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Violence and Long-run Economic Growth in the United States

Michele Baggio, Alberto Chong, and Metin Coşgel*

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Abstract

We examine patterns of lethal socio-political violence in the United States between 1934 and 2010 and estimate the impact on income growth. The predominant type of violence shifted from riots to rampages over time. Whereas such incidents were heavily concentrated in the South before the 1960s, they spread to all regions by the twenty-first century. Using improved data measurement and applying a difference-in-difference approach designed for multiple types of events, we find that socio-political violence had a significant adverse effect on the growth of personal incomes. The magnitude was greater for racial violence than non-racial violence. Although the initial impact was immediate, it did not last long.

Keywords: growth, polarization, targeted groups, race, unemployment, social capital

JEL Classification Codes: N12, N32, O10, Z13

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1. Introduction

The question of how violence may impact economic development has preoccupied social scientists for years. At a basic level, it is straightforward to expect a negative association between these two variables. Violence typically brings destruction of both human and physical capital, which directly impacts the production function and thus, economic performance. Unsurprisingly, the empirical literature that attempts to answer this question is rather extensive and confirms a robust negative link between massive violence, including civil wars, bombings, terrorism, and genocide, with dramatic reductions in growth and overall development. For instance, in a pioneering paper, Collier (1999) used cross-national data to estimate the impact of civil wars on the growth rate of a country's Gross Domestic Product. Researchers have used similar strategies to investigate the negative effects of various types of conflicts. Among others, Blomberg, et al. (2004) analyzed the impact of international terrorism, Besley and Reynal-Queral (2014) examined the legacy of historical conflict for development in Africa, and Iqbal, et al., (2019) made methodological improvements in estimating the global costs of violence.

For the specific case of the United States, a substantial literature has been devoted to estimating the impact of violence on targeted groups. Interestingly, contributions to this literature have typically focused on the impacts of a specific historical episode or type of violence. For instance, Jones, Troesken, and Walsh (2017) recently found that exposure to lynching reduced Black voter turnout in the post-Reconstruction American South. Similarly, Cook (2014) found that violence between 1870 and 1940 reduced patent productivity of Black inventors. Other examples are the race riots of the 1960s, studied by Collins and Margo (2004, 2007) and Brazil (2016), who examined their effects on the labor market, the value of central-city residential property, and the levels of Black residential segregation in major U.S. cities. In the same vein, Matheson and Baade

(2004) estimated the effects of the 1992 Los Angeles riots on various measures of economic performance.

In this paper, we broaden this episode-specific approach by constructing a comprehensive dataset of lethal socio-political violence in the United States for the period between 1934 and 2010. The dataset builds upon the information gathered by previous researchers interested in documenting incidents of violence in U.S. history (Browne-Marshall, 2013; Gilje, 1996; Levy, 1991; Rucker and Upton, 2007; Turchin, 2012). It covers incidents of lethal group-level violence, including riots, lynching, rampages, terrorism, and assassinations.

Our comprehensive approach allows us to observe broad patterns in the way incidents of lethal violence vary over time and across regions. We contribute to the literature by examining significant changes in subcategories and regional distribution of socio-political violence over time. Our results show that the predominant type of lethal socio-political (group-level) violence shifted from riots to rampages during the period between 1934 and 2010. Whereas such incidents were heavily concentrated in the South before the 1960s, they spread to all regions by the twenty-first century.

We use the event-based information to generate a state-level panel dataset of lethal socio-political violence over time. We apply a difference-in-differences approach designed for multiple types of events to estimate how the cost of violence is borne by society as a whole. Our results show that sociopolitical divisions and violence affected economic growth significantly in the aggregate at the state level. However, we find that whereas the initial impact was immediate, it did not last long. Our findings contribute to the broad literature on the impact of violence by showing that the negative and significant impact of violence originated from not just large-scale civil wars

or global conflicts but also come from targeted, smaller-scale domestic riots, lynchings, and rampages.[1] However, lethal violence did not affect economic growth permanently.

Our research also contributes to the literature on the consequences of prominent violent incidents in the United States by showing that the economic impact of violence was systematic and broader than the isolated disruptions of notorious episodes. Although the impact on growth was short-lived, it was significant. In addition, we contribute to the specialized literature on racial violence in the United States by showing that the impact of racial violence is greater than non-racial socio-political violence. An important question raised by studies of race-related violence, such as the 1960s race riots and the lynchings of the post-reconstructionist era, is how the impact of these events compared with that of non-racial violence due to other social and political divisions. To make this comparison, we examine the impact of race-related events separately from other events included in the database. Our findings show a greater impact for racial violence, with significant policy implications and the need to address the root causes of racial divisions and violence.

2. Data

Our dataset builds upon information compiled by previous researchers regarding incidents of socio-political violence in U.S. history. In a pioneering attempt at collecting data on violence, Levy (1991), used the archives of *The New York Times* to record incidents of political and social violence in the United States from 1850 to 1968. He provided systematic information regarding various aspects of each violent event, including its date, motivation or reason for the attack, and number

[1] While our research focuses exclusively on the causal link that goes from violence to growth, the other direction of causality may well be present, too. Olzak (1990) argues that political challenges and economic competition shaped regional and temporal variation in lynching and urban violence against Blacks during the volatile period from 1882 through 1914. She provides event history and time series to show that economic slumps, particularly those that affected the least-skilled workers, increased rates of both lynching and urban racial violence, as did rising competition from immigration.

of deaths. Turchin (2012) extended the temporal coverage of this dataset by using digital methods to search for *The New York Times* archives for the period between 1969 and 2010. In addition, he expanded the source base of the violence dataset for his own analysis by digitizing information compiled on a set of index cards used by Gilje (1996) and from several other sources focused on specific types of violence.[2]

The dataset compiled by Turchin (2012) has several significant advantages that make it an ideal starting point for a quantitative analysis of the effects of lethal socio-political violence in U.S. history. First, the inclusion of an event in the dataset depends on clear criteria for consistency. Specifically, the dataset consists of lethal (at least one death) events that involved a group (twelve or more) of people. Restricting the dataset to lethal events, associated with at least a single fatality, ensures a clear demarcation between peaceful demonstrations and deadly violence. Likewise, restricting it to events that involve a large number of individuals ensures that violence is aimed not at individual people but at groups, social or political institutions, or entire societies. The pertinent size of the group is defined as "twelve or more people," a standard introduced by Gilje (1996: 4) who considered a riot as "any group of twelve or more people attempting to assert their will immediately through the use of force outside the normal bounds of law." Despite being conservative and somewhat arbitrary standards, these restrictions nevertheless ensure consistency across violent events included in the dataset.

Second, the dataset is restricted to incidents of social and political violence rather than criminal violence among individuals. Originally collected in connection with the National Commission on the Causes and Prevention of Violence, Levy's (1991) dataset consisted of such events "as those involving an attack on an official or group of officials for any reason or an attack

[2] See the Appendix to Turchin (2012) for details and references.

on an individual or group of individuals for political or social reasons." This definition includes incidents arising from racial, religious, labor, and political disputes; but it excludes criminal acts, family disputes, or other incidents of individual violence with no socio-political significance.

The third advantage of Turchin's (2012) dataset is that it has been expanded by applying these standards to include other forms of socio-political violence. Specifically, it includes incidents of riots (group-on-group violence), lynching (group-on-individual), terrorism (one/few-on-group), rampages (one/few-on-group), and assassinations in which an individual is targeted "not as a private person, but as a representative or an embodiment of some social group or political institution" (Turchin, 2012: 7).

As a fourth advantage, the dataset differentiates among the types of violence by the motivations/issues that led to them, if known. The most common types are race, ethnicity, politics, and labor-management conflicts. If mixed motivations have been identified, all are so coded in the dataset. Likewise, if no motivation has been identified, the information is missing.

Finally, the temporal coverage of the dataset is sufficiently long to allow merging with other data for an appropriate long-term event study. From the original dataset that covers the years between 1780 and 2010, we included the events that took place after the year 1934 to match the availability of data regarding state-level economic growth, as detailed below.

In the context above, we made two types of improvements on the dataset compiled by Turchin to make it more suitable for our analysis.[3] First, we completed the information that was missing for some of the events included in the original dataset. Since Turchin's (2012) own analysis was focused more on tracking the cycles of violence in the aggregate over time than on investigating

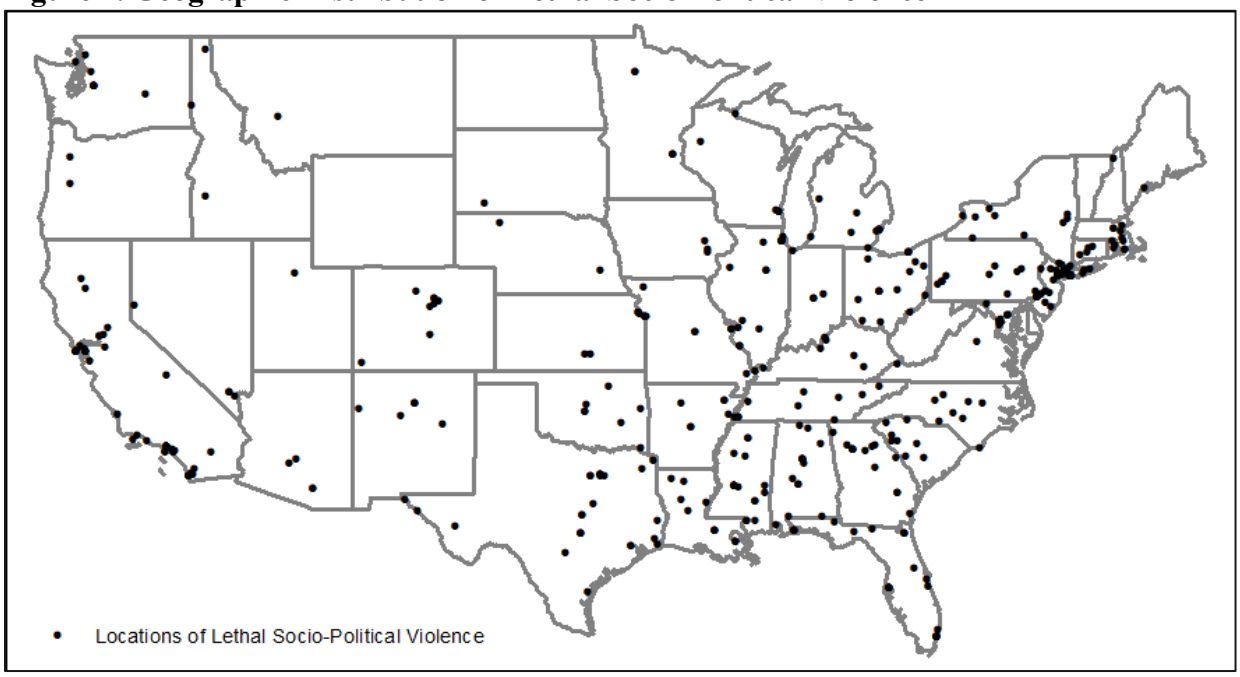
[3] See Duwe (2007: 203–14) and Gilje, 1996 (183) for a general discussion of the inherent problems in records of violence.

shifts in patterns across regions or categories, it was not essential to have complete information regarding types and locations of incidents. We used newspaper archives and various digital searches to complete the information regarding the type (e.g., labor, race, work, religion, political) and specific locations of all incidents for which this information was missing. In addition, we compared all entries against their original sources to check for accuracy (e.g., date, location, type) and made changes as necessary. In addition, we used the information about location to determine the geographic coordinates of all events for mapping and spatial analysis.

The second improvement of the dataset is that we expanded on the number of incidents included in the dataset by using information from other sources and applying the restriction standards systematically. Given the inherent difficulties of extracting entries directly from records of violence, we relied on Browne-Marshall (2013), Duwe (2007), LaFree (2010), and Rucker and Upton (2007) as secondary sources with extensive and systematic coverage of socio-political violence in the United States.

By comparing entries in Turchin's (2012) dataset against these sources, we included in our own analysis all other incidents of lethal socio-political violence (based on definitions of Gilje and Turchin) that were not included in the original dataset. With this approach, we were able to expand the dataset by adding 11 new incidents of rampages, nine assassinations, eight terrorism events, one insurrection, and eight riots. Although there may still be a small number of other missing events, we feel confident that the current coverage of the dataset is sufficiently complete for an appropriate analysis of the evolution of lethal socio-political violence in the U.S. during our period and of the impact of such violence on economic growth.

Figure 1. Geographic Distribution of Lethal Socio-Political Violence



The final dataset used in our analysis consists of 449 incidents of lethal socio-political violence in the United States during the period between 1934 and 2010. Figure 1 shows the geographic distribution of these incidents. The total numbers of violent events were clearly higher in the eastern regions of the country than the midwestern or western regions. They were also more heavily clustered in densely populated areas and around major cities.

3. Lethal Socio-political Violence in U.S. History

In this section, we use the data to examine the evolution of lethal socio-political violence during our period. We first look at the distribution of these events as a whole to observe aggregate differences over time and across regions. Next, grouping incidents by types of violence, we identify systematic patterns in the way predominant types changed over time. Finally, we explore differences between racial and non-racial types of violence.

Table 1. Regional and Temporal Differences in Total Violence

Period	Midwest	Northeast	South	West	Total
1934-40	9	5	16	4	34
1941-50	6	8	18	4	36
1951-60	7	1	5	5	18
1961-70	24	10	34	9	77
1971-80	10	18	20	6	54
1981-90	4	15	25	14	58
1991-2000	6	18	28	23	75
2001-10	18	26	29	24	97
Total	84	101	175	89	449

Source: Turchin (2012) and data collected by authors

Table 1 shows the variation in total numbers of lethal socio-political violence over time and across regions. The frequency of such violence clearly peaked during the 1960s, followed by a sharp fall in the next decade and a persistent rise afterward. There was a significant regional shift from the South to other regions of the country. Whereas about half of the incidents took place in the South before the 1970s, violence gradually spread to other regions over time, most notably to urban centers of the West and the Northeast.

Table 2. Types of Violence Based on Group Size

	Large on Large		Small on Large			Large on Small	
Period	Riot	Insurrection	Assassination	Rampage	Terrorism	Lynching	Total
1934-40	27	0	1	0	0	6	34
1941-50	23	0	0	3	0	10	36
1951-60	9	0	0	5	1	3	18
1961-70	57	0	7	9	1	3	77
1971-80	30	1	6	13	4	0	54
1981-90	20	2	4	28	3	1	58
1991-2000	9	5	9	44	7	1	75
2001-10	5	1	9	75	6	1	97
Total	180	9	36	177	22	25	449

Source: Turchin (2012) and data collected by authors

To examine variations in specific types of lethal socio-political violence, we first categorize them based on the relative sizes of the parties involved. As noted above, Gilje used the standard of groups being greater than 12 individuals for his analysis of riots. Other types of socio-political violence could involve groups of asymmetric size, with one group smaller than the other. For a basic categorization of such violence, we distinguish simply between large groups of many individuals and small groups that included only one or a few individuals. Table 2 shows a significant shift from "Large on Large" and "Large on Small" to "Small on Large" types of violence in U.S. history during the period between 1934 and 2010. Riots were the predominant type of lethal socio-political violence in the first half of the twentieth century and peaked in number during the 1960s. While the number of riots declined sharply over time, the number of rampages grew steadily and significantly in the last decades of this period.

Table 3. Racial Violence

	Midwest		Northeast		South		West		Total	
Period	Racial	Non-R.	Racial	Non-R.	Racial	Non-R.	Racial	Non-R.	Racial	Non-R.
1934-40	0	9	1	4	8	8	0	4	9	25
1941-50	3	3	3	5	15	3	2	2	23	13
1951-60	0	7	0	1	4	1	0	5	4	14
1961-70	14	10	6	4	24	10	6	3	50	27
1971-80	2	8	6	12	9	11	1	5	18	36
1981-90	0	4	3	12	7	18	0	14	10	48
1991-2000	1	5	2	16	3	25	2	21	8	67
2001-10	0	18	4	22	1	28	0	24	5	92
Total	20	64	25	76	71	104	11	78	127	322

Source: Turchin (2012) and data collected by authors

Finally, as an illustration of other temporal and spatial variations in socio-political violence, we focus on the difference between racial and non-racial violence, as seen in Table 3. Overall, 28 percent of all lethal socio-political violence involved a racial motive during this period. The fraction of racial violence declined significantly over time, from about two-thirds of all violence

in the 1940s and 1960s to about 5 percent in the 2000s. Whereas racial violence was predominantly in the South until the 1990s, thereafter it became less frequent and more evenly spread geographically.

4. The Economic Impact of Socio-Political Violence

We now turn to an investigation of whether episodes of socio-political violence impacted economic growth. This analysis requires panel data, which we obtained by collapsing the event-based data to state-year format to merge with data on annual per capita personal income for U.S. states. The latter was downloaded from the Bureau of Economic Analysis (BEA) and is available from 1929. Our main outcome variable is the rate of change in annual per capita personal income, and it is calculated as the log difference of per capita personal income. After merging the data, we restrict our sample to the 48 contiguous states plus Washington D.C.

Summary statistics are presented in Table 4. The average annual state growth rate is around 1.8 percent. In the sample period, there are 0.2 episodes of socio-political violence per year, 0.05 that are racially motivated. Each year in which there is an episode, on average there is a total of more than four fatalities. We created a dichotomous variable to denote the occurrence of a socio-political violence episode in each state-year. The variable takes a value equal to 1 for each year an episode occurred in the state; 0 otherwise. The variable also takes a value equal to 0 for states that did not have any episodes of violence.

This definition for our variable of interest allows us to employ a difference-in-differences (DID) research design to study the effect of violence on growth and in particular, personal income growth. States that had episodes of violence over our sample period are considered to be treated; those without any episodes are control states.

Table 4. Summary Statistics

	Observations	Mean	SD
Growth rate (log difference of per capita income)	3,773	0.0179	0.0485
Population (millions)	3,773	10.1342	8.7266
All events of lethal socio-political violence	3,773	0.2229	0.5703
Events of racial violence	3,773	0.0519	0.2630
Events of non-racial violence	3,773	0.1710	0.5023
Fatalities	3,773	0.6977	2.051
Decennial Census			
Share of Black population	441	0.1064	0.1064
Unemployed, White	441	0.0231	0.0109

Data Sources: Turchin (2012), Decennial U.S. Census from IMPUS, and data collected by authors. Summary statistics reported in the table are weighted by total population in state-year. Economic growth rate is calculated as the log difference of per capita personal income (deflated). Number of fatalities is recoded up to a maximum of 10 per event. Personal income is deflated using CPI for All Urban Consumers, 1982-84=100.

To investigate whether socio-political violence impacted income growth, we exploit variation of episodes of violence across-state and time and estimate a difference-in-differences (DID) panel model. Specifically, we rely on an event study strategy to uncover the dynamics of response to the treatment. The necessary condition for a causal interpretation of the estimated treatment effect is the existence of a valid counterfactual. In a DID study this is achieved by showing that trends in the outcome variable in treated and non-treated units of observation (e.g., states) are parallel in the period preceding the event. This is typically accomplished by means for an event study consisting of a DID regression that includes leads and lags of the treatment event, that is, a set of dummy variables indicating when the event has happened relative to a specific time period, before or after the time of the treatment. In the context of this paper, states had multiple events (episodes of socio-political violence) over the sample period. Unfortunately, the literature does not offer an accepted event study strategy that account for multiple treatments occurring in each location. Instead of selecting the events of largest relevance to define the time of the treatment, we decided to consider all events occurring in any given state. To do this, we allow for multiple time dummy variables to be turned on at once. That implies that the time dummies indicating time passed since/from the

event are not mutually exclusive. For instance, a state in a given period could be both one period before and one after an event such that both relevant dummy variables are equal to 1. This strategy allows us to investigate the causal linkage between violence and income growth controlling for the intensity of the frequency of the events. This approach has been shown to produce unbiased results (Sandler and Sandler, 2014) and has been applied in similar contexts (e.g., Dube et al, 2010) in the economic literature. Using the described setup, we investigate the presence of pre-existing trend differences between treatment and control states by estimating the following specification:

$$y_{st} = \alpha + \sum_{i=-6}^{6} \beta_i 1(\tau_{st} = i) + \mathbf{X}_{st}\boldsymbol{\gamma} + \theta_s + \delta_t + \eta_{st}. \quad (1)$$

where y_{st} denotes the rate of change of per capita personal income (wealth) in state *s* on year *t*. τ_{st} indicates the socio-political violence episode, which takes a value equal to one when an observation is *i* years away from the year of occurrence of the episode. The case ($\tau = 0$) denotes the year of the event. The coefficients β_i are estimated relative to year preceding the year of the event ($\tau = -1$), the omitted coefficient. Note that *i* equal to -6 or 6 denotes more than 5 years before or after, respectively, the episode. The term θ_s represents a state fixed effect; and δ_t represents the year fixed effect that is constant across states. $\mathbf{X}_{st}$ is a full vector of state-level covariates including state population, number of violent events of any type (e.g., politically, or racially motivated), the number of fatalities and the cumulative number of those events up to year *t*, the log of the initial wealth, and a state-specific time trend. We also include a dummy variable to account for differential effects due to the Dust Bowl.[4] We also include the share of African

[4] The dummy variable takes a value equal to 1 for the period 1934–40 for states mostly affected by the Dust Bowl: Nebraska, Kansas, Colorado, New Mexico, Texas, and Oklahoma. Results do not vary if we exclude this dummy.

American population and the share of unemployment for Caucasians reported in the census.[5] The reason for including the former is that controlling for pre-existing African American population, which is correlated with current African American population, may help control for migration patterns. The latter controls for pre-existing employment opportunities for the Caucasian population, which is correlated with historic sentiment of racial discrimination. Standard errors are clustered at the state level and regressions were weighted using county-year population. Conditional on observable characteristics and using fixed effects to eliminate the influence of unobservable characteristics, income growth rate will be different only because of difference in social instability proxied by riots and other episodes of violence. We estimate equation (1) for any violence episode, for racially motivated episodes, and for all non-racially motivated one.

Complementing our DID methodology, our empirical approach follows an empirical 'growth regression' tradition along the lines of the well-known growth-related research summarized by Barro and Sala-i-Martin (2003), which pays particular attention to the relationship between theory and data and its corresponding empirical implications.[6] In particular, in addition to the typical controls that capture broad measures of human capital creation and destruction, we also include a variable that captures so-called conditional convergence, as measured by the logarithm of initial wealth in our growth regressions (Barro and Sala-i-Martin, 2003).[7]

[5] To match the decadal frequency of the census to the annual frequency of the rest of the data census data are assigned to violence data with a 5-14 year lag. For example, data for 1940 is merged with the violence data for 1945–54, included data for 1950 with data for 1955–64, and so on.

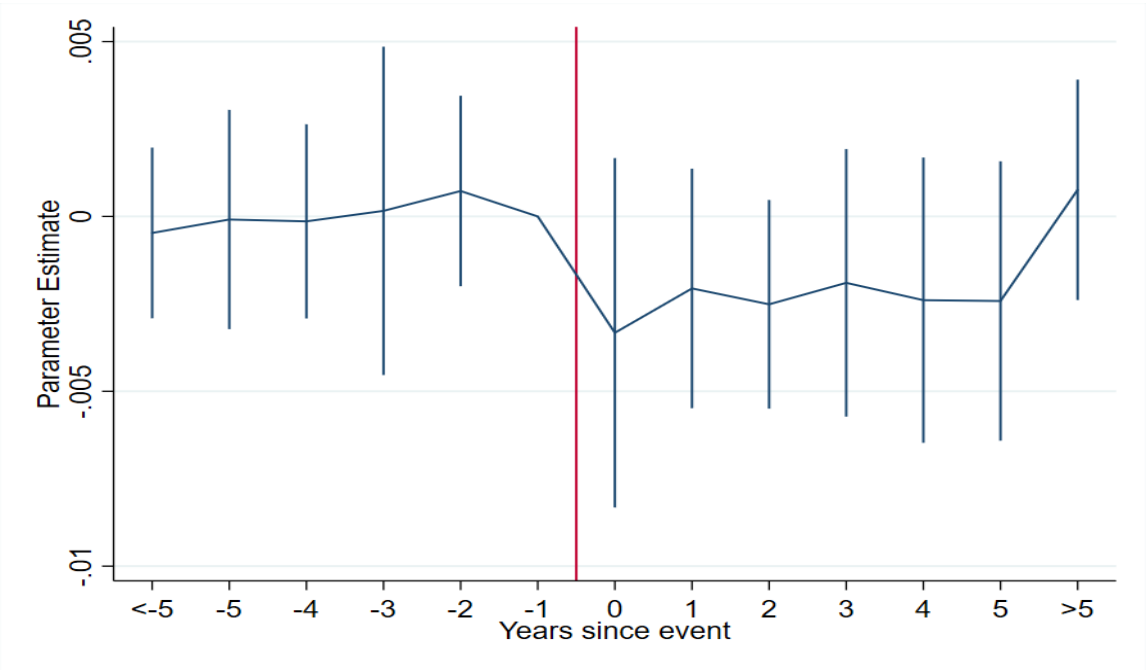
[6] The new wave of cross-country empirical approaches is largely motivated by the seminal work of Lucas (1988) and Romer (1990), among others.

[7] Unfortunately, recent advances in DID methodologies (e.g., Callaway and Sant'Anna, 2021) cannot be applied to our setting. This is because we have a discrete, non-binary treatment in a non-staggered context. In theory, a possibility would be to define cohorts of treatment based on when units were treated, but in our specific context it is unclear how these groups should be defined. This is because in our case, we have states that are treated multiple times, which might suggest that they should be included into several cohort groups, but this goes against Callaway and Sant'Anna (2021). It should be noted that if we apply this method our basic findings appear to hold, albeit depending on the grouping assumption employed.

5. Results

Our main results consist of event studies. An event study is itself useful to test the causality of the estimated effects by providing evidence for or against the existence of trend differentials in the pre-treatment period. The event study is also useful to investigate dynamic responses to the culmination of the socio-political violence episode, which may generate effects unfolding over time.

Figure 2. Event Study – All Episodes of Socio-Political Violence

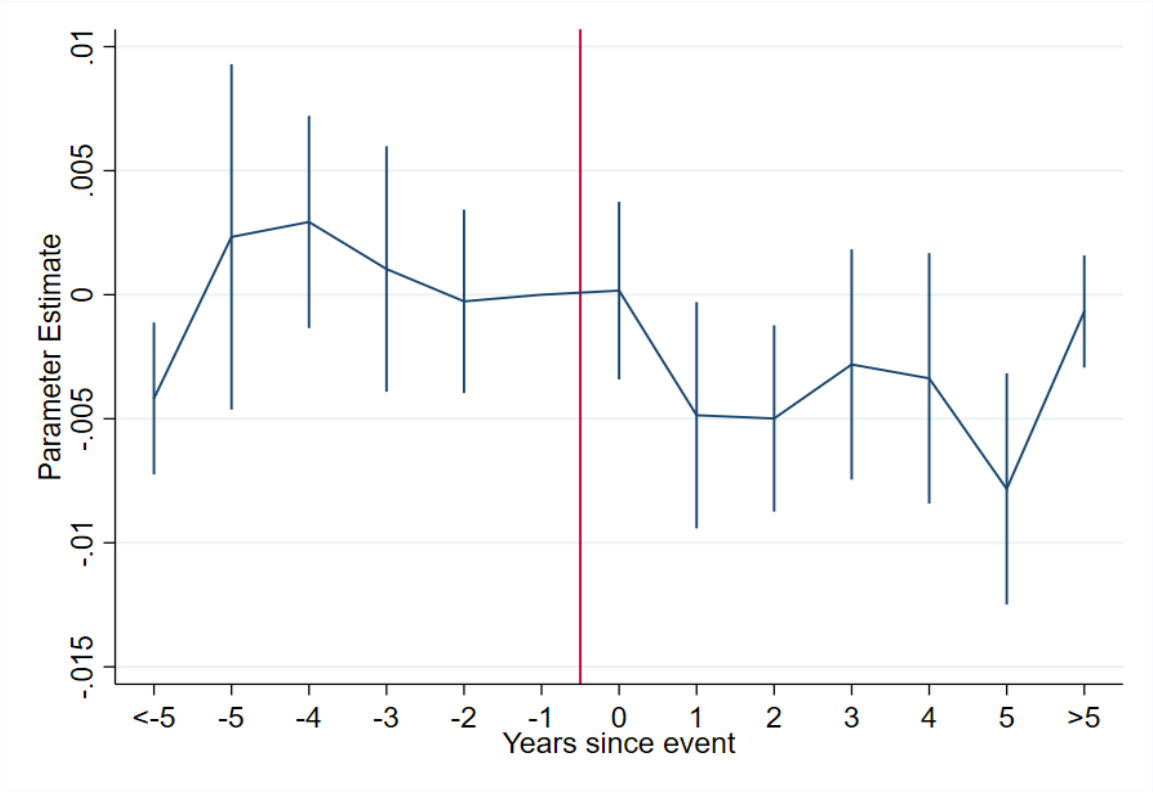


Notes: The graph shows parameter estimates and a 95-percent confidence interval for semesters before and after the occurrence of targeted violence episodes estimated using regression (1) for all types of violence. The regression is weighted using county-year population; standard errors are clustered at the state level.

Figure 2 shows an event study that test formally the differential trends assumption for all episodes of violence. Before any episode income growth rate has a flat pre-trend, with none of the pre-period coefficients being statistically different from zero at the 5-percent level. There is a

relatively sharp decrease in growth rate in the year when the violence episode occurs. The negative effect persists, although somewhat noisily, for the following five years.

Figure 3. Event Study – Racially-Based Episodes of Socio-Political Violence

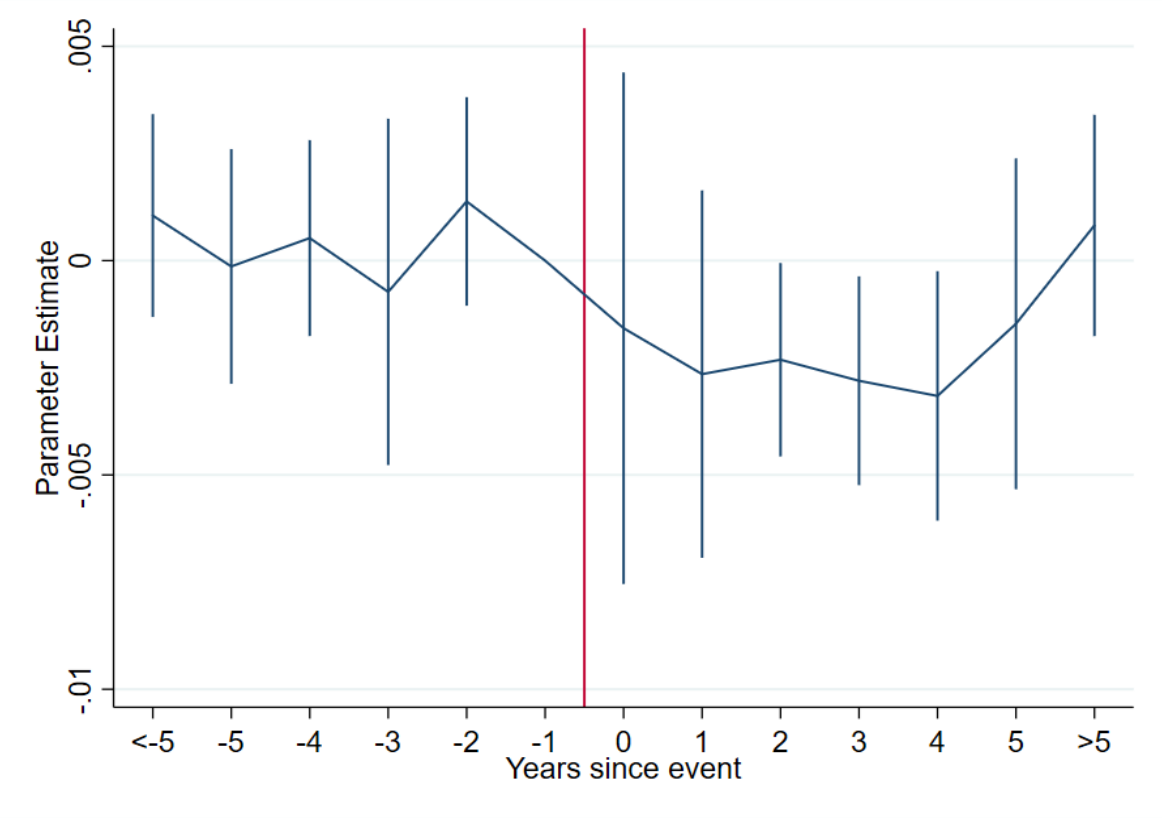


Notes: The graph shows parameter estimates and a 95-percent confidence interval for semesters before and after the occurrence of targeted violence episodes estimated using regression (1) for racially based types of violence. The regression is weighted using county-year population; standard errors are clustered at the state level.

Focusing on racially motivated episodes, we find that there is no definite evidence that there are no differential trends in growth rates prior to the event, as shown in Figure 3, which indicates first a decrease followed by a decrease in growth rate until two years before. Apart from the earliest period, none of these effects statistically different from zero. In the period between two years before and the year of the event the pre-trend is flat. Differently from the other event study, the decrease in growth rate begins one year after the violence episode. The decrease of growth rate is

more prominent in the first two years after the episode with a magnitude that is larger than for all events. The negative effect is sustained through a period of five years after the event, when we see the largest decrease, and dissipates after that.

Figure 4. Non-racial Episodes of Socio-Political Violence



Notes: The graph shows parameter estimates and a 95-percent confidence interval for semesters before and after the occurrence of targeted violence episodes estimated using regression (1) for all non-racial types of violence. The regression is weighted using county-year population; standard errors are clustered at the state level.

Figure 4 shows the event study in nonracially motivate episodes of violence. Before the law is passed, there is evidence of a flat pre-trend. The pre-period coefficients are all statistically different from zero at the 5-percent level. As in the other event studies, there is a relatively sharp decrease in growth rate in the period following each violence events. The magnitude of the negative effect is about half of that estimated for racial violence.

Table 5. Event Studies

	All Events	Racial Events	Non-Racial Events
More than five years before	-0.0005	-0.0042***	0.0011
	(0.0012)	(0.0015)	(0.0012)
Five years before	-0.0001	0.0023	-0.0001
	(0.0016)	(0.0035)	(0.0014)
Four years before	-0.0001	0.0029	0.0005
	(0.0014)	(0.0021)	(0.0011)
Three years before	0.0002	0.0010	-0.0007
	(0.0023)	(0.0025)	(0.0020)
Two years before	0.0007	-0.0003	0.0014
	(0.0014)	(0.0018)	(0.0012)
One year before	---	---	---
Year of the event	-0.0033	0.0002	-0.0016
	(0.0025)	(0.0018)	(0.0030)
One year after	-0.0021	-0.0049**	-0.0026
	(0.0017)	(0.0023)	(0.0021)
Two years after	-0.0025*	-0.0050**	-0.0023**
	(0.0015)	(0.0019)	(0.0011)
Three years after	-0.0019	-0.0028	-0.0028**
	(0.0019)	(0.0023)	(0.0012)
Four years after	-0.0024	-0.0034	-0.0032**
	(0.0020)	(0.0025)	(0.0014)
Five years after	-0.0024	-0.0078***	-0.0015
	(0.0020)	(0.0023)	(0.0019)
More than five years after	0.0008	-0.0007	0.0008
	(0.0016)	(0.0011)	(0.0013)
N. of observations	3,773	3,773	3,773
R-squared	0.7514	0.7522	0.7515
Mean of growth rate		0.0179	

Notes: Regressions include year, state fixed effects and state-specific time trends and weighted by total population in the state-year. Standard errors are clustered at the state level and are reported in parentheses. Effects are estimated using the log difference of per capita personal income. The indicator for the year before the event has been omitted and all coefficients are relative to that year.

The point estimates relative to the event studies are presented in Table 5. The decrease in income growth rate is smaller for nonracial, between 0.23 and 0.32 percentage points, than for racial violence, between 0.49 and 0.78 percentage points. Finding that income growth rate will fall

by up to 0.78 percentage points is, arguably a relatively large impact given that the average annual state-level growth rate is around 1.79 percent. Overall, our results provide evidence of a negative economic impact of socio-political division and violence on income growth. Racially motivated violence episodes are followed by larger decrease in income growth than nonracial episodes.

Finally, we check for the robustness of our results by removing the dummy variable for the Dust Bowl. Results are qualitatively identical when removing the dummy Similarly, we find consistent results by re-estimating our specifications excluding from the controls the number of violent events of any type (e.g., politically or racially motivated), the number of fatalities and the cumulative number of those events up to year *t*. Because of the robustness of the results, we chose to keep it in the main specification as it helps absorbing unobserved variation.

6. Discussion

While our findings above show that lethal socio-political violence impacts growth negatively, there appear to be several likely mechanisms at play, according to the existing literature. At a basic level, it is straightforward to expect a negative causal link between these two variables, as violence may bring destruction of both human and physical capital, which directly impacts the production function and thus, economic performance. Unsurprisingly, the empirical literature that attempts to answer this question is rather extensive and confirms a robust negative link between massive violence, including civil wars, bombings, terrorism and genocide, with dramatic reductions in growth and overall development (e.g., Blomberg, et al., 2004; Besley and Reynal-Queral, 2014; Iqbal, et al., 2019, among several others). In the case of lethal socio-political violence, however, the latter tends to be somewhat more sporadic as well as more targeted. Given this, it is unclear

that the amount of destruction in physical and human capital that occurs as a result of this type of violence may significantly negatively impact growth rates in the way our results show above.[8]

Some recent literature argues that an indirect, signaling-based impact may be a crucial mechanism that may help contribute to producing a significant reduction in growth and income rates instead. In this view, lethal socio-political conflict may act indirectly, by eroding the social fabric in societies and in particular its social capital.[9] It may impact social capital by increasing antagonism and distrust among people, producing breakdowns of social institutions and even psychological trauma, which may end up polarizing a society (Coletta and Cullen, 2000).[10] This may be particularly true when both the nature of such violence is traceable to specific negative behavioral motivations, for instance, hatred, or when the targeted groups are specifically identifiable, for example, race-based ones. When violence arises in these situations it may serve as a society-wide signaling mechanism, by which the agents in the economy will respond accordingly, regardless of the actual magnitude and frequency of these episodes. In other words, this type of violence does not necessarily have to be massive, but strategic, and it may impact productivity and growth all the same.

[8] Hovland and Sears (1940) employ historical data from 1882 to 1930 and show a negative correlation between total lynchings in the United States and Economic activity. Mintz (1946) however, argues that this study greatly overstates such a correlation. He finds that while still negative, the correlation is much smaller.

[9] Costalli, et al., (2017) argue that in the case of massive wars, interethnic trust is eroded, and highly fractionalized societies pay an especially high price, as they rely heavily on interethnic business relations. In fact, when they measure the economic impact of civil war on the years of armed conflict in a sample of 20 countries, they observe an average annual loss of local GDP per capita of 17.5 percent.

[10] An additional impact is that increased mobility may also follow. Collins and Smith (2007) show that the riots Cleveland between 1959 and 1980 had an especially negative and long-lasting effects on property values. Areas near riots epicenter lost significant amounts of property value relative to other places in Cleveland of between 20 percent and 30 percent in the riot-area tracts relative to other tracts in the city. These researchers show that homes that were a half mile from the riot epicenter had property value gains that were approximately 7 percent higher than at the epicenter and that homes three miles away had gains that were 40 percent higher. Interestingly, Ottaviano and Peri (2006) document economic benefits of diversity in urban areas.

Along these lines the sociology literature argues that communities with reduced social capital are not very effective in exercising social control and establishing norms associated with lower violence and this correlates to higher violence in communities with low social capital (Sampson and Wilson, 1995; Galea, et al., 2002). In fact, some related studies demonstrate an inverse association between violence and social capital in the United States (Kennedy, et al., 1998; Sampson, et al., 1997; Taylor et al., 2016).

This issue is directly related to the literature that argues that group diversity and, in particular, cultural diversity can affect output growth. Costa and Kahn (2003) argue that diversity and racial heterogeneity may damage the sense of community, interpersonal trust, and social interactions. However, Letki (2008) shows that when the association between racial diversity and economic deprivation is accounted for, there is no evidence for the eroding effect of racial diversity on interactions within local communities. In fact, this researcher shows that interactions may improve perceptions of a neighborhood, no matter its economic status or racial composition, although these interactions are less frequent in poorer neighborhoods. Letki (2008) argues that there is no deficiency of social capital networks in diverse communities, but there is a shortage of them in the economically disadvantaged ones. As Alesina and La Ferrara (2017) argue, cultural diversity may have a positive effect on output growth if a more diverse working-age population is also associated with a greater variety of skills, which enables the production of an increased variety of goods and services. However, as explained by Ager and Brückner (2013) a more polarized population can also have detrimental effects on output growth if it is associated with increased social conflict and a reduction in the quality and quantity of public good provision. Interestingly, Ager and Brückner (2013) show that social conflicts are more likely in societies where a large ethnic minority faces

an ethnic majority.[11] According to these researchers, social tensions are greatest when there are two equally powerful groups that contest for resources.[12]

Another, perhaps more controversial, way of understanding the indirect impacts of lethal socio-political violence is argued by King (2005). She claims that one way to understand racial violence economically is to see it as enforcing unwritten property rights in "whiteness" that include ownership of jobs, occupations, business and educational opportunities, real estate and others. As such, lethal, socio-political violence to specific groups may inhibit firms to hire members of such targeted groups for fear of losing property, which may be expressed in the form of increased risks of retaliation. Thus, an indirect manner in which to assess whether this mechanism may be driving our findings is to look at the historical evolution of the labor market and, in particular, assess potential differences by targeted groups. Interestingly, there is no formal evidence that shows this potential link.[13] However, plenty of anecdotal evidence points to this. Perhaps, the most compelling example is Florida, where for almost forty years after the Civil War, it held the highest rate of lynching in the United States, many linked to labor disputes, and at the same time it has been one of the States in which the rate of unemployment of African Americans has consistently been dramatically higher than the rate of unemployment of other groups.[14] The case of this state is clearly not an exception, and it simply highlights the potential role of unemployment as a likely mechanism by which targeted lethal socio-political violence may impact productivity and growth.

[11] Standard measures of fractionalization and polarization (e.g., Alesina and La Ferrara, 2013; Ager and Brückner, 2013) are difficult to employ in our context as the data sources are mostly reduced to decennial census data, which in addition, do not take into account within-state migration.

[12] For the purposes of our research, the exact direction of causality is less important than the fact that there appears to be a feedback effect among both variables (Chong and Calderon, 2000)

[13] This may be related to the fact that historical data come from the national Census, which is collected every ten years. For instance, as observed in Figures 1 to 4, the negative causal impact on income growth appears to drastically diminish after the fifth year of the event.

[14] https://www.floridapolicy.org/posts/unemployment-rate-for-black-floridians-is-strikingly-higher-than-the-states-overall-rate

7. Concluding Remarks

In this research we investigate the evolution of socio-political violence in the United States and estimate the impact of violence on economic growth, as measured by the rate of change of per capita personal income (wealth) during the period between 1934 and 2010. Our dataset consists of episodes of lethal group-level violence, including riots, lynching, rampages, and assassinations. Categorizing these events by the relative sizes of the parties involved, we showed that the predominant type of socio-political violence shifted from "large on large" events, such as riots, to "small on large" events, such as rampages and terrorism. Geographically, our results showed that socio-political violence spread from heavy concentration in the South before the 1960s to other regions by the twenty-first century. By differentiating between racial and non-racial events as an illustration of other temporal and spatial variations in socio political violence, we observed that the fraction of racial violence declined significantly over time.

To examine the impact of violence on income growth, we transformed event-based information to a unique state-level panel dataset of annual lethal socio-political violence during the period between 1934 and 2010. Applying a difference in differences approach designed for multiple types of events, we found that socio-political violence had a highly significant adverse effect on the growth of personal incomes during this period. Our results indicate that violence affected economic growth significantly in the aggregate at the state level, with cost borne by society as a whole and not just targeted groups. By examining the impact of race-related events separately from other events, we found that racial violence had a significant impact on income growth, with a magnitude greater than for non-racial socio-political violence.

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