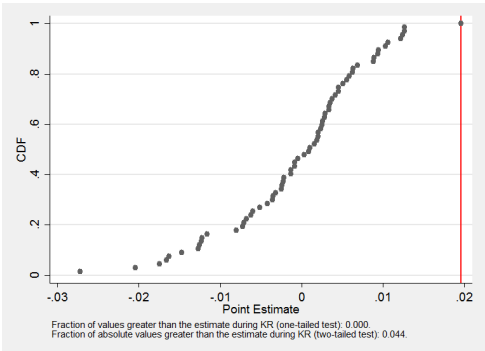
(a) # Bodies in commune



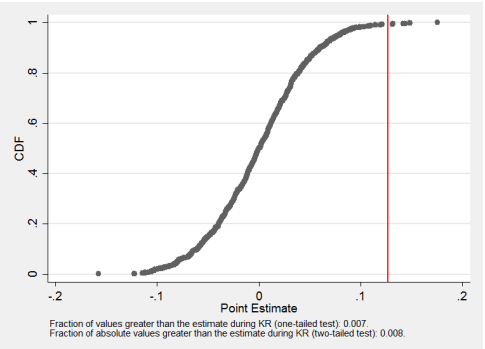


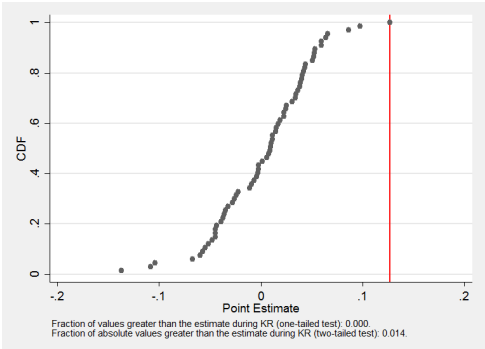
(b) # Mass graves in commune





(c) War memorial in commune

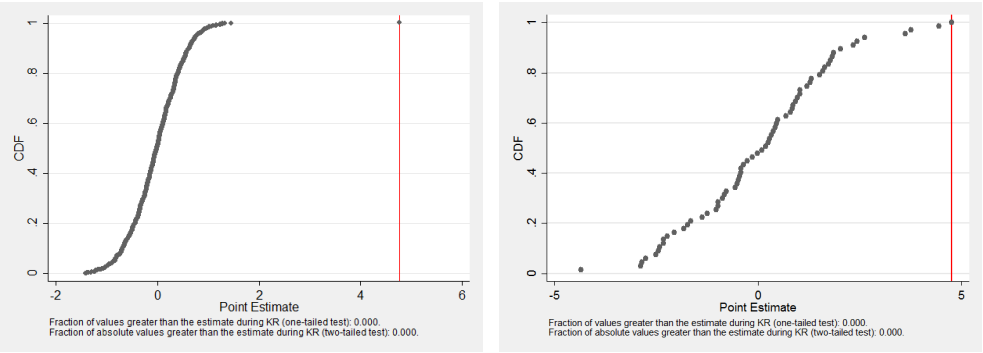




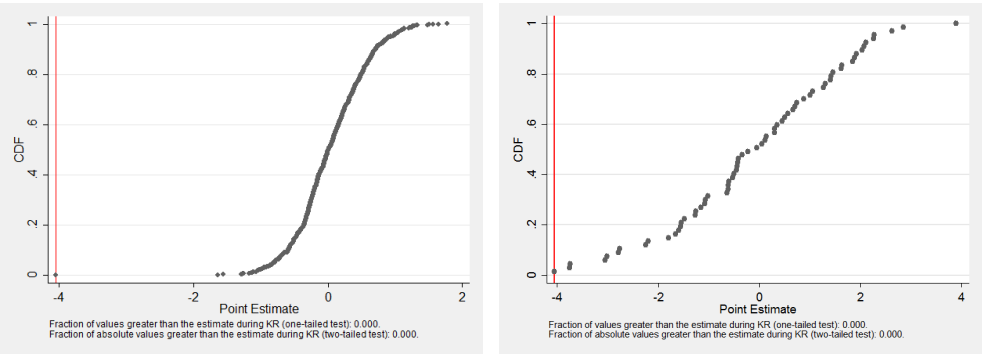
(d) Standardized violence

The graphs show the main effect of the production shock in the harvest seasons during the Khmer Rouge reign, compared to the cumulative distribution of estimates of a production shock in placebo years. The line indicates the estimated coefficient during the Khmer Rouge. Under every graph two statistics indicating the p-value of a one-sided and two-sided test are presented. Randomization inference (left) and placebo seasons (right) for the main violence indicators. The randomization procedure assigns 50% of the communes within a province to treatment using 1,000 draws. In the placebo estimations (right), treatment is assigned based on the within province productivity in the harvest season in all three-year windows from 1951 until 2017. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions.

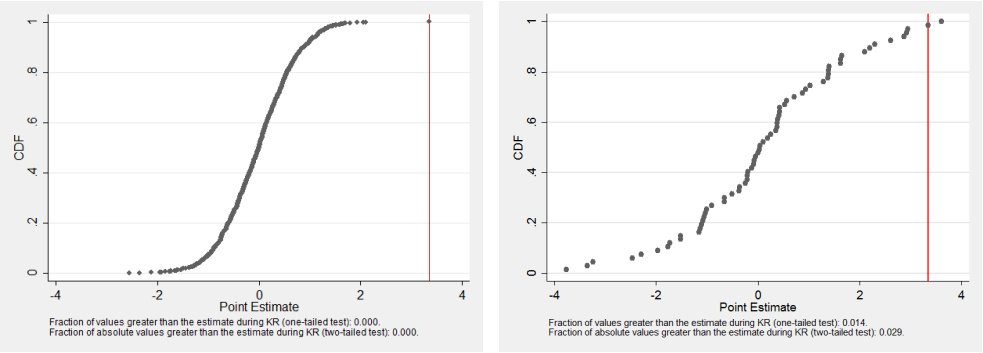
Figure 7: Placebo estimates for political mobilization: National election



(a) Vote share opposition in commune (CNRP)



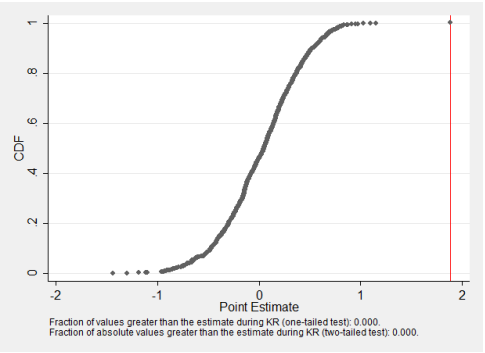
(b) Vote share incumbent in commune (CPP)

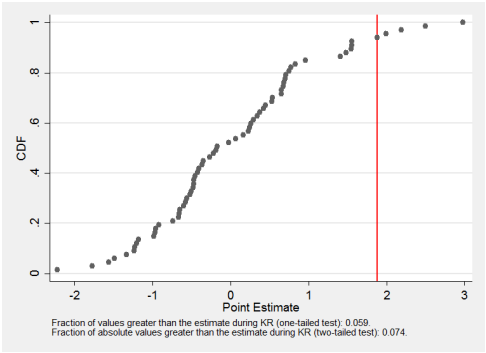


(c) Turnout in commune

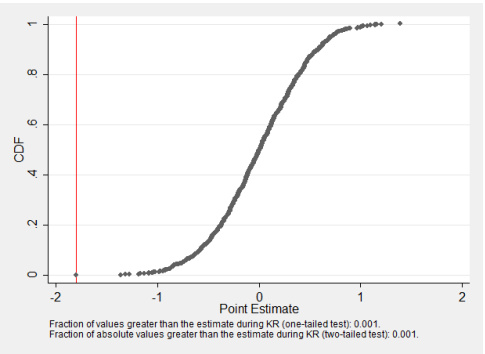
The graphs show the main effect of the production shock in the harvest seasons during the Khmer Rouge reign, compared to the cumulative distribution of estimates of a production shock in placebo years. The line indicates the estimated coefficient during the Khmer Rouge. Under every graph two statistics indicating the p-value of a one-sided and two-sided test are presented. Randomization inference (left) and placebo seasons (right) for the main violence indicators. The randomization procedure assigns 50% of the communes within a province to treatment using 1,000 draws. In the placebo estimations (right), treatment is assigned based on the within province productivity in the harvest season in all three-year windows from 1951 until 2017. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions.

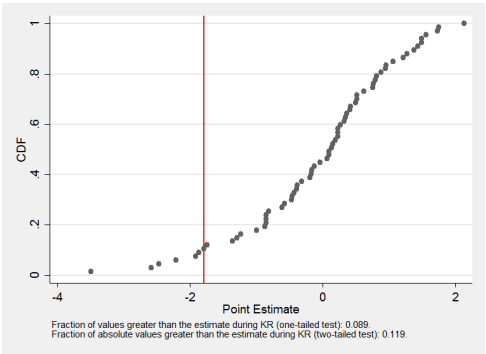
Figure 8: Placebo estimates for political mobilization: Communal elections



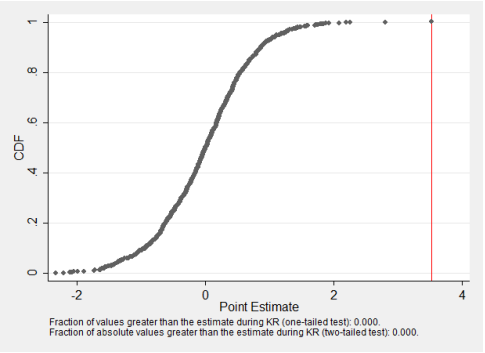


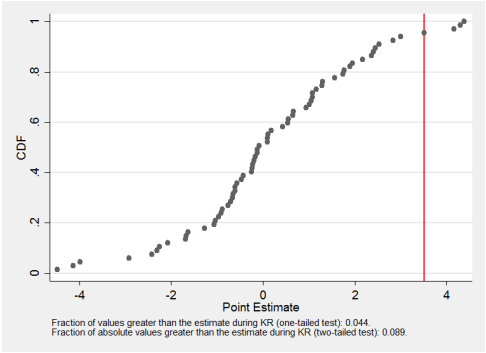
(a) Vote share opposition in commune (CNRP)





(b) Vote share incumbent in commune (CPP)

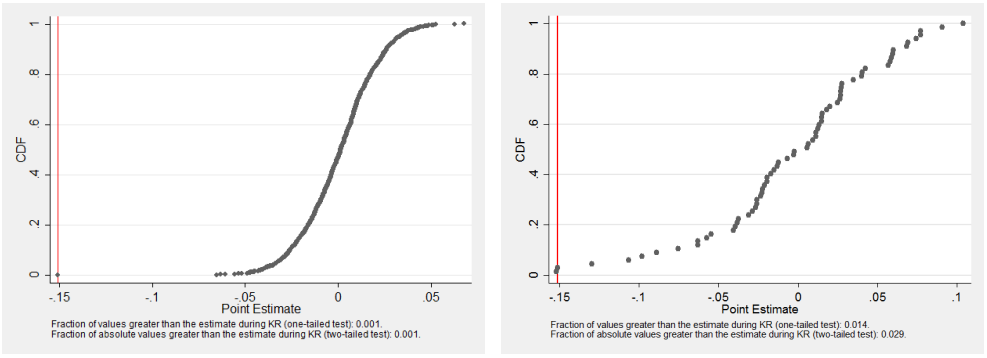




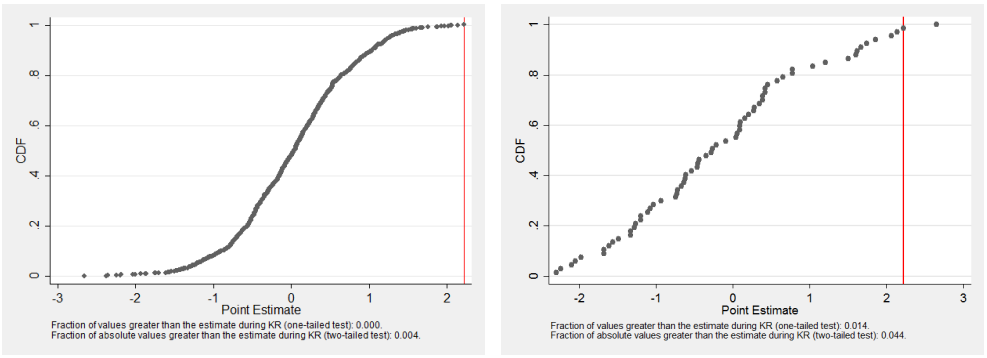
(c) Turnout in commune

The graphs show the main effect of the production shock in the harvest seasons during the Khmer Rouge reign, compared to the cumulative distribution of estimates of a production shock in placebo years. The line indicates the estimated coefficient during the Khmer Rouge. Under every graph two statistics indicating the p-value of a one-sided and two-sided test are presented. Randomization inference (left) and placebo seasons (right) for the main violence indicators. The randomization procedure assigns 50% of the communes within a province to treatment using 1,000 draws. In the placebo estimations (right), treatment is assigned based on the within province productivity in the harvest season in all three-year windows from 1951 until 2017. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions.

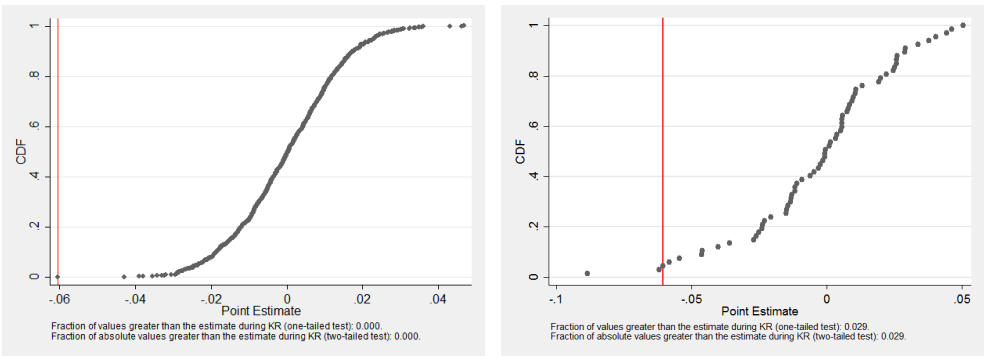
Figure 9: Placebo estimates for political competition



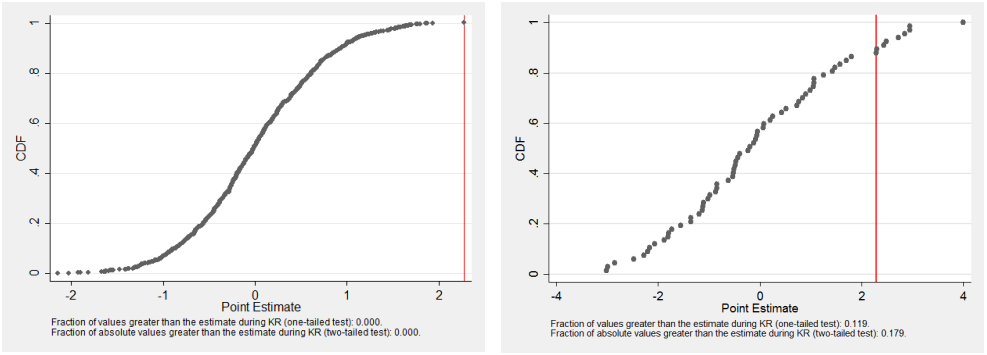
(a) National election: Probability of CPP having a majority in commune



(b) National election: Margin -|CPP-CNRP|



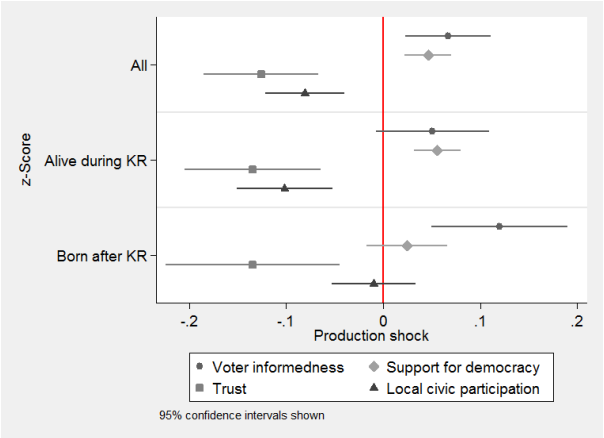
(c) Commune election: Probability of CPP having a majority in commune



(d) Commune election: Margin -|CPP-CNRP|

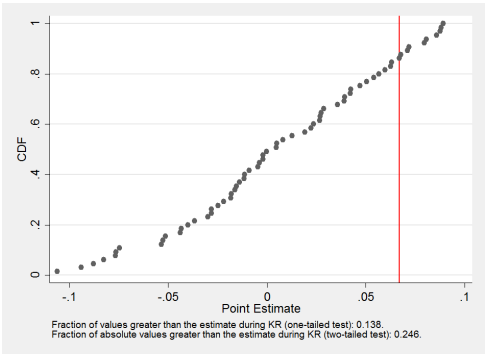
The graphs show the main effect of the production shock in the harvest seasons during the Khmer Rouge reign, compared to the cumulative distribution of estimates of a production shock in placebo years. The line indicates the estimated coefficient during the Khmer Rouge. Under every graph two statistics indicating the p-value of a one-sided and two-sided test are presented. Randomization inference (left) and placebo seasons (right) for the main violence indicators. The randomization procedure assigns 50% of the communes within a province to treatment using 1,000 draws. In the placebo estimations (right), treatment is assigned based on the within province productivity in the harvest season in all three-year windows from 1951 until 2017. 'Margin -|CPP-CNRP|' is calculated as the vote share of CPP minus CNRP and a variation of the competitiveness measure by Besley et al. (2010). Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions.

Figure 10: Exit and voice

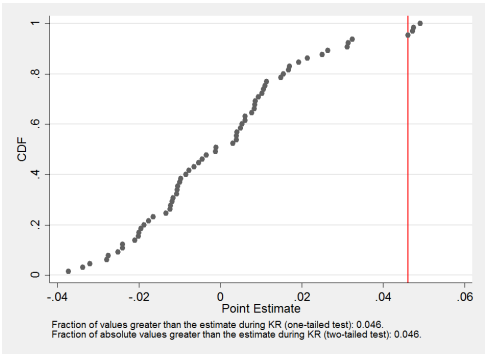


Standardized scores on voter informedness, support for democracy, local civic participation, and trust from the Asia Foundation 2003 and 2013 survey. Zone fixed effects and a second-degree polynomial in latitude in longitude included in all communes. 95% confidence intervals shown.

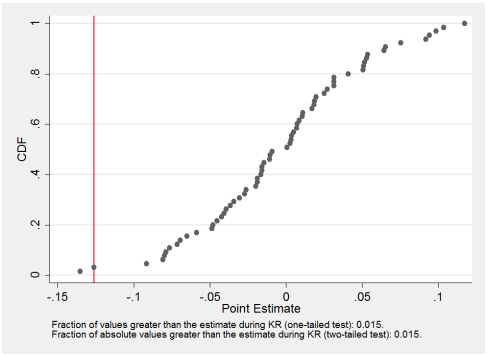
Figure 11: Placebo estimates for exit and voice



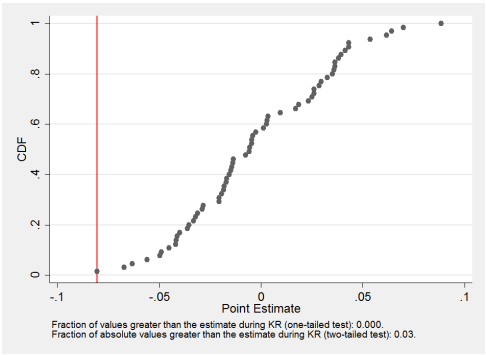
(a) Voter informedness



(b) Support for democracy



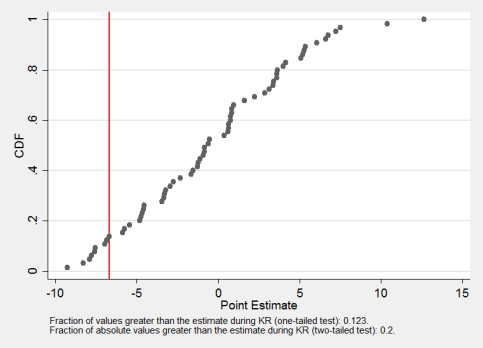
(c) Trust



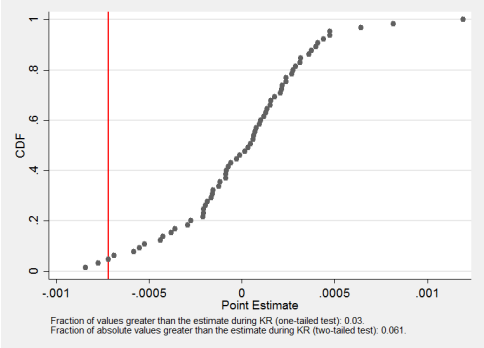
(d) Civic participation

The graphs show the main effect of the production shock in the harvest seasons during the Khmer Rouge reign, compared to the cumulative distribution of estimates of a production shock in placebo years. The line indicates the estimated coefficient during the Khmer Rouge. Under every graph two statistics indicating the p-value of a one-sided and two-sided test are presented. Placebo estimations for the average effects. Treatment is assigned based on the within province productivity in the harvest seasons in all three year windows from 1951 until 2017. Zone fixed effects and a second-degree polynomial in latitude in longitude included in all communes. Commune characteristics included and defined in Table 1.

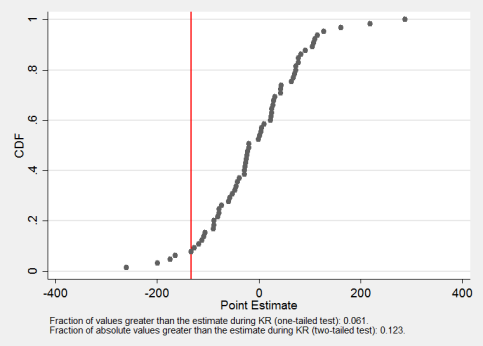
Figure 12: Placebo estimates: Paying property taxes and government employment



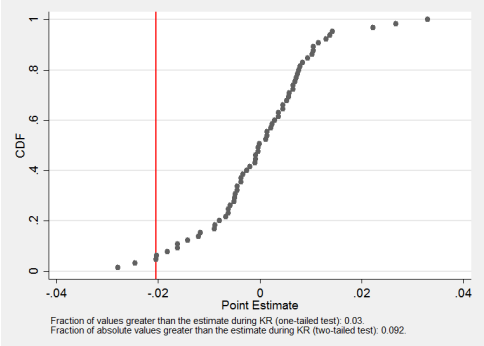
(a) Property taxes paid



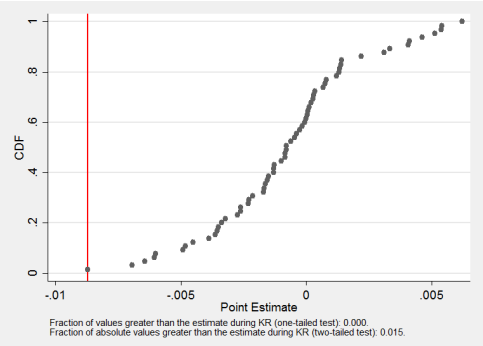
(b) Share of property tax



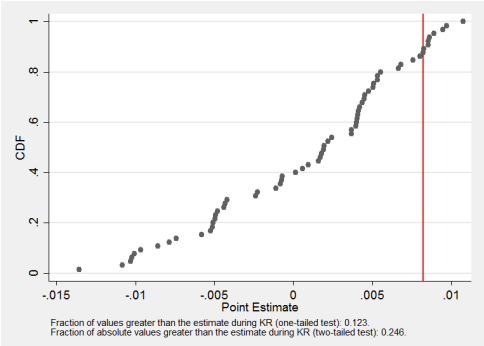
(c) Property tax per sqm of housing



(d) Standardized score



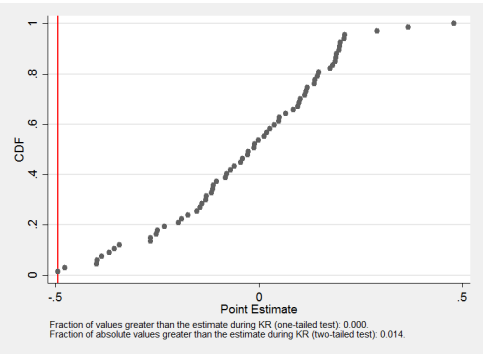
(e) Employed by the government



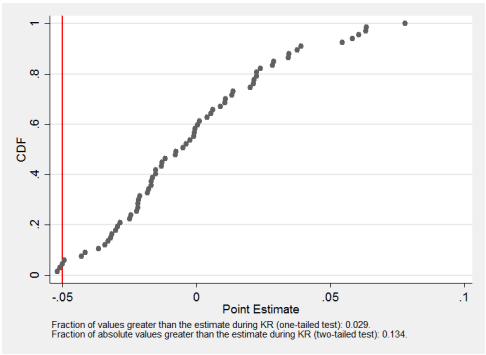
(f) Self employed

The graphs show the main effect of the production shock in the harvest seasons during the Khmer Rouge reign, compared to the cumulative distribution of estimates of a production shock in placebo years. The line indicates the estimated coefficient during the Khmer Rouge. Under every graph two statistics indicating the p-value of a one-sided and two-sided test are presented. Placebo estimations for the average effects. Treatment is assigned based on the within province productivity in the harvest seasons in all three year windows from 1951 until 2017. Source for all variables: Cambodia socio economic survey 1996–2014. 'Share of property tax' is defined as the amount of property tax paid, relative to all non-food expenditures. 'Property tax per sqm of housing' is defined as the amount of property tax paid, relative to the floor area of the individuals home. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics included and defined in Table 1.

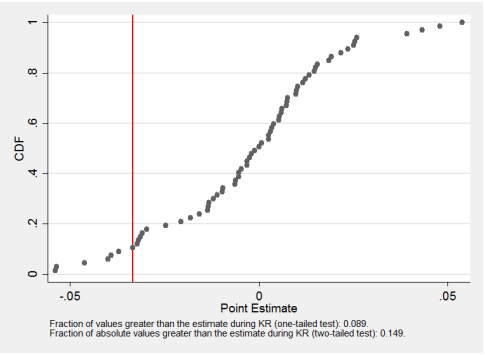
Figure 13: Placebo estimates: Deforestation and illegal land use



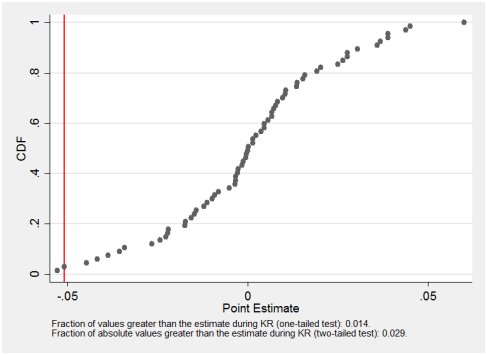
(a) Forest loss



(b) Land concessions



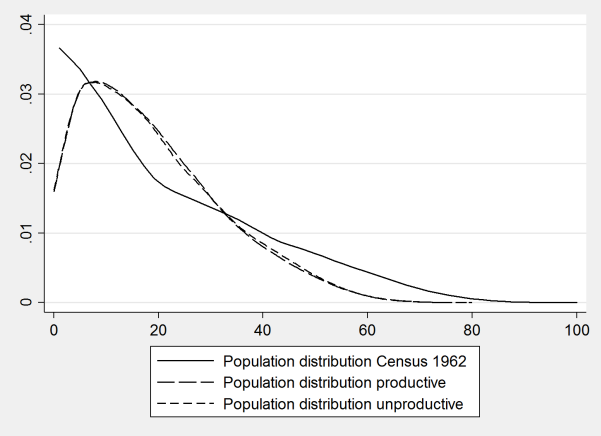
(c) Illegal logging



(d) Illegal overuse

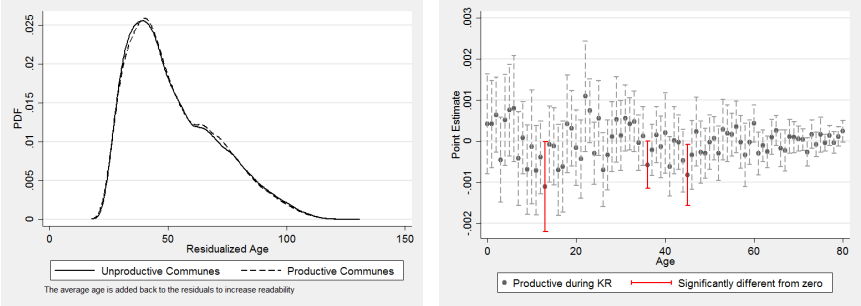
The graphs show the main effect of the production shock in the harvest seasons during the Khmer Rouge reign, compared to the cumulative distribution of estimates of a production shock in placebo years. The line indicates the estimated coefficient during the Khmer Rouge. Under every graph two statistics indicating the p-value of a one-sided and two-sided test are presented. Placebo estimations for the average effects. Treatment is assigned based on the within province productivity in the harvest seasons in all three year windows from 1951 until 2017. Source for all variables: Cambodia socio economic survey 1996–2014. 'Forest loss' is defined as the square kilometers of forest lost between 2000–2014 and provided by Hansen. Source for all other variables: The village data set from the Cambodia socio economic survey 1996–2014. 'Land concessions' is defined as one if a commune sold land for mining of forest operations. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics included and defined in Table 1.

Figure 14: Survival composition: Age



The distribution of age in the 1962 census (solid line) and the Cambodian socio economic survey 1996–2014. The dashed line represents the age distribution within communes that where more productive during the Khmer Rouge and the dotted line those that were less productive.

Figure 15: Distributional effects: Age



The distribution of age in the Cambodian socio economic survey 1996–2014, separated by the productiveness of the commune during the Khmer Rouge regime. Histogram on the residualized distributions (left) and point estimates on the difference between the distributions for every age between 0–80. Differences based on whether the commune was productive during the genocide. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics included and defined in Table 1.

Table 1: Summary statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Non-productive communes		Productive communes		Exogeneity test			
	Mean	S.D.	Mean	S.D.	β	s.e.	T-Stat	p-value
Violence indicators:								
#Bodies in commune	407.873	2724.575	792.152	4514.115				
#Mass graves in commune	7.086	46.580	16.237	97.032				
War memorial in commune	0.035	0.183	0.053	0.224				
Political mobilization:								
Vote share for CNRP, national election	37.512	15.710	41.814	16.315				
Vote share for CNRP, commune election	33.683	12.887	35.808	13.438				
Vote share for CPP, national election	54.782	14.639	50.852	14.967				
Vote share for CPP, commune election	61.664	14.304	59.405	14.852				
Turnout, national election	77.274	18.361	80.430	17.012				
Turnout, commune election	75.427	20.175	78.799	18.768				
CPP$\geq$50%, national election	0.593	0.492	0.468	0.499				
CPP$\geq$50%, commune election	0.782	0.413	0.708	0.455				
Margin: -|CPP-CNRP|, national election	−27.889	20.337	−25.271	20.001				
Margin: -|CPP-CNRP|, commune election	−31.053	22.807	−28.509	22.705				
Local state avoidance:								
Property taxes paid	54.737	306.353	22.398	150.791				
Share of property tax	0.005	0.020	0.002	0.011				
Property tax per sqm of housing	906.715	12980.324	351.728	2276.594				
Working for the government	0.098	0.298	0.065	0.247				
Self employment	0.216	0.412	0.248	0.432				
Deforestation:								
log Forest loss	3.846	3.104	3.093	2.959				
Land concession	0.317	0.466	0.244	0.430				
Illegal logging	0.252	0.434	0.274	0.446				
Illegal overuse	0.304	0.460	0.326	0.469				
Commune characteristics:								
Commune with school	0.670	0.471	0.705	0.456	0.026	0.025	1.046	0.296
Commune with telephone	0.004	0.061	0.006	0.078	0.002	0.003	0.579	0.563
Commune with commune office	0.383	0.486	0.386	0.487	0.001	0.029	0.048	0.961
Commune with post office	0.017	0.131	0.016	0.125	−0.003	0.005	−0.529	0.597
log Population density	5.189	1.521	5.096	1.576	−0.024	0.133	−0.182	0.856
log Rice field area	5.691	2.841	6.239	2.430	0.392	0.349	1.123	0.261
log Area partially inundated	3.250	3.246	2.894	3.085	−0.125	0.247	−0.504	0.614
log Area covered by dense forests	4.081	3.941	3.911	3.594	−0.281	0.469	−0.599	0.549
log Commune area	3.864	1.619	3.814	1.152	−0.134	0.114	−1.173	0.241
log Distance to Phnom Penh	4.448	1.450	4.549	0.937	−0.067	0.069	−0.967	0.334
log Distance to closest road	0.397	1.416	0.387	1.465	0.032	0.116	0.272	0.786
log Distance to province capital	2.440	2.851	2.810	2.125	−0.003	0.103	−0.032	0.974
log Bomb load 1965-1973	4.932	3.356	4.630	3.188	0.095	0.236	0.402	0.688
log Potential yields (FAO, 1960-1990)	1.013	0.014	1.015	0.013	0.000	0.000	0.850	0.395
Individual characteristics, Asia foundation 2003 and 2013:								
Ethnicity	0.038	0.335	0.088	0.592	0.041	0.042	0.968	0.344
Year of birth	1969.798	15.256	1970.949	14.963	0.288	0.620	0.464	0.647
Male	0.488	0.500	0.501	0.500	0.013	0.017	0.779	0.445
Education	2.369	1.298	2.244	1.192	−0.131	0.112	−1.173	0.253
Income	2.990	1.839	3.003	1.829	−0.085	0.128	−0.664	0.513
Interview circumstance	1.125	1.220	1.163	1.198	0.111	0.059	1.874	0.074
Urbanity	0.497	0.500	0.506	0.500	0.009	0.062	0.146	0.885
Brick House	0.892	0.311	0.887	0.317	0.011	0.023	0.480	0.636
Individual characteristics, Cambodian socio economic survey 1996–2014:								
Year of birth	1979.462	19.389	1980.076	19.591	−0.058	0.208	−0.277	0.782
Male	0.480	0.500	0.481	0.500	−0.001	0.002	−0.432	0.666
Urbanity	0.338	0.473	0.230	0.421	0.021	0.055	0.377	0.706
Years of education	5.532	5.337	5.010	5.142	−0.033	0.070	−0.047	0.635

Data on violence taken from the Cambodian Genocide Project. Data on Political mobilization taken from the national election offices in Cambodia. Commune characteristics are taken from the L7016 army maps covering Cambodia in 1970 and digitized by the authors if not otherwise noted. 'log Bomb load' taken from the Cambodian Genocide Project. 'Potential yields' are for low input rain fed rice from 1960–1990 and taken from the FAO. For deforestation, 'log Forest loss' is defined as the hectares of forest lost between 2000 and 2014, as calculated by Hansen et al. (2013), and 'land concessions' is a binary variable indicating whether any area in the communes was sold under a land concessions. The remaining variables are taken from the village questionnaires from the Cambodian socio-economic survey 1996–2014. Individual characteristics obtained by the indicated surveys and are included into regressions as fixed effects. Interview circumstance indicates whether the respondent was alone, with family, or a local official when answering the questionnaire.

Table 2: Violence incidence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	#Bodies		#Mass graves		War Memorial		Standardized violence	
Productive during KR	377.914***	387.276***	8.501***	8.038***	0.020**	0.022***	0.127***	0.135***
	(171.222)	(150.958)	(3.529)	(3.265)	(0.011)	(0.010)	(0.045)	(0.043)
	[141.584]	[138.934]	[2.909]	[2.856]	[0.008]	[0.008]	[0.033]	[0.031]
Commune characteristics		Yes		Yes		Yes		Yes
Mean non-productive	407.873	407.873	7.094	7.094	0.035	0.035		
Observations	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621

First stage results on how productivity during the Khmer Rouge influenced violence in a commune. 'Standardized violence' is the standardized index of '#Bodies', '#Mass graves', and 'War memorial', taking into account the covariance between these variables. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Political mobilization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Political mobilization						Political competition			
	Vote share CNRP (Opposition)		Vote share CPP (Incumbent)		Turnout		Absolute majority for CPP		Margin -|CPP-CNRP|	
	National election in 2013									
Productive during KR	4.766***	4.890***	−4.054***	−4.218***	3.351**	2.939**	−0.151***	−0.155***	2.223*	1.754
	(1.530)	(0.879)	(1.463)	(0.876)	(1.767)	(1.474)	(0.055)	(0.038)	(1.276)	(1.147)
	[1.049]	[0.600]	[0.979]	[0.614]	[1.583]	[1.292]	[0.031]	[0.026]	[1.341]	[1.305]
	Communal elections in 2012 and 2017									
Productive during KR	1.882***	2.100***	−1.794**	−2.016***	3.514*	3.080**	−0.061**	−0.069***	2.280**	2.383***
	(1.053)	(0.680)	(1.108)	(0.811)	(2.157)	(1.686)	(0.032)	(0.024)	(1.484)	(1.048)
	[0.720]	[0.493]	[0.724]	[0.565]	[2.077]	[1.478]	[0.024]	[0.019]	[1.040]	[0.851]
Commune characteristics		Yes		Yes		Yes		Yes		Yes
Observations national election	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621
Mean national election	37.512	37.512	54.782	54.782	77.274	77.274	0.593	0.593	−27.889	−27.889
Observations commune elections	3,230	3,230	3,230	3,230	3,230	3,230	3,230	3,230	3,230	3,230
Mean commune elections	33.683	33.683	61.664	61.664	75.427	75.427	0.782	0.782	−31.053	−31.053

Every cell constitutes a separate regression of the instrument on the dependent variable in the header. Data taken from the official election results. 'Vote share CNRP' in the communal elections 2012 is calculated as the combined votes of the 'Sam Rainsy Party' and the 'Human Rights Party'. 'Turnout' is calculated using the electorate information from the national elections in 2013. 'Vote share CPP $\geq 50\%$' is a binary variable indicating an absolute majority for the incumbent party CPP. 'Margin -|CPP-CNRP|' is calculated as the vote share of CPP minus CNRP and a variation of the competitiveness measure by Besley et al. (2010). Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Exit and voice

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Voter informedness		Support for democracy		Local civic participation		Trust	
Average effect	0.060**	0.067***	0.043***	0.046***	−0.081***	−0.081***	−0.131***	−0.126***
	0.027	0.027	0.008	0.009	0.025	0.022	0.034	0.035
	[0.025]	[0.023]	[0.012]	[0.012]	[0.023]	[0.021]	[0.030]	[0.030]
Alive during KR	0.039	0.049*	0.050***	0.054***	−0.096***	−0.099***	−0.128***	−0.131***
	0.031	0.032	0.009	0.009	0.026	0.023	0.037	0.036
	[0.028]	[0.028]	[0.012]	[0.012]	[0.026]	[0.024]	[0.034]	[0.033]
Born After KR	0.108***	0.110***	0.022	0.022	−0.012	−0.009	−0.124***	−0.123***
	0.037	0.033	0.014	0.014	0.034	0.032	0.054	0.055
	[0.038]	[0.033]	[0.018]	[0.019]	[0.022]	[0.021]	[0.045]	[0.045]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls		Yes		Yes		Yes		Yes

Every cell constitutes a separate regression of the instrument on the dependent variable in the header using individual level data. The row names define the sample used based on whether the year of birth is before or after 1978. Results using questions from the Asia Foundation 2003 and 2013. Individual results per category show in Table 4. Individual covariates are ethnicity, year of birth, education, income, interview circumstance, rural status and housing status. Zone fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Zone fixed effects sort provinces in four zones to improve power. Commune characteristics are defined in Table 1.Results with province fixed effects shown in Table A.9. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Local state avoidance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Property taxes paid		Share of property tax		Property tax per sqm of housing		Standardized z-score		Working for the government		Self employment	
Average Effect	−8.637**	−6.902**	−0.001*	−0.001*	−156.334***	−133.906***	−0.024**	−0.021**	−0.008***	−0.008***	0.006	0.007*
	(4.325)	(3.390)	(0.000)	(0.000)	(77.477)	(65.947)	(0.012)	(0.009)	(0.002)	(0.003)	(0.005)	(0.005)
	[3.541]	[2.699]	[0.000]	[0.000]	[52.485]	[41.728]	[0.011]	[0.011]	[0.002]	[0.002]	[0.004]	[0.004]
Alive during KR	−7.682*	−4.665	−0.001*	−0.001	−159.334***	−118.912***	−0.023**	−0.018*	−0.008***	−0.007**	0.008**	0.008**
	(4.568)	(3.679)	(0.000)	(0.000)	(75.710)	(60.812)	(0.011)	(0.008)	(0.003)	(0.004)	(0.006)	(0.006)
	[4.111]	[3.233]	[0.000]	[0.000]	[57.099]	[42.413]	[0.011]	[0.010]	[0.002]	[0.003]	[0.004]	[0.004]
Born After KR	−6.192*	−4.669*	−0.000	−0.000	−47.867	−35.720	−0.051*	−0.044*	−0.007***	−0.004	−0.001	0.000
	(3.218)	(2.679)	(0.000)	(0.000)	(61.250)	(55.796)	(0.026)	(0.022)	(0.002)	(0.003)	(0.004)	(0.004)
	[3.211]	[2.613]	[0.000]	[0.000]	[66.946]	[60.245]	[0.027]	[0.024]	[0.002]	[0.003]	[0.003]	[0.003]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls		Yes		Yes		Yes		Yes		Yes		Yes
Observations average	19,671	16,513	19,671	16,513	19,671	16,513	19,671	16,513	136,027	118,849	136,027	118,849
Mean control average	61.386	61.386	0.005	0.005	974.410	974.410			0.098	0.098	0.216	0.216
Observations alive during KR	14,916	11,758	14,916	11,758	14,916	11,758	14,916	11,758	85,635	68,457	85,635	68,457
Mean control alive during KR	61.039	59.020	0.005	0.005	961.806	930.878			0.126	0.126	0.302	0.302
Observations born after KR	4,755	4,755	4,755	4,755	4,755	4,755	4,755	4,755	47,996	47,996	47,996	47,996
Mean control born after KR	63.861	63.861	0.005	0.005	1012.070	1012.070			0.050	0.050	0.063	0.063

Every cell constitutes a separate regression of the instrument on the dependent variable in the header using household level data. The row names define the sample used based on whether the year of birth is before or after 1978. Results using expenditure data from the Cambodian socio-economic survey 1996–2014. 'Property taxes paid' denotes the amount of property tax paid in Cambodian Riel.'Share of property tax' is defined as the share of nonfood consumption in the last 12 months of the household. 'Property tax per sqm of housing' relates the property taxes to the size of the households house. The standardized z-score in Columns (7) and (8) combines the previous variables, accounting for the covariance between the variables. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Included individual covariates are: Urbanity and highest education. Year of birth and male fixed effects included in all estimations. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Rent extraction: Deforestation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	log Forest loss		Land concessions		Illegal logging		Illegal overuse	
Productive during KR	−0.827***	−0.501***	−0.074***	−0.048*	−0.037*	−0.032**	−0.051***	−0.051***
	(0.207)	(0.151)	(0.029)	(0.026)	(0.023)	(0.016)	(0.027)	(0.017)
	[0.178]	[0.131]	[0.025]	[0.027]	[0.019]	[0.016]	[0.018]	[0.016]
Commune characteristics		Yes		Yes		Yes		Yes
Year fixed effects					Yes	Yes	Yes	Yes
Mean non-productive	3.846	3.846	0.317	0.317	0.252	0.252	0.304	0.304
Observations	1,621	1,621	1,621	1,621	3,027	3,027	3,027	3,027

Commune level results using various data sources. log Forest loss is defined as the hectares of forest lost between 2000 and 2014, as calculated by Hansen et al. (2013). 'Land concessions' is a binary variable indicating whether any area in the communes was sold under a land concessions. The remaining variables are taken from the village questionnaires from the Cambodian socio-economic survey 1996–2014. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Population, age, and education

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Population: Census 1998				Population: Census 2008			
	log Population ≤ 15	log Population ∈ [10,19]	log Population ∈ [15,64]	log Population density	log Population ≤ 15	log Population ∈ [10,19]	log Population ∈ [15,64]	log Population density
Productive during KR	0.013	0.002	0.001	0.002	0.038	0.027	0.026	0.031
	(0.036)	(0.040)	(0.042)	(0.039)	(0.038)	(0.040)	(0.044)	(0.042)
	[0.031]	[0.033]	[0.034]	[0.034]	[0.035]	[0.036]	[0.039]	[0.037]
	Age: Cambodia socio economic survey 1996–2014							
	Age ∈ [0,9]	Age ∈ [10,19]	Age ∈ [20,29]	Age ∈ [30,39]	Age ∈ [40,49]	Age ∈ [50,59]	Age ∈ [60,69]	Age ∈ [70,79]
Productive during KR	0.002	−0.003	0.001	0.001	−0.002	0.000	−0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
	[0.002]	[0.002]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
	Education: Cambodia socio economic survey 1996–2014							
	Can read	Can write	Speaking English	Speaking French	Lower secondary school	Upper secondary school	Bachelor	Years of education
Productive during KR	0.003	0.004	−0.004	−0.001	0.000	−0.001	−0.003*	0.003
	(0.007)	(0.006)	(0.005)	(0.001)	(0.001)	(0.002)	(0.002)	(0.070)
	[0.003]	[0.004]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.033]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations population	1,570	1,570	1,570	1,570	1,614	1,614	1,614	1,614
Mean population	7.822	7.307	8.039	4.870	7.716	7.378	8.276	4.906
Observations age	393,591	393,591	393,591	393,591	393,591	393,591	393,591	393,591
Mean age	0.208	0.237	0.181	0.128	0.103	0.074	0.042	0.020
Observations education	266,586	266,600	347,794	347,794	289,062	289,062	289,062	289,062
Mean education	0.710	0.736	0.065	0.019	0.017	0.027	0.020	5.762

Data taken on population taken from commune level censuses in 1998 and 2008. Remaining data taken from the Cambodian socio economic survey 1996–2014. Regressions on age feature a binary variable if the age of the individual is within the indicated interval as the dependent variable. Point estimates then reflect differences in the distributions of productive and non-productive communes. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Assets and consumption

	(1) Rooms p.c.	(2) log Farm value	(3) log Size of farm	(4) log Consumption p.c.	(5) log Food expenditure p.c.	(6) log Non-food expenditure p.c.	(7) log Expenditure p.c.	(8) log Alcohol & tobacco
Average	−0.001	0.069	−0.050	0.003	0.011	0.011	0.007	−0.054
	(0.004)	(0.271)	(0.152)	(0.019)	(0.016)	(0.028)	(0.018)	(0.093)
	[0.004]	[0.220]	[0.123]	[0.016]	[0.014]	[0.026]	[0.016]	[0.095]
Never movers	−0.008	0.266	0.051	0.016	0.029	0.037	0.021	−0.014
	(0.006)	(0.238)	(0.153)	(0.024)	(0.022)	(0.040)	(0.022)	(0.279)
	[0.006]	[0.209]	[0.119]	[0.025]	[0.022]	[0.047]	[0.023]	[0.219]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean control average	0.378	8.329	4.852	8.361	7.870	6.735	8.259	0.700
Observations average	52,222	68,938	68,938	77,201	77,105	77,119	77,205	49,336
Mean control never movers	0.32	12.446	7.477	7.766	7.318	5.869	7.636	1.129
Observations never movers	11,241	13,659	13,659	18,745	18,735	18,720	18,747	6,153

Every cell constitutes a separate regression of the instrument on the dependent variable in the header using individual data from the Cambodian socio-economic survey 1996–2014. The row names define whether the individual ever moved and has been in that village since birth. Variabels with 'p.c.' are denominated by household size. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Poverty and income inequality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Poverty Rate (Head Count Ratio)		Poverty gap		Poverty severity		Gini coefficient	
Productive during KR	−0.009	−0.006	−0.005	−0.004	−0.003	−0.002	0.001	0.001
	(0.016)	(0.011)	(0.007)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)
	[0.015]	[0.010]	[0.007]	[0.005]	[0.004]	[0.003]	[0.003]	[0.004]
Commune characteristics		Yes		Yes		Yes		Yes
Observations	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470
Mean non-productive	0.388	0.388	0.119	0.119	0.052	0.052	0.304	0.304

Data about poverty taken from Cambodian EMIS census data on enrollment and school characteristics in 1997. Head count ratio is the proportion of a population that lives below the poverty line. Poverty gap is defined as the ratio by which the mean income of the poor falls below the poverty line. Poverty severity is defined as the squares of the poverty gaps relative to the poverty line. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Migration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Returned 1979/1980		Returned 1979		Return after displacement		In village during KR	
Alive during KR	0.004	0.011	−0.004	0.001	0.001	0.004	0.021	0.011
	(0.013)	(0.012)	(0.008)	(0.008)	(0.008)	(0.007)	(0.016)	(0.016)
	[0.012]	[0.013]	[0.009]	[0.009]	[0.007]	[0.007]	[0.014]	[0.014]
Older than 18 during KR	0.007	0.018	−0.004	0.002	0.007	0.012	0.027*	0.008
	(0.015)	(0.016)	(0.010)	(0.010)	(0.010)	(0.009)	(0.017)	(0.016)
	[0.014]	[0.016]	[0.010]	[0.011]	[0.008]	[0.009]	[0.014]	[0.014]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls		Yes		Yes		Yes		Yes
Mean control alive during KR	0.219	0.205	0.163	0.150	0.071	0.062	0.426	0.415
Observations alive during KR	75,112	60,707	75,112	60,707	75,112	60,707	75,112	60,707
Mean control older than 18 during KR	0.281	0.271	0.209	0.194	0.092	0.082	0.421	0.399
Observations older than 18 during KR	33,245	23,671	33,245	23,671	33,245	23,671	33,245	23,671

Every cell constitutes a separate regression of the instrument on the dependent variable in the header using individual data from the Cambodian socio-economic survey 1996–2014. The row names define the sample used based on whether the individual had reached adulthood in 1978. 'Returned 1979/1980' defines whether an individual returned in either of these years and stayed until the survey. 'Returned 1979' narrows this down to the 15% of individuals who returned directly after the genocide. 'Returned after displacement' is a variable that asked whether an individual returned in 1979 and gave the reason that you were displaced. The last two columns estimate the probability that an individual was in the commune during the genocide. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Market access or public infrastructure

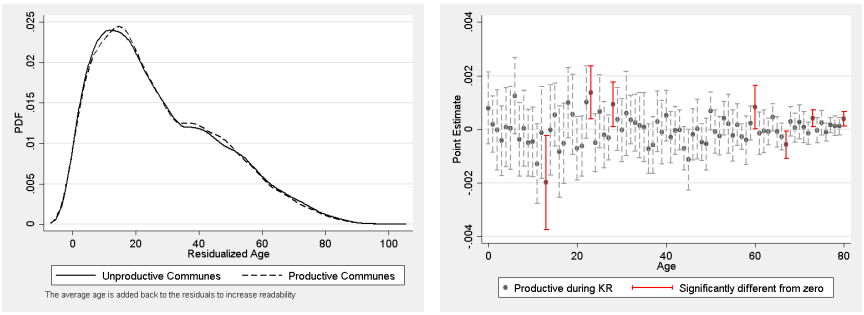
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Market access and public infrastructure							
	Distance to food store	Distance to bank	Distance to extension worker	Distance to market	Distance to agricultural market	% Pop with electricity	% Pop with piped water	Public hospital
Productive during KR	−0.337	−0.136	−1.159	−0.385	−0.217	0.789	−0.252	0.028
	(0.493)	(0.675)	(1.100)	(0.666)	(0.653)	(1.680)	(1.983)	(0.019)
	[0.493]	[0.645]	[1.010]	[0.620]	[0.591]	[1.384]	[1.275]	[0.019]
	School characteristics							
	Distance to school	Village with school	Director with degree	log School income p.c.	Enrollment rate	# Teachers	Student-teacher-ratio	Number of classes
Productive during KR	0.060	0.081	0.002	0.041	0.881	0.573	0.601	−0.085
	(0.059)	(0.229)	(0.002)	(0.069)	(1.004)	(3.526)	(1.627)	(0.314)
	[0.074]	[0.170]	[0.002]	[0.058]	[0.941]	[3.286]	[1.647]	[0.274]
Geographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean market access	6.272	10.698	18.123	7.060	7.190	37.027	27.236	0.119
Observations market access	3,593	3,665	3,724	3,684	3,614	3,812	3,812	3,027
Mean school characteristics	1.370	6.404	0.002	8.529	39.705	53.023	41.727	7.908
Observations school characteristics	1,593	1,621	1,543	1,436	4,518	1,592	1,592	1,592

Data on market access and public infrastructure taken from the village survey of the Cambodian socio economic survey 1996–2014. Data on School characteristics taken from Cambodian EMIS census data on enrollment and school characteristics in 1997–2002. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

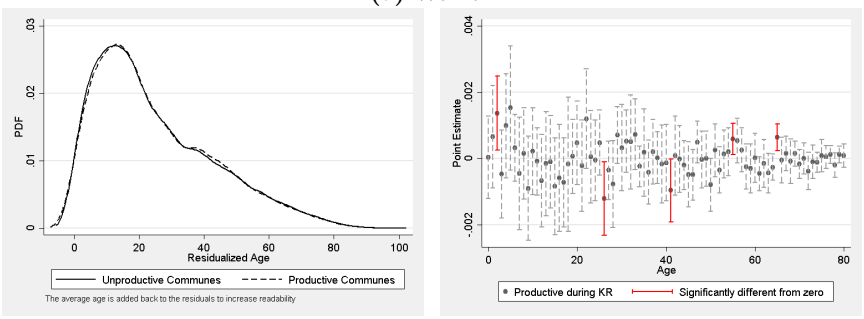
A Appendix

A.1 Figures

Figure A.1: Distributional effects: Sex ratio



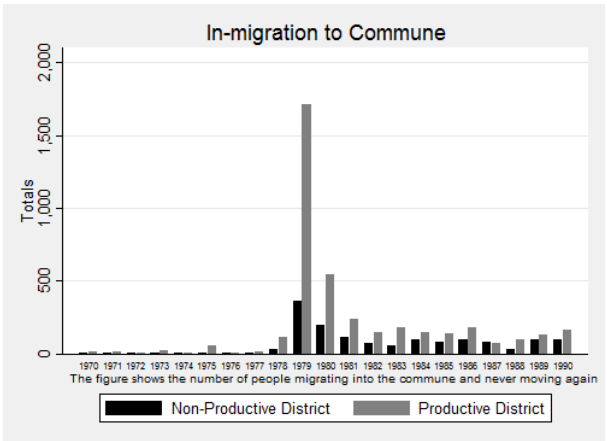
(a) Women



(b) Men

The distribution of age in the Cambodian socio economic survey 1996–2014, separated by the productiveness of the commune during the Khmer Rouge regime and sex of the respondent. Histogram on the residualized distributions (left) and point estimates on the difference between the distributions for every age between 0–80. Differences based on whether the commune was productive during the genocide. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics included and defined in Table 1.

Figure A.2: In Migration



In migration into commune, based on productiveness status of district during the Khmer Rouge. Source: Cambodian socio economic survey 1996

A.2 Tables

Table A.1: Growing season shocks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	#Bodies		#Massgraves		Memorial		Violence Index	
Productive during harvest season	391.671***	480.267**	7.728***	13.211***	0.023***	0.018	0.136***	0.147***
	(149.841)	(272.957)	(3.174)	(5.781)	(0.011)	(0.012)	(0.046)	(0.054)
	[133.149]	[243.396]	[2.822]	[3.767]	[0.008]	[0.012]	[0.033]	[0.053]
Productive during growing season	30.288	120.672	−2.136	3.458	0.003	−0.002	0.005	0.016
	(246.852)	(154.951)	(3.636)	(4.238)	(0.014)	(0.014)	(0.064)	(0.060)
	[166.737]	[159.584]	[3.922]	[3.959]	[0.008]	[0.012]	[0.037]	[0.050]
Interaction harvest × growing		−183.105		−11.332*		0.010		−0.022
		(466.051)		(7.378)		(0.015)		(0.086)
		[345.908]		[5.862]		[0.016]		[0.082]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean non-productive	407.873	407.873	7.094	7.094	0.035	0.035	−0.063	−0.063
Observations	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621

Robustness to including growing season controls. We include a binary variable indicating less rain during the growing season May–August, and its interaction in odd columns. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.2: Rice yields using different shock definitions

	(1)	(2)	(3)	(4)	(5)	(6)						
	Shock in survey year						Average over three previous years					
	Yield in tons per hectar			Standardized yields			Yield in tons per hectar			Standardized yields		
Productive during harvest season	0.173***	0.149**	0.213***	0.077***	0.066***	0.083***	0.201**	0.176**	0.185**	0.075**	0.064**	0.059*
	(0.087)	(0.080)	(0.095)	(0.027)	(0.025)	(0.028)	(0.098)	(0.089)	(0.086)	(0.036)	(0.031)	(0.032)
	[0.063]	[0.062]	[0.056]	[0.019]	[0.017]	[0.018]	[0.085]	[0.077]	[0.092]	[0.032]	[0.028]	[0.030]
Continuous	0.088**	0.068*	0.078**	0.039***	0.031***	0.035***	0.085**	0.062*	0.063*	0.041***	0.032**	0.032**
	(0.052)	(0.044)	(0.048)	(0.015)	(0.013)	(0.015)	(0.045)	(0.037)	(0.039)	(0.017)	(0.015)	(0.015)
	[0.040]	[0.035]	[0.032]	[0.012]	[0.010]	[0.011]	[0.036]	[0.032]	[0.038]	[0.014]	[0.013]	[0.015]
Continuous, one SD	0.178***	0.183***	0.194***	0.067***	0.069***	0.074***	0.107**	0.085*	0.112	0.049**	0.040**	0.050**
	(0.065)	(0.073)	(0.088)	(0.020)	(0.023)	(0.026)	(0.059)	(0.054)	(0.056)	(0.021)	(0.019)	(0.018)
	[0.051]	[0.059]	[0.057]	[0.019]	[0.021]	[0.021]	[0.050]	[0.047]	[0.068]	[0.019]	[0.019]	[0.022]
Raw continuous variation	0.079**	0.067*	0.112***	0.039***	0.034***	0.053***	0.072	0.045	0.080	0.058***	0.048**	0.058
	(0.030)	(0.033)	(0.047)	(0.012)	(0.012)	(0.019)	(0.052)	(0.066)	(0.085)	(0.019)	(0.023)	(0.033)
	[0.035]	[0.036]	[0.041]	[0.013]	[0.013]	[0.017]	[0.073]	[0.077]	[0.117]	[0.022]	[0.022]	[0.037]
Commune characteristics		Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Year × province			Yes			Yes			Yes			Yes
Mean non-productive	3.041	3.041	3.041				3.041	3.041	3.041			
Observations	3,772	3,772	3,772	3,772	3,772	3,772	3,772	3,772	3,772	3,772	3,772	3,772

Every cell constitutes a separate regression of the row instrument on the dependent variable in the header from the Cambodian socio-economic survey 1996–2014. More productive implies relatively less rain during the harvest season. Yields are calculated at the individual level and then aggregated to the commune. In columns (1)–(6), the shock in the survey year is used while in columns (6)–(12) the average of the previous three years is taken. The variable 'Standardized yields' indicate standardized yields across Cambodia in a given year and the point estimates can be interpreted as standard deviation increases in productivity. One standard deviation is 3.213. 'Productive during harvest season' is a binary variable indicating whether the commune was above average productive during the harvest season. 'Continuous' is the continuous version of our standard binary instrument. After standardizing each commune by its mean and standard deviation, we standardize again within each province to match the Khmer Rouge leaders' allocation process. 'Continuous, one SD' takes the value one if the within-province-standardized rain is larger than 0.5, minus one if it is smaller than -0.5 and zero otherwise, introducing a spread of one standard deviation between productive and unproductive communes, introducing a spread of one standard deviation between productive and unproductive communes. 'Raw continuous variation' is the rainfall in each commune standardized by the commune mean and standard deviation. Province fixed effects, year fixed effects, and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Communes that were more productive during the Khmer Rouge do not have higher contemporaneous yields. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.3: Alternative shock and violence definitions

	(1) #Bodies	(2) #Mass graves	(3) Memorial	(4) Violence Index	(5) Bodies per capita	(6) Bodies per sqkm	(7) Mass graves per capita	(8) Mass graves per sqkm	(9) log Bodies	(10) log Bodies, per capita	(11) log Bodies, per sqkm	(12) log Mass graves	(13) log Mass graves, per capita	(14) log Mass graves, per sqkm
Productive during KR	387.276***	8.038***	0.022***	0.135***	1.245***	7.459	0.026*	0.262***	0.183**	0.072***	0.148***	0.111***	0.015**	0.055***
	(150.958)	(3.265)	(0.010)	(0.043)	(0.595)	(4.109)	(0.014)	(0.085)	(0.079)	(0.027)	(0.044)	(0.042)	(0.006)	(0.015)
	[138.934]	[2.856]	[0.008]	[0.031]	[0.458]	[4.876]	[0.013]	[0.077]	[0.077]	[0.024]	[0.039]	[0.038]	[0.006]	[0.012]
'Continuous'	150.140***	4.006***	0.012***	0.065***	0.565***	2.652	0.014*	0.119***	0.082*	0.028*	0.070***	0.045*	0.007**	0.025***
	(57.207)	(1.606)	(0.004)	(0.016)	(0.209)	(2.399)	(0.007)	(0.044)	(0.051)	(0.014)	(0.025)	(0.025)	(0.003)	(0.008)
	[50.660]	[1.547]	[0.004]	[0.013]	[0.199]	[2.307]	[0.008]	[0.040]	[0.047]	[0.015]	[0.022]	[0.024]	[0.004]	[0.007]
'Continuous, one SD'	343.592***	7.056***	0.012**	0.093***	1.181***	5.431	0.023**	0.193***	0.190***	0.069***	0.138***	0.091***	0.012***	0.039***
	(128.034)	(2.760)	(0.004)	(0.022)	(0.302)	(4.430)	(0.009)	(0.070)	(0.063)	(0.017)	(0.033)	(0.034)	(0.004)	(0.012)
	[121.771]	[2.396]	[0.005]	[0.020]	[0.312]	[4.571]	[0.009]	[0.063]	[0.056]	[0.018]	[0.031]	[0.027]	[0.004]	[0.009]
Raw continuous variation	1025.012***	24.017***	0.032*	0.281***	3.554***	31.724***	0.078**	0.679***	0.326	0.152**	0.307***	0.242**	0.043***	0.133***
	(411.779)	(8.154)	(0.017)	(0.091)	(1.095)	(10.391)	(0.031)	(0.189)	(0.212)	(0.057)	(0.105)	(0.124)	(0.014)	(0.034)
	[382.599]	[7.081]	[0.018]	[0.074]	[1.149]	[9.948]	[0.033]	[0.180]	[0.209]	[0.063]	[0.104]	[0.119]	[0.015]	[0.029]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean non-productive	407.873	7.094	0.035		1.693	23.189	0.027	0.162	0.714	0.189	0.312	0.317	0.018	0.057
Observations	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621	1,621

Various indicators of violence, denominated by population or area, and taken the logarithm. 'Productive during KR' is a binary variable indicating whether the commune was above average productive during the genocide. 'Continuous' is the continuous version of our standard binary instrument. After standardizing each commune by its mean and standard deviation, we standardize again within each province to match the Khmer Rouge leaders' allocation process. 'Continuous, one SD' takes the value one if the within-province-standardized rain is larger than 0.5, minus one if it is smaller than -0.5 and zero otherwise, introducing a spread of one standard deviation between productive and unproductive communes. 'Raw continuous variation' is the rainfall in each commune standardized by the commune mean and standard deviation. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.4: Dropping large communes: Violence definitions

	(1) #Bodies	(2) #Mass graves	(3) Memorial	(4) Violence Index	(5) Bodies per capita	(6) Bodies per sqkm	(7) Mass graves per capita	(8) Mass graves per sqkm	(9) log Bodies	(10) log Bodies, per capita	(11) log Bodies, per sqkm	(12) log Mass graves	(13) log Mass graves, per capita	(14) log Mass graves, per sqkm
All communes	387.276***	8.038***	0.022***	0.135***	1.245***	7.459	0.026*	0.262***	0.183**	0.072***	0.148***	0.111***	0.015**	0.055***
(1,621 communes)	(150.958)	(3.265)	(0.010)	(0.043)	(0.595)	(4.109)	(0.014)	(0.085)	(0.079)	(0.027)	(0.044)	(0.042)	(0.006)	(0.015)
	[138.934]	[2.856]	[0.008]	[0.031]	[0.458]	[4.876]	[0.013]	[0.077]	[0.077]	[0.024]	[0.039]	[0.038]	[0.006]	[0.012]
All communes≤ 99th percentile	384.081***	7.821***	0.022***	0.132***	1.253***	6.488	0.026*	0.244***	0.165**	0.070***	0.136***	0.103***	0.015**	0.051***
(1,605 communes)	(154.943)	(3.381)	(0.010)	(0.042)	(0.600)	(4.283)	(0.014)	(0.093)	(0.084)	(0.027)	(0.046)	(0.041)	(0.007)	(0.016)
	[141.230]	[2.894]	[0.007]	[0.030]	[0.461]	[5.011]	[0.013]	[0.081]	[0.081]	[0.024]	[0.039]	[0.038]	[0.006]	[0.012]
All communes≤ 95th percentile	418.539**	7.405**	0.026***	0.147***	1.336**	14.497***	0.024	0.247**	0.185**	0.078***	0.144***	0.116***	0.015**	0.053***
(1,540 communes)	(197.018)	(3.963)	(0.012)	(0.051)	(0.736)	(6.069)	(0.018)	(0.111)	(0.093)	(0.033)	(0.053)	(0.041)	(0.008)	(0.019)
	[175.937]	[3.309]	[0.009]	[0.040]	[0.578]	[5.470]	[0.017]	[0.096]	[0.086]	[0.028]	[0.044]	[0.037]	[0.007]	[0.015]
All communes≤ 90th percentile	315.459***	8.130**	0.020**	0.121***	1.203**	13.246***	0.026	0.267**	0.157*	0.071**	0.125***	0.114***	0.016**	0.055***
(1,459 communes)	(140.213)	(4.106)	(0.009)	(0.043)	(0.754)	(5.886)	(0.019)	(0.121)	(0.092)	(0.036)	(0.055)	(0.039)	(0.009)	(0.020)
	[114.167]	[3.469]	[0.008]	[0.034]	[0.545]	[4.951]	[0.018]	[0.105]	[0.080]	[0.028]	[0.044]	[0.036]	[0.008]	[0.016]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Every row drops communes that have a pre-genocide population above the 99th, 95th, or 90th, percentile of the distribution. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.5: Alternative shock definitions: Election results

	National election 2013					Commune elections 2012 and 2017				
	(1) Vote share CNRP	(2) Vote share CPP	(3) Turnout	(4) Vote share CPP ≥ 50%	(5) Margin -|CPP-CNRP|	(6) Vote share CNRP	(7) Vote share CPP	(8) Turnout	(9) Vote share CPP ≥ 50%	(10) Margin -|CPP-CNRP|
Productive during KR	4.890***	−4.218***	2.939**	−0.155***	1.754	2.100***	−2.016***	3.080**	−0.069***	2.383***
	(0.879)	(0.876)	(1.474)	(0.038)	(1.147)	(0.680)	(0.811)	(1.686)	(0.024)	(1.048)
	[0.600]	[0.614]	[1.292]	[0.026]	[1.305]	[0.493]	[0.565]	[1.478]	[0.019]	[0.851]
Continuous	2.992***	−2.611***	1.282	−0.092***	1.534*	1.242***	−1.259***	1.201	−0.043***	1.526***
	(0.489)	(0.487)	(0.795)	(0.020)	(0.805)	(0.380)	(0.463)	(0.878)	(0.012)	(0.610)
	[0.330]	[0.328]	[0.795]	[0.011]	[0.826]	[0.316]	[0.349]	[0.905]	[0.012]	[0.478]
Continuous, one SD	3.368***	−2.934***	1.715*	−0.104***	1.809*	1.286***	−1.237***	1.661	−0.040***	1.404***
	[0.362]	[0.352]	[0.918]	[0.014]	[0.934]	[0.348]	[0.370]	[1.029]	[0.015]	[0.513]
	[0.362]	[0.352]	[0.918]	[0.014]	[0.934]	[0.348]	[0.370]	[1.029]	[0.015]	[0.513]
Raw continuous variation	13.085***	−10.846***	2.716	−0.393***	4.522	4.265***	−4.584***	2.611	−0.176***	5.165**
	(2.502)	(2.724)	(3.685)	(0.117)	(4.090)	(1.862)	(2.157)	(3.316)	(0.053)	(2.772)
	[2.023]	[1.986]	[3.458]	[0.078]	[3.893]	[1.564]	[1.669]	[3.385]	[0.046]	[2.374]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects						Yes	Yes	Yes	Yes	Yes
Mean non-productive	37.512	54.782	77.274	0.593	−27.889	33.683	61.664	75.427	0.782	−31.053
Observations	1,621	1,621	1,621	1,621	1,621	3,230	3,230	3,230	3,230	3,230

Data taken from the official election results. 'Vote share CNRP' in the communal elections 2012 is calculated as the combined votes of the 'Sam Rainsy Party' and the 'Human Rights Party'. 'Turnout' is calculated using the electorate information from the national elections in 2013. 'Vote share CPP ≥ 50%' is a binary variable indicating an absolute majority for the incumbent party CPP. 'Margin -|CPP-CNRP|' is calculated as the vote share of CPP minus CNRP and a variation of the competitiveness measure by Besley et al. (2010). 'Productive during KR' is a binary variable indicating whether the commune was above average productive during the genocide. 'Continuous' is the continuous version of our standard binary instrument. After standardizing each commune by its mean and standard deviation, we standardize again within each province to match the Khmer Rouge leaders' allocation process. 'Continuous, one SD' takes the value one if the within-province-standardized rain is larger than 0.5, minus one if it is smaller than -0.5 and zero otherwise, introducing a spread of one standard deviation between productive and unproductive communes. 'Raw continuous variation' is the rainfall in each commune standardized by the commune mean and standard deviation. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.6: Dropping large communes: Election results

	National election 2013					Commune elections 2012 and 2017				
	(1) Vote share CNRP	(2) Vote share CPP	(3) Turnout	(4) Vote share CPP ≥ 50%	(5) Margin -|CPP-CNRP|	(6) Vote share CNRP	(7) Vote share CPP	(8) Turnout	(9) Vote share CPP ≥ 50%	(10) Margin -|CPP-CNRP|
All communes	4.890***	−4.218***	2.939**	−0.155***	1.754	2.100***	−2.016***	3.080**	−0.069***	2.383***
(1,621 communes)	(0.879)	(0.876)	(1.474)	(0.038)	(1.147)	(0.680)	(0.811)	(1.686)	(0.024)	(1.048)
	[0.600]	[0.614]	[1.292]	[0.026]	[1.305]	[0.493]	[0.565]	[1.478]	[0.019]	[0.851]
All communes≤ 99th percentile	4.908***	−4.237***	2.847**	−0.154***	1.830	2.104***	−2.027***	2.420**	−0.070***	2.027***
(1,605 communes)	(0.890)	(0.888)	(1.482)	(0.039)	(1.144)	(0.686)	(0.821)	(1.698)	(0.024)	(1.072)
	[0.605]	[0.618]	[1.294]	[0.027]	[1.295]	[0.496]	[0.571]	[1.486]	[0.019]	[0.866]
All communes≤ 95th percentile	4.090***	−3.511***	1.770	−0.123***	2.110	1.853***	−1.642***	1.606	−0.054***	2.095**
(1,540 communes)	(0.879)	(0.905)	(1.611)	(0.040)	(1.230)	(0.696)	(0.839)	(1.782)	(0.022)	(1.138)
	[0.625]	[0.634]	[1.467]	[0.026]	[1.382]	[0.519]	[0.586]	[1.543]	[0.017]	[0.908]
All communes≤ 90th percentile	3.899***	−3.276***	1.897	−0.119***	1.869	1.751***	−1.529**	1.754	−0.056***	2.020**
(1,459 communes)	(0.950)	(0.973)	(1.644)	(0.043)	(1.335)	(0.782)	(0.937)	(1.821)	(0.024)	(1.283)
	[0.658]	[0.662]	[1.478]	[0.027]	[1.428]	[0.565]	[0.638]	[1.565]	[0.017]	[1.004]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects						Yes	Yes	Yes	Yes	Yes

Data taken from the official election results. 'Vote share CNRP' in the communal elections 2012 is calculated as the combined votes of the 'Sam Rainsy Party' and the 'Human Rights Party'. 'Turnout' is calculated using the electorate information from the national elections in 2013. 'Vote share CPP ≥ 50%' is a binary variable indicating an absolute majority for the incumbent party CPP. 'Margin -|CPP-CNRP|' is calculated as the vote share of CPP minus CNRP and a variation of the competitiveness measure by Besley et al. (2010). Every row drops communes that have a pre-genocide population above the 99th, 95th, or 90th, percentile of the distribution. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7: Results from Asia Foundation: Adjusting for multiple hypothesis testing for the average effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Without individual controls				With individual controls				Summary Statistics			
									Non-productive communes		Productive communes	
	beta	s.e.	p-value	FDR adj. p-value	beta	s.e.	p-value	FDR adj. p-value	Mean	S.D.	Mean	S.D.
Category: Voter informedness												
Frequency: Listen to radio	0.036	(0.033)	0.269	0.506	0.047	(0.033)	0.149	0.271	1.798	0.873	1.818	0.876
Frequency: Watch TV	0.131	(0.061)	0.031	0.129	0.132	(0.056)	0.018	0.069	2.870	1.411	3.028	1.451
Know parties are different	0.010	(0.051)	0.839	0.887	0.004	(0.053)	0.956	0.682	2.715	1.239	2.744	1.255
Can name representative	0.047	(0.022)	0.033	0.129	0.047	(0.020)	0.018	0.069	0.116	0.321	0.182	0.386
Know whether representative visited	0.027	(0.021)	0.211	0.506	0.028	(0.020)	0.171	0.271	0.194	0.396	0.229	0.420
Know role of parties in assembly	0.018	(0.024)	0.470	0.887	0.021	(0.023)	0.378	0.426	0.305	0.461	0.347	0.476
Understands purpose of democracy	0.014	(0.028)	0.609	0.887	0.025	(0.025)	0.325	0.426	0.580	0.494	0.542	0.499
z-Score	0.069	(0.025)			0.067	(0.023)						
Category: Support for democracy												
Democracy preferred to strong leader	0.001	(0.014)	0.938	0.350	0.002	(0.033)	0.337	0.252	0.904	0.295	0.892	0.311
One can vote against the government	−0.035	(0.019)	0.069	0.137	−0.033	(0.018)	0.068	0.099	0.854	0.353	0.839	0.368
Not voted because told to vote	0.028	(0.019)	0.144	0.177	0.028	(0.018)	0.124	0.115	0.941	0.236	0.967	0.180
Government and people are equals	0.053	(0.023)	0.024	0.078	0.052	(0.027)	0.051	0.090	0.366	0.482	0.434	0.496
All Political parties should hold events	0.030	(0.013)	0.020	0.078	0.029	(0.013)	0.031	0.088	0.905	0.293	0.924	0.265
Democracy empowers People	0.035	(0.020)	0.089	0.144	0.050	(0.021)	0.016	0.077	0.141	0.348	0.137	0.345
Women make own choice in voting	0.035	(0.012)	0.002	0.026	0.035	(0.012)	0.004	0.043	0.858	0.349	0.889	0.314
Women as a representative	0.046	(0.036)	0.207	0.208	0.049	(0.036)	0.172	0.115	1.080	0.901	1.115	0.893
Would like to see more women	0.011	(0.012)	0.355	0.247	0.015	(0.011)	0.181	0.115	0.944	0.230	0.954	0.209
Reserved top list place for women	0.038	(0.026)	0.150	0.177	0.048	(0.024)	0.040	0.088	0.542	0.499	0.570	0.496
z-Score	0.041	(0.012)			0.046	(0.012)						
Category: Local civic participation												
Member of #civil associations (CA)	−0.112	(0.043)	0.009	0.017	−0.101	(0.039)	0.009	0.013	0.416	0.910	0.346	0.825
Took part in a meeting of a CA	−0.028	(0.022)	0.201	0.088	−0.031	(0.022)	0.152	0.083	0.218	0.413	0.208	0.422
Helped reach a decision of a CA	−0.039	(0.015)	0.010	0.017	−0.034	(0.013)	0.008	0.013	0.129	0.336	0.120	0.325
Local government affects my life	−0.118	(0.044)	0.008	0.017	−0.134	(0.040)	0.001	0.004	0.535	0.499	0.434	0.496
Would report election crime	−0.102	(0.067)	0.127	0.088	−0.068	(0.060)	0.262	0.118	3.228	1.065	3.170	1.129
z-Score	−0.076	(0.023)			−0.081	(0.021)						
Category: Trust												
Trust in neighborhood	−0.204	(0.053)	0.000	0.001	−0.181	(0.060)	0.002	0.005	0.196	0.397	0.202	0.402
Trust in general	−0.039	(0.020)	0.054	0.028	−0.039	(0.019)	0.040	0.021	2.485	0.702	2.257	0.780
z-Score	−0.123	(0.031)			−0.126	(0.030)						

Individual covariates are ethnicity, year of birth, education, income, interview circumstance, rural status and housing status. 'FDR adj. p-value' represent p-values adjusted for false detection rates following Anderson (2008). Zone fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics included in all estimations and are defined in Table 1. Standard errors and p-values corrected for spatial dependence within 1 degree.

Table A.8: Alternative Shock Definitions: Asia Foundation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Voter informedness			Support for democracy			Local civic participation			Trust		
	All	Alive During KR	Born After KR	All	Alive During KR	Born After KR	All	Alive During KR	Born After KR	All	Alive During KR	Born After KR
Productive during KR	0.067***	0.049*	0.110***	0.046***	0.054***	0.022	−0.081***	−0.099***	−0.009	−0.126***	−0.131***	−0.123***
	0.027	0.032	0.033	0.009	0.009	0.014	0.022	0.023	0.032	0.035	0.036	0.055
	[0.023]	[0.028]	[0.033]	[0.012]	[0.012]	[0.019]	[0.021]	[0.024]	[0.021]	[0.030]	[0.033]	[0.045]
Continuously within province	0.055***	0.042***	0.089***	0.022***	0.025***	0.022	−0.038***	−0.045***	0.011	−0.079***	−0.072***	−0.080***
	0.018	0.018	0.021	0.005	0.005	0.011	0.013	0.012	0.018	0.014	0.011	0.035
	[0.015]	[0.016]	[0.021]	[0.006]	[0.006]	[0.016]	[0.014]	[0.013]	[0.015]	[0.016]	[0.013]	[0.029]
Continuously within province, one SD	0.047**	0.034	0.065***	0.021**	0.027***	0.012	−0.041***	−0.048***	0.006	−0.083***	−0.069***	−0.089***
	0.026	0.029	0.024	0.007	0.007	0.016	0.017	0.021	0.016	0.017	0.017	0.032
	[0.023]	[0.026]	[0.022]	[0.009]	[0.010]	[0.017]	[0.015]	[0.016]	[0.016]	[0.018]	[0.017]	[0.030]
Raw Continuous Variation	0.130**	0.107*	0.106	0.087***	0.128***	−0.027	−0.143**	−0.141**	−0.053	−0.315***	−0.270***	−0.271**
	0.072	0.076	0.076	0.022	0.018	0.035	0.063	0.058	0.093	0.109	0.100	0.165
	[0.054]	[0.060]	[0.065]	[0.029]	[0.024]	[0.046]	[0.059]	[0.063]	[0.067]	[0.090]	[0.093]	[0.135]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zone fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,999	1,321	681	1,999	1,321	681	1,999	1,321	681	1,999	1,321	681

Individual covariates are ethnicity, year of birth, education, income, interview circumstance, rural status and housing status. 'Productive during KR' is a binary variable indicating whether the commune was above average productive during the genocide. 'Continuously within province' is the continuous version of our standard binary instrument. After standardizing each commune by its mean and standard deviation, we standardize again within each province to match the Khmer Rouge leaders allocation process. 'Continuously within province, on SD' takes the value one if the within-province-standardized rain is larger than 0.5, minus one if it is smaller than -0.5 and zero otherwise, introducing a spread of one standard deviation between productive and unproductive communes. 'Raw continuous variation' is the rainfall in each commune standardized by the commune mean and standard deviation. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.9: Exit and voice Using province fixed effects instead

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Voter informedness		Support for democracy		Local civic participation		Trust	
Average effect	0.051**	0.058**	0.044***	0.049***	−0.043**	−0.038**	−0.094***	−0.096***
	0.031	0.032	0.012	0.012	0.022	0.020	0.023	0.022
	[0.026]	[0.027]	[0.013]	[0.013]	[0.018]	[0.018]	[0.020]	[0.020]
Alive during KR	0.034	0.049*	0.058***	0.064***	−0.067***	−0.065***	−0.080***	−0.090***
	0.035	0.037	0.015	0.015	0.027	0.025	0.023	0.026
	[0.027]	[0.029]	[0.015]	[0.015]	[0.021]	[0.021]	[0.021]	[0.022]
Born After KR	0.069	0.037	0.019	0.023	0.054	0.047	−0.089*	−0.080
	0.043	0.030	0.026	0.028	0.036	0.040	0.050	0.046
	[0.047]	[0.035]	[0.027]	[0.029]	[0.035]	[0.035]	[0.051]	[0.051]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls		Yes		Yes		Yes		Yes

Results using questions from the Asia Foundation 2003 and 2013. Individual results per category show in Table 4. Individual covariates are ethnicity, year of birth, education, income, interview circumstance, rural status and housing status. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Zone fixed effects sort provinces in four zones to improve power. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.10: Alternative shock definitions: Local state avoidance

	(1) Property taxes paid	(2) Share of property tax	(3) Property tax per sqm of housing	(4) Standardized tax score	(5) Working for the government	(6) Self employment
Productive during KR	−6.902**	−0.001*	−133.906***	−0.021**	−0.008***	0.007*
	(3.403)	(0.000)	(66.202)	(0.009)	(0.003)	(0.005)
	[2.699]	[0.000]	[41.728]	[0.011]	[0.002]	[0.004]
Continuously within province	−3.739*∗	−0.000	−84.319**	−0.011*	−0.006***	0.007**
	(2.131)	(0.000)	(47.601)	(0.005)	(0.002)	(0.003)
	[1.648]	[0.000]	[34.072]	[0.006]	[0.002]	[0.003]
Continuously within province, one SD	−2.919*	−0.000**	−111.218**	−0.014***	−0.006***	0.006**
	(2.322)	(0.000)	(56.804)	(0.007)	(0.002)	(0.003)
	[1.555]	[0.000]	[45.673]	[0.004]	[0.002]	[0.003]
Raw Continuous variation	−4.844	−0.001	−98.719	−0.025	−0.027***	0.019
	(9.680)	(0.001)	(183.033)	(0.021)	(0.008)	(0.016)
	[7.718]	[0.001]	[128.959]	[0.021]	[0.008]	[0.013]
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Mean non-productive	61.386	0.005	974.410	0.069	0.314	
Observations	16,513	16,513	16,513	16,513	118,849	118,849

'Productive during KR' is a binary variable indicating whether the commune was above average productive during the genocide. 'Continuously within province' is the continuous version of our standard binary instrument. After standardizing each commune by its mean and standard deviation, we standardize again within each province to match the Khmer Rouge leaders allocation process. 'Continuously within province, on SD' takes the value one if the within-province-standardized rain is larger than 0.5, minus one if it is smaller than -0.5 and zero otherwise, introducing a spread of one standard deviation between productive and unproductive communes. 'Raw continuous variation' is the rainfall in each commune standardized by the commune mean and standard deviation. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.11: Alternative shock definitions: Deforestation

	(1) log Forest loss	(2) Land concessions	(3) Illegal logging	(4) Illegal overuse
Productive during KR	−0.501***	−0.048*	−0.032**	−0.051***
	(0.151)	(0.026)	(0.016)	(0.017)
	[0.131]	[0.027]	[0.016]	[0.016]
Continuously within province	−0.297***	−0.035***	−0.021**	−0.028***
	(0.066)	(0.013)	(0.009)	(0.010)
	[0.067]	[0.013]	[0.009]	[0.009]
Continuously within province, one SD	−0.365***	−0.032*	−0.028***	−0.028**
	(0.100)	(0.018)	(0.009)	(0.013)
	[0.097]	[0.018]	[0.011]	[0.011
Raw Continuous variation	−1.282***	−0.147*	−0.055	−0.108***
	(0.270)	(0.066)	(0.035)	(0.039)
	[0.289]	[0.077]	[0.037]	[0.033]
Commune characteristics	Yes	Yes	Yes	Yes
Year fixed effects			Yes	Yes
Mean non-productive	3.846	0.317	0.252	0.304
Observations	1,621	1,621	3,027	3,027

'Productive during KR' is a binary variable indicating whether the commune was above average productive during the genocide. 'Continuously within province' is the continuous version of our standard binary instrument. After standardizing each commune by its mean and standard deviation, we standardize again within each province to match the Khmer Rouge leaders allocation process. 'Continuously within province, on SD' takes the value one if the within-province-standardized rain is larger than 0.5, minus one if it is smaller than -0.5 and zero otherwise, introducing a spread of one standard deviation between productive and unproductive communes. 'Raw continuous variation' is the rainfall in each commune standardized by the commune mean and standard deviation. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.12: Dropping large communes: Deforestation

	(1) log Forest loss	(2) Land concessions	(3) Illegal logging	(4) Illegal overuse
Productive during KR	−0.501***	−0.048*	−0.032**	−0.051***
(1,621 communes)	(0.151)	(0.026)	(0.016)	(0.017)
	[0.131]	[0.027]	[0.016]	[0.016]
All communes≤ 99th percentile	−0.494***	−0.050*	−0.032**	−0.049***
(1,605 communes)	(0.153)	(0.026)	(0.016)	(0.018)
	[0.133]	[0.026]	[0.016]	[0.016]
All communes≤ 95th percentile	−0.376***	−0.032	−0.030*	−0.049***
(1,540 communes)	(0.149)	(0.026)	(0.017)	(0.019)
	[0.106]	[0.024]	[0.017]	[0.017
All communes≤ 90th percentile	−0.402***	−0.035	−0.030*	−0.049***
(1,459 communes)	(0.157)	(0.026)	(0.017)	(0.019)
	[0.105]	[0.024]	[0.017]	[0.017]
Geographic controls	Yes	Yes	Yes	Yes
Commune characteristics	Yes	Yes	Yes	Yes
Year fixed effects			Yes	Yes

Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.13: Shift in sectoral composition

	(1)	(2)	(3)	(4)	(5)	(6)
	log #Establishments		Employment share: Agriculture		Employment share: Manufacturing	
Productive during KR	0.054	0.063	−2.025	−1.995**	2.807***	2.734***
	(0.085)	(0.057)	(3.040)	(1.181)	(1.020)	(0.649)
	[0.066]	[0.046]	[1.810]	[0.838]	[0.994]	[0.760]
Geographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Commune characteristics		Yes		Yes		Yes
Observations	1,611	1,611	1,614	1,614	1,614	1,614
Mean non-productive	5.237	5.237	79.213	79.213	5.578	5.578

Data on the number of establishments taken from the economic census in 2011. Data about the sectoral composition taken from population census in 2008. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.14: Public investments and night time lights

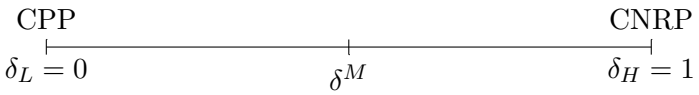
	(1)	(2)	(3)	(4)	(5)	(6)
	Maximum night time light	Any night time light 2013	Night time light in 2013	#Markets in commune	Distance to health center	Radio access
Productive during KR	−1.128	0.025	−0.216	−0.020	0.027	0.022
	(0.970)	(0.029)	(0.613)	(0.028)	(0.030)	(0.019)
	[0.805]	[0.018]	[0.458]	[0.032]	[0.033]	[0.018]
Geographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Commune characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Controlling for 1992 value		Yes	Yes			
Observations	1,621	1,621	1,621	1,621	1,621	1,621
Mean non-productive	9.404	0.409	7.164	0.424	0.688	0.881

Data on the number of markets, access to health facilities, and radio stations obtained from Open Development Cambodia. Night time light data from NOAA covering the years 1992–2013. 'Maximum night time light' indicates the highest observed mean luminosity in the commune. 'Any night time light 2013' is a binary variable indicating whether the mean in 2013 was non-zero. Province fixed effects and a second-degree polynomial in latitude in longitude included in all regressions. Commune characteristics are defined in Table 1. Standard errors clustered by 24 provinces shown in parenthesis and corrected for spatial dependence within 1 degree in brackets. Symbols reflect significance level for spatially corrected standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

B Model Extension: Rent Extraction

The simple framework laid out in Section 3 can be extended to incorporate rent extraction and the politicians response to state repression.

Figure B.1: Model space for δ



Here, $\delta^M = \theta^M + \mu$ depicts the position of the median voter, given her history of state repression θ^M and the fraction of resources a CPP politician can extract $\mu \in [0, 1]$. The politician can extract only extract μ if she wins the election

$$\Pr[\text{CPP win}] = \begin{cases} 1 & \text{if } \mathbb{E}\left[\theta^M\right] + \mu < 0.5 \\ 0 & \text{else.} \end{cases} \tag{5}$$

Thus, the optimal extraction rate is thus determined by the expectation of θ^M. If θ^M is uniformly distributed over the interval $[a, b]$, the extraction rate depends on the politician's knowledge of the bounds:

$$\mu = \begin{cases} 0 & \text{if } \theta^M \in [0, 1] \\ 0.4 & \text{if } \theta^M \in [0, 0.2] \\ 0.1 & \text{if } \theta^M \in [0.3, 0.5] \end{cases} \tag{6}$$

In the first case, without any information, the politician chooses not to extract any rent, as the expected value of θ^M is 0.5. In the second case of low initial state repression, the politician extracts maximum rents in order to maximize her utility. Finally, in the case of high state repression, the politician rationally expects the median voter to have high reservations against a reelection and hence chooses to extract as little rent as possible. Thus, our framework predicts low extraction in high state repression areas and vice versa.

C Questions from the Asia Foundation:

Table C.1: Informedness

Frequency: Listen to radio	How frequently do you listen to radio?
Frequency: Watch TV	How frequently do you watch TV?
Know parties are different	What difference do you see, if any, between the different political parties in Cambodia today?
Can name representative	Many people are not sure of the names of their province's representative in the National Assembly. Can you name yours?
Know whether representative visited	As far as you know, have any of the candidates elected to the National Assembly who represent your province visited your area since the last National Assembly election?
Know role of parties in assembly	Different people have different ideas about what the people in the National Assembly do? What do you think they do?
Understands purpose of democracy	If a country is called a democracy, what does this mean to you? (Any answer)

Table C.2: Category: Preferences

Democracy preferred to strong leader	On some occasions, democracy doesn't work. When that happens there are people that say we need a strong leader who doesn't have to be elected through voting. Others say that even if things don't function, democracy is always the best. What do you think?
One can vote against the government	Some people say, "Even if we are not happy with the government, we cannot vote against it. They are the high authority." Other people say, "If you are unhappy with the government, you should vote for another party to let the government know you are unhappy." Which of these is closer to your view?
Not voted because told to vote	What is the most important reason why you want to vote? (Not because she was told to)
Government and people are equals	Here are some different ways people think about the government. The first is that the people and government should be equals, and government should listen to the criticisms voiced by people. The second is that government should be like a father and the people like a child he must look after. The third is that the government is like a boss and the people like a worker who must obey. Which of these is closest to your view of what the government should be?
All Political parties should hold events	Do you think that all political parties, even the ones most people do not like, should be allowed to hold meetings in your area?
Democracy empowers People	If a country is called a democracy, what does this mean to you? (Answer: People are empowered)
Women make own choice in voting	Do you think a woman should make her own choice for voting, or do you think men should advise her on her choice?
Women as a representative	Would you prefer to be represented by a man or a woman in the National Assembly?
Would like to see more women	Would you like to see more women as members of the National Assembly?
Reserved top list place for women	In the National Assembly elections, every party has a list of candidates for the province, but usually only the top two or three people on the list have a chance of being elected. Knowing this, if a woman were included on a list in one of the top three places would you be more likely to vote for the list or less likely to vote for it?

Table C.3: Category: Taking local action

Member of # civil associations (CA)	Here is a list of organizations. As I mention each, please tell me if you belong to it.
Took part in a meeting of a CA	Have you ever participated in a meeting of an association or group you belong to?
Helped reach a decision of a CA	Have you ever helped make a decision at a meeting of an association or group you belong to?
Local government affects my life	Now I'm going to ask you a question about the local commune government. Tell me, whose decisions affect your life more: the national government in Phnom Penh, or the communal government in this town or village?
Would report election crime	If one of these problems were to happen in your area in the election, how likely would you be to report this problem - very likely, somewhat likely, somewhat unlikely or very unlikely?

Table C.4: Category: Trust

Trust in neighborhood	Now, speaking in general terms of the people from here, what do you think about people in this neighborhood are generally:
Trust in general	Generally speaking, do you think that most people can be trusted?