

# A HISTORY OF VIOLENCE: THE CULTURE OF HONOR AND HOMICIDE IN THE US SOUTH

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## Abstract

The paper tests the popular hypothesis that the high prevalence of homicide in the South of the United States originates from the settlement by herders from the fringes of Britain in the 18th century. I find that historical Scots-Irish presence is associated with higher contemporary homicide, particularly by white offenders, and that a culture of violence was transmitted to subsequent generations—but only in the South and, more generally, where historical institutional quality was low. The interpretation is that the Scots-Irish culture of honor prevailed and persisted as an adaptive behavior to weak institutions. As institutional quality converged between the South and North over the last 200 years, the influence of the culture of honor has been fading over time. The results are robust to controlling for state fixed effects and for a large number of historical and contemporary factors, as well as to relying on instrumental variables for historical settlements. The results are also specific to a particular type of homicide and background of settlers. (JEL: K42, N31, O15, Z13)

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## 1. Introduction

The risk of being murdered is still, at the beginning of the 21st century, three times as high in the Deep South as in the North of the United States.<sup>1</sup> Moreover, this

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1. Source: UCR. See Table 1.

southern homicide specificity is confined to white offenders.<sup>2</sup> Why this large disparity in homicide, and why is it confined to whites? This study finds that it originates in the cultural and institutional conditions that prevailed on the frontier. The 18th-century United States saw an unprecedented influx of settlers from Ulster—the so-called Scots-Irish—and from the Scottish Highlands, two traditionally pastoral and lawless areas that were among the most violent of Europe (O'Donnell 2005; Roth 2009). Cultures of honor, which rely heavily on aggression and male honor, are common adaptations among populations that live in stateless regions and that depend upon easily stolen herds. In the absence of third-party law enforcement, aggression and a willingness to kill can be essential to build a reputation for toughness and deter animal theft.<sup>3</sup> In a famous and debated hypothesis, Nisbett and Cohen (1996) argue that the violent Southern culture of honor originates in the settlement of the backcountry by Scots-Irish herders.

In this paper, I show that historical presence of Scots or Ulster Scots, hereafter referred to collectively as Scots-Irish, contributes to higher homicide today. The typical homicide is consistent with a culture of honor, which aims at the defense of one's reputation: it involves people who know each other but are not direct relatives, and it is perpetrated with a handgun, pistol or, in an even more demonstrative way, a blunt object, such as a hammer or club. Strikingly, the relationship between historical Scots-Irish presence and contemporary homicide violence is specific to the South, where the magnitude of the relationship is considerable. In the Deep South, Scots-Irish settlement in the 18th century explains nearly 20% of the residual variation in homicide today that is left unexplained by other more traditional determinants of crime, such as poverty, inequality, racial composition, education, or historical presence of slavery. On average, an increase by 1 percentage point in the share of Scots-Irish in the 1790 population (a 30% increase) is associated with 25% higher homicide rate by white offenders.

Why did this culture of violence survive in the South only? Wyatt-Brown (2001) depicts how in the North, formal and impersonal institutions quickly became the cement of social and political order in the 19th century. By contrast, formal institutions remained weak in the South, where the Scots-Irish culture of honor, as a private justice system, may have provided the best adaptive response and could become the prevailing norm. Empirical results confirm that the historical Scots-Irish presence is associated with higher homicide only in areas where the quality of formal institutions was low.

Several strategies are pursued in order to establish that the relationship between Scots-Irish settlements in the South and homicide is causal. First, the results are robust to controlling for a large number of contemporary determinants of crime and historical

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2. Between 1980 and 2007, white offender rates in the Deep South were 2.8 times those in Northern states. Black offender rates were “only” 1.4 times higher, a difference that is no longer significant since the end of the 1980s.

3. Edgerton (1992) describes natural experiments where two tribes living in the same region of East Africa but differing in their economic occupations display different tendency for violence and warfare. Pigliaru (1959) describes the codes of honor and the reliance on interpersonal violence among Sardinian herdsman. Braudel (1949) recounts the reputation for violence of the mountainous herding people of the Mediterranean rim.

characteristics, such as poverty, education, inequality, ethnic fractionalization, and historical presence of slavery. Interestingly, Scots-Irish settlement in the 18th century is positively correlated with literacy and income and negatively with slavery suggesting that, if anything, selection of Scots-Irish settlers would bias the results against finding a positive relationship with violence. Second, the results are robust to controlling for state fixed effects. Third, several falsification tests are performed. The positive relationship between contemporary homicide in the South and early settlers is specific to the Scots-Irish, and it is confined to violence related to a self-protection ethic. Last, the results are robust to instrumental variable estimation. Historical presence as a proportion of total population is instrumented by the distance to a major crossroad on the way to the backcountry and by the total stock of Scots-Irish migrants over the period. Last, the influence of unobservable factors would need to be about three times as large as observable factors to explain away the effect.

A concern is that settlers' cultural norms may have contributed to inefficient formal institutions, or that Scots-Irish settlers self-selected into counties with deficient formal institutions, leading to biased estimates of the relationship between Scots-Irish settlement, historical institutional quality, and crime today. However, the Scots-Irish were a minority of the population, so that they had a very limited influence on county institutional quality as it is measured in this paper, namely the date of county incorporation and newspaper circulation. Descriptive evidence confirms that there is no correlation between Scots-Irish presence and these measures of institutional quality. Comparison of coefficients across different specifications also suggests that selection bias is unlikely to drive the results. The results are, furthermore, robust to the use of instrumental variables for Scots-Irish settlement and for controlling for state fixed effects, which remove any state-level variation that could be correlated with institutional quality, timing of incorporation, settlements, or homicide.

The rest of the paper is devoted to studying the mechanisms underlying cultural transmission, which explain why settlements 200 years ago are still associated with homicide today. A first possibility arises from social interactions models (Glaeser, Sacerdote, and Scheinkman 1996), which argue that violence feeds on itself so that initial Scots-Irish violence could have left a long-lasting imprint. A second, possibly complementary argument comes from paternalistic cultural transmission models à la Bisin and Verdier (2001), which predict that Scots-Irish settlers transmitted their beliefs to their descendants. The difficulty with both these interpretations is that persistence is not observed everywhere. A third option is that violence was simply a best response to weak formal institutions. But if that was the case, more violence today should be observed in all areas with weak institutions historically, regardless of the cultural background of settlers. Instead, the results suggest that the descendants of the original settlers have internalized cultural traits consistent with a culture of honor, but only where such traits paid off given the weakness of formal institutions. This is very close to the mechanism in Tabellini (2008a), in which parental transmission of preferences depends on the spatial pattern of external enforcement. It predicts that homicide should be higher today in counties with higher proportions of Americans of Scots-Irish ancestry, but only where historical institutional quality was low. Also,

given that the quality of institutions has improved in the South over the last 200 years, the influence of Scots-Irish cultural norms should have waned. Both predictions are confirmed in the empirical analysis. In particular, the statistical influence of Scots-Irish settlements on homicide rates was much higher at the beginning of the 20th century and has been decreasing steadily since the beginning of the 1980s. At the individual level, older cohorts of Americans of Scots-Irish ancestry in the South hold stronger cultural values associated with a culture of honor.

This paper contributes to the literature on the role of culture as a channel of a long-lasting influence of historical events on present-day outcomes.<sup>4</sup> The influence of historical and cultural factors on violence has been explored in the context of inter-ethnic hostility, between Hindus and Muslims in India (Jha 2008) and against Jews in Germany (Voigtländer and Voth 2012). This paper deals instead with interpersonal violence. Its main contribution is to suggest not only that violent cultural norms are inheritable but, more importantly, that persistence vanishes in the presence of strong formal institutions. This is explained by the fact that the development of formal institutions, by providing alternative means of dispute adjudication and property rights' security, lowers the returns to interpersonal violence. It also increases its cost, as the monopolization of violence by the state goes hand in hand with penalization of interpersonal violence (Weber 1958; Elias 1994). Voigtländer and Voth (2012) also find that cultural persistence is conditional: anti-Semitic attitudes disappeared in the most active trading regions of Germany, where the cost of discriminating against outsiders was high. Others have shown that cultural norms only play a role when formal institutions are weak or lack impartiality. In a study on parking violations committed by UN diplomats, Fisman and Miguel (2007) find that cultural origins cease to matter once external enforcement is imposed. Cassar, d'Adda, and Grosjean (2014) show, in an experimental setting, that regional origins influence behavior only in the absence of impartial institutions.

A secondary contribution of this paper is to the literature on crime. In the face of the difficulty of reconciling the Southern—white offender—homicide specificity with traditional determinants such as income, institutions, or drug prevalence,<sup>5</sup> the role of cultural values has attracted much attention in sociology, history and psychology.<sup>6</sup> Previous literature on the Nisbett–Cohen hypothesis has struggled to establish a robust link between homicide and ecological conditions, specific groups of people or social

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4. Among others, Guiso, Sapienza, and Zingales (2008) and Tabellini (2008b) link current trust to the experience of free city states in Italy. Grosjean (2011a,b) and Becker et al. (2011) relate current trust, banking practices and corruption to Ottoman and Habsburg rule in Europe. Nunn and Wantchekon (2011) root low contemporary trust in Africa in the slave trade history. Durante (2011) provides a link between pre-industrial farming practices and contemporary trust.

5. None of the factors discussed in Levitt (2004) and Levitt and Miles (2006)—number of police, prison population, abortion, and the crack epidemics—seems to apply more obviously to the North rather than the South. Moreover, their analysis is mostly focused on explaining the sharp decline of homicide rates in the 1990s, which was confined to black offender rates.

6. See Gastil (1971), Wyatt-Brown (1982, 2001), Cohen and Nisbett (1994), and Nisbett and Cohen (1996).

organization<sup>7</sup> taken in isolation of one another. By contrast, I find that the persistence of the Scots-Irish culture of honor explains a substantial part of the variation in homicide rates, but conditionally on the quality of formal institutions. This finding is consistent with the literature on the secular decline in interpersonal violence in the face of institutional development and the “civilizing process” (Elias 1994; Pinker 2011). Silverman (2004) shows theoretically, in a model in which reputation concerns underlie violent behavior, that a culture of honor can emerge in a context of weak formal law enforcement.

Section 2 provides the historical and conceptual background. Section 3 presents the data. Section 4 discusses the empirical relationship between historical settlements and contemporary violence. Section 5 analyzes the determinants of the survival of the culture of honor in the South. Section 6 investigates cultural transmission. Section 7 concludes.

## **2. Historical Background and Conceptual Framework**

### ***2.1. The Scots-Irish and Migration to America***

According to Nisbett and Cohen (1996, p. xv), the Southern culture of honor comes from the “herdsmen from the fringes of Britain” who settled the frontier South. Chief among them were the Scots-Irish and the Highland Scots, who had been driven away by the defeat of Charles Edward Stuart in 1745. The term Scots-Irish was coined in the United States in the 19th century to differentiate the Protestant—mainly Presbyterian—people from the province of Ulster, from the Catholic Irish. These people originated in the Anglo-Scot borderlands and were resettled to Ulster when the English and Scottish crowns were united under James I in 1603. Economic difficulties following restrictive English trade laws<sup>8</sup> and severe religious discrimination after the 1704 Test Act, spurred mass migration of the Scots-Irish to the United States. It is estimated that over 200,000 Scots-Irish migrated to the Americas between 1717 and 1775, in what has been described as the first mass migration to the United States (Fischer 1989). They found land in the coastal areas already owned or too expensive and left for the backcountry on the “Great Philadelphia Wagon Road”, along the Appalachian Mountains southward to the Carolinas. They were joined by large numbers of Germans, in particular from the Palatine region, who emigrated for similar reasons of economic deprivation and religious discrimination (Fischer 1989).

Although Protestants were only one-third of the population of Ireland, they represented three-quarters of all emigrants leaving Ireland between 1700 and 1776 (Adamson 1982). Things radically changed at the end of the 18th century. By

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7. See Rivera, Chu, and Loftin (2002), Loftin and McDowall (2003), and Lee et al. (2007).

8. The 1660 Navigation Act had prohibited all exports from Ireland to the colonies and the export of Irish cattle to England. In 1699, the English parliament prohibited wool or woolen goods exports from any Irish ports except Drogheda, Dublin, Waterford, Youghal, Cork, and Kinsale, none of which is in Ulster.

then, economic and political conditions had improved in Ulster and the ensuing mass emigration from Ireland, particularly after the 1840s Potato Famine, consisted primarily of Irish Catholics, whose cultural and historical background is very different.

## 2.2. *Conceptual Framework: Lawlessness and Interpersonal Violence*

The premise of this paper lies in the relationship between lawlessness, economic vulnerability, and interpersonal violence. Violence plays an essential role for the defense and enforcement of property rights in the absence of third-party enforcement.<sup>9</sup> Evolutionary anthropologists argue that rules of dispute resolution belong to the set of culturally transmitted norms of behavior, that is to say pre-set behaviors that save on the cost of developing new responses to changing environments (Paciotti and Richerson 2002; Richerson and Boyd 2005). The absence of formal law enforcement entails the prevalence of self-help justice, which is sustained by specific cultural traits—the culture of honor being a particular example. Elias' (1994) idea of the “civilizing process” consists of this very idea: as the state develops and monopolizes violence, violent instincts and the inclination to solve disputes with fists, sticks, blades or guns are gradually placed under an increasingly strong social control. Pinker (2011) provides ample historical evidence consistent with this view.

Eighteenth-century Scots-Irish and Scottish Highlanders were more prone to interpersonal violence than other Western European settlers, as they originated from areas that were lagging behind in the “civilizing process”. Lawlessness, lack of political centralization, and violence had characterized the Anglo-Scot borderlands for much of the 250 years during which Scotland and England were in open conflict with one another (from 1296 to 1551). Ulster, the last Irish province to come under English domination, had been particularly ravaged by the Nine Years War and left in a power vacuum by the Flight of The Earls in 1607. In the borderlands, as in Ulster, the concept of state-administered punishment for crime was foreign (O'Donnell 2005).<sup>10</sup> As Fischer (1989) writes: “Borderers placed little trust in legal institutions. They formed the custom of settling their own disputes by the *lex talionis* of feud violence and blood money” (p. lx). Homicide rates in Ulster in the 1730s were around 10 per 100,000 (Roth 2009) and rates of killings in Ireland were twice as high as in England until well into the 20th century (O'Donnell 2005). Fischer (1989) adds: “This border culture was carried across the Irish Sea to Ulster by the settlers who would be called Scots-Irish and Anglo-Irish [ . . . ] In Ireland they found another environment of endemic violence” (p. lx).

This paper deals with the extent to which this “border culture” was also carried across the Atlantic, and to what extent it thrived in the environment encountered

9. Bates, Greif, and Singh (2002) and Gonzalez (2010), for example, model the state as but one agent specialized in the protection of property rights.

10. Early Irish law, the Brehon Law, which was a civil rather than a criminal law, had persisted in Ireland until the Norman invasions in the 12th century and in Ulster until the Tudor conquest in the 17th century. Under the Brehon law, as under customary law in the Anglo-Scot borderland, offenders in case of physical injury only had to respond to the victim or her representative.

there. State controllers, such as courts and sheriffs, were weak in the Antebellum South (Wyatt-Brown 2001), leaving little opportunity for individuals to resolve dispute through third-party adjudication. Besley, Persson, and Sturm (2010) identify conditions in the pre-Civil War South, which were conducive to restricted political competition and lower quality of political institutions. The Scots-Irish culture of honor, which had emerged as, precisely, a response to lawlessness and economic vulnerability, may have provided the best adaptive response to such deficient formal institutions. As such, it could become the prevailing cultural norm.<sup>11</sup> Along these lines, Fischer (1989) writes: “These emigrants from North Britain established in the southern highlands [of the United States] a cultural hegemony that was even greater than their proportion on the population. An explanation of this fact may be found in the character of this American environment, which proved to be exceptionally well matched to the culture of the British borderlands” (p. lxi).

Anecdotal evidence on the ruthlessness and violence of the 18th-century Scot and Scots-Irish settlers in the United States abounds. Wyatt-Brown (2001, p. 73) writes that: “the Scots-Irish were more prone to personal violence and more conscious of honor than any other group then settled in the country”.<sup>12</sup> Roth (2009) describes how the Scots and the Scots-Irish immigrants “brought their homicidal tendencies with them to North America [ . . . ] [In New England], the Scots-Irish [ . . . ] were more than twice as likely to be murdered or to commit murder as other colonists. [ . . . ] In Virginia, [ . . . ] the Scots-Irish had a reputation for extraordinary violence” (p. 83, 84). They represented less than 4% of the population but 18% of homicide assailants in New England and Virginia between 1676 and 1800. Lethal attacks by the Scots-Irish were more likely to occur in a physical fight (25%) or be performed with a knife (21%) and to lead to immediate (91%) rather than delayed death compared with other homicide. Cultures of honor are aimed at establishing or maintaining a reputation so that the targets of violence are more likely to be other members of the community rather than strangers (Silverman 2004) and the vast majority (65%) of homicide perpetrated by the Scots-Irish also had a Scot or an Irish as a victim.<sup>13</sup>

However, the frontier conditions that led to the prevalence of interpersonal violence have now disappeared. Why, then, should such a culture of violence have persisted? One explanation is that such events are rather recent from the point of view of cultural evolution, namely that the original settlers’ culture has not yet fully dissipated despite changes in economic and political conditions. Cultural evolutionary models account for significant time lags between environmental and cultural changes because of hysteresis

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11. Paciotti and Richerson (2002) provides other examples, where the culture of certain groups, like the Chinese in the San Francisco vice industry or the Italian mafia, were the best adaptive norms and came to dominate environments where state institutions were weak.

12. The author refers to the time period around President Jackson’s childhood. Jackson was born in 1767, two years after his parents emigrated from county Antrim, Ulster.

13. Statistics are based on data by Roth (2009) and available in the Historical Violence Database at Criminal Justice Research Center at Ohio State University. All of the reported proportions are statistically significant higher than the sample mean.



in parental transmission of values (Bisin and Verdier 2001).<sup>14</sup> However, cultural transmission is more than cultural reproduction. In models à la Bisin and Verdier (2001), parental decisions to transmit cultural norms are determined by the payoff to alternative cultural norms in different environments. This is formalized more directly in Doepke and Zilibotti (2008), in which parents choose to transmit cultural traits that provide higher fitness to the economic environment. Where formal institutions are strong and provide alternative sources of dispute adjudication and property rights' security, the returns to interpersonal violence are low and the risks high because of the threat of imprisonment. The culture of honor should thus have been transmitted to subsequent generations only where formal institutions were weak.

### 3. Data

#### 3.1. Crime

Crime data are from the Uniform Crime Reporting (UCR) Program Data by the United States Department of Justice and Federal Bureau of Investigation. UCR provides information on several offenses and the monthly count of arrests by age, sex, and race for each offense in more than 17,000 reporting agencies. The main offense to test the culture of honor hypothesis is "murder and non-negligent manslaughter". Homicide by white offenders, defined as the number of homicides for which a white offender has been arrested as a proportion of the white population, is of particular relevance. More precise information on the type of homicide is available from the Supplementary Homicide Reports (SHR) of the UCR, which provide information on the relationship between offenders and victims.

Data collection by the UCR started in the 1960s but data at the county level are only available since 1980 and the number of reporting agencies has been increasing over the years. For this reason, the analysis relies mostly on more recent and complete data, between 2000 and 2007. Data since 1980 are used for robustness and to explore how the influence of Scots-Irish settlements has evolved over time. Historically, the 1904 Special Report to the Bureau of the Census of Prisoners and Juvenile Delinquents in Institutions records the number of inmates held for homicide, a proxy for homicide, but only at the state level.

UCR data is merged with the 2000 Census to obtain crime rates per 100,000 people. The average yearly crime rate per 100,000 people between 2000 and 2007 is 5.8. The average yearly homicide rate by white offenders is 2.5 per 100,000,<sup>15</sup> which is

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14. Empirical evidence on the persistent effects on culture of the African slave trade (Nunn and Wantchekon 2011), Ottoman domination (Grosjean 2011a,b), or climatic conditions several centuries ago (Durante 2011) illustrates that indeed, cultural change is slow.

15. The white offender homicide rate per 100,000 people is defined as the number of homicide for which a white offender has been arrested, over the white population, multiplied by 100,000.



more than twice the average *total recorded* homicide rate in the EU-12.<sup>16</sup> Descriptive statistics displayed in Table 1 show that US-wide averages mask substantial regional heterogeneity. Homicide rates are twice as high in the Deep South as in other regions considered together, and nearly three times as high as in the Northern states (with *t*-stats of the differences in means between 5 and 25). North and South Carolina have the highest crime rates.<sup>17</sup>

### 3.2. *Historical Settlements*

Data on historical settlements are from the US Census (National Historical and Geographical Information System and IPUMS by Ruggles et al. 2010). The first Census was taken in 1790 and then every ten years after that. However, the first Census after 1790 to contain information on settlers' countries of origin is in 1870. As described in Section 2, Scots-Irish settlement in the United States was roughly completed by 1775. The ensuing massive emigration from Ireland particularly after the 1840s potato famine consisted of culturally very different people. The Scots-Irish are hardly identifiable from the Welsh, the Scots or the English by their last names (Berthoff 1986). These two reasons make it necessary to identify settlement by the Scots-Irish from the only pre-1840 Census that contains information on countries of origin: the 1790 Census. Information on the country of origin<sup>18</sup> is available for 147 counties in 11 states on 1790 states' boundaries, 13 on contemporary ones.<sup>19</sup> The main group of interest is the Scots grouped together with the Ulster Scots. The Scots-Irish represented only 7% of the 1790 population. They were more numerous in the North, (see Table 1) but their share as a fraction of the white population is quite homogeneous across different regions.<sup>20</sup> They were a minority everywhere. In 90% of the counties, their share in the population did not exceed 10%.

Vertical cultural transmission from parents to children implies that Americans of Scots-Irish ancestry are more likely to share cultural traits with the original Scots-Irish settlers. Individuals reporting Scots-Irish as first or second ancestry in the 2000 Census are considered as being of Scots-Irish descent. They represent 3% of the 2000 US population (see Table 1).

16. This is a lower-bound estimate of the difference since unsolved crime is not considered in the US number but is in the EU-12 number. The source of data on EU crime rate is UNODC (2010).

17. Maine and New Hampshire have the lowest. Alaska and Hawaii are excluded.

18. The 1790 Census records as countries of origin of settlers: "England and Wales", "Ireland", "Scotland", "France", "Holland", "Hebrew", and "All other nationalities".

19. Connecticut, Maryland, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, and West Virginia. Some counties were carved out of Massachusetts and Virginia and reallocated to, respectively, Maine and West Virginia in the 19th century.

20. None of the regional shares is statistically different from the sample mean when shares of the white population in 1790 are considered.

TABLE 1. Descriptive statistics: Homicide, Scots-Irish settlers (1790 Census), Scots-Irish ancestry (2000 Census) and institutional quality, by region.

Region	Homicide rate		White offender homicide rate		Proportion Scots- Irish 1790 (A) or Scots- Irish ancestry in 2000 (B), % total population		Proportion Scots- Irish 1790 (A) or Scots- Irish ancestry in 2000 (B), % white population		Date of initial county creation		Newspapers per 100,000 people in 1840		Obs.
	Mean	Std dev.	Mean	Std dev.	Mean	Std dev.	Mean	Std dev.	Mean	Std dev.	Mean	Std dev.	
Panel A: 1790 Census													
North	2.93	2.83	1.11	1.09	8.04	7.37	8.35	7.66	1729.89	47.28	9.71	7.40	90
Border South	5.87	4.13	2.01	1.35	6.36	2.95	9.03	3.47	1720.20	62.05	6.75	5.53	20
Deep South	7.10	5.85	1.91	1.86	3.34	1.57	6.75	3.05	1750.90	73.27	3.03	7.65	39
Panel B: 2000 Census													
North	3.10	2.53	1.29	1.07	2.97	1.48	3.21	1.47	1784.10	52.84	10.29	1.24	219
Border South	4.14	4.37	1.90	2.79	3.13	1.39	3.53	1.54	1832.59	53.83	5.58	1.20	374
Deep South	8.59	8.05	3.36	7.05	3.37	1.86	4.68	2.39	1834.55	50.55	6.60	4.42	1016
West	4.94	5.41	3.04	3.6	3.57	1.6	4.16	1.56	1879.76	24.70	na	na	413
Midwest	2.51	3.44	1.17	1.88	2.33	1.12	2.49	1.17	1848.29	24.00	11.15	3.56	1051

Notes: North: CT, MA, ME, NH, NJ, NY, PA, RI, VT; Border South: DC, DE, KY, MD, OK, WV; Deep South: AL, AR, FL, GA, LA, MS, NC, SC, TX, VA; West: CA, OR, WA, ID, MT, WY, AZ, NM, CO, NV, UT; Midwest: IL, IN, KS, MI, MN, MO, NE, ND, SD, OH, WI. States highlighted in bold are included in the 1790 Census. All crime and offenses rates are averages for 2000–2007, per 100,000 people. “White offender” is defined as the number of the relevant offense or crime for which a white offender has been arrested, over the white population. “Proportion Scots-Irish 1790” and “Scots-Irish ancestry in 2000” are expressed as percentages of the county total population or as percentages of the county total white population, as indicated.

Source: US Census, UCR, National Association of Counties.

### 3.3. *Institutional Quality*

A challenge to investigating the interaction between the culture of honor and formal institutions consists of finding early and sufficiently disaggregated measures of formal institutional quality, which are, furthermore, unlikely to have been directly influenced by Scots-Irish presence. Here, I use two. The first hinges on the work by Bockstette, Chanda, and Putterman (2002), which highlights the age of the state as a deep-rooted determinant of state capacity and institutional quality. It shows that state antiquity is significantly correlated with current measures of political stability and institutional quality. Even though the focus of this work is at the country level, a similar argument can be made for US counties. "County antiquity" is defined as the laps of time since initial incorporation. Counties in the 18th- and 19th-century United States had many prerogatives, particularly in law enforcement. Local city and county authorities had entire hiring and financial control over sheriffs and constables (Lane 2002). Sheriffs, constables as well as courts and county jails could only come about with formal incorporation. The time elapsed since or to the original<sup>21</sup> date of formal county incorporation in 1790 thus reflects experience with formal institutions at the time of Scots-Irish settlement.<sup>22</sup> Table 1 displays the average dates of county creation in different regions. In 1790, county formation in the Deep South lagged 30 years behind the North, on average (panel A).

The second measure consists of the number of newspapers per capita, first recorded in the 1840 Census. The role of the media in enhancing institutional quality is the focus of a substantial theoretical and empirical literature. Newspaper entry promotes political participation (Gentzkow, Shapiro, and Sinkinson 2011) and low concentration of both media ownership and readership has been associated with increased political accountability (Besley and Burgess 2002) and lower corruption (Besley and Prat 2006), especially in the 19th-century United States (Gentzkow, Glaeser, and Goldin 2006). In the 1790 population, there were, on average, 9.71 daily, weekly, or tri-weekly newspapers per capita in 1840 per 100,000 people in Northern States, 6.75 in the Border South and 3.03 in the Deep South.

These two measures of institutional quality are positively and significantly correlated with Besley, Persson, and Sturm (2010)'s measure of political competition at the state level. This measure is a party-neutral measure of political competition, computed as (minus) the absolute value of the difference between 50 and the average vote share of the Democrats in all statewide elections. A higher value corresponds to states with more political competition. Table A.2 in the Online Appendix shows that this measure is positively and significantly correlated with the measures of county level institutional quality, even when taking into account total population, historical presence of slavery and literacy in 1900 (the closest available date to 1870 for which literacy is available in the Census).

21. Considering date of redistricting instead does not affect the results.

22. Dates of county formation are taken from the National Association of Counties web site, <http://www.naco.org/Pages/default.aspx>, with additional information from Wikipedia on redistricting.

Beyond capturing the quality of formal institutions, a second criterion guiding the choice of institutional quality variables is the extent to which these measures are exogenous to Scots-Irish settlement. County incorporation was mainly driven by population pressure, and the Scots-Irish, as a minority group, could hardly have exerted a notable influence on the precise date of incorporation. Table A.2 in the Online Appendix shows that when a few 1790 characteristics that are most likely to have driven incorporation, such as the total male and white population, population density, and historical presence of slavery, are included as controls, the proportion of Scots-Irish settlers is not significantly correlated with county antiquity in 1790. As for the other measure, the number of newspapers per capita in 1840 is never significantly correlated with historical Scots-Irish presence. Further tests that rule out the presence of a selection bias due to the endogeneity of historical institutions to Scots-Irish settlement are discussed in Section 5.

### 3.4. Control Variables

Current potential determinant of crime, such as education, income, urbanization, inequality, and racial composition and ethnic fragmentation are from the 2000 US Census. Robustness tests consider the number of police officers and police budget per capita at the county level, which are from the 2000 Census of State and Local Law Enforcement Agencies (US Department of Justice 2000). Table A.1 in the Online Appendix displays descriptive statistics for all variables used in the analysis.

The 1790 Census contains information on race, urbanization, and historical presence of slavery but unfortunately does not include any indicators of income or education, which could be correlated with patterns of settlement and institutional quality. Literacy is only available in the 1900 Census. Further information on income, such as agricultural output and manufacturing wages, is provided by the 1900 Census.

## 4. Historical Scot and Scots-Irish Settlements and Contemporary Homicide

### 4.1. Estimating Equations and Identification

I investigate the legacy of Scots-Irish settlement on contemporary crime across and within regions of the United States by estimating the following equations:

$$m_c = \beta_0 + \beta_1 SI_c + \beta_2 R_c + \beta_3 X_c + \beta_4 S_c + u_c \quad (1)$$

$$m_c = \gamma_0 + \gamma_1 SI_c + \gamma_2 R_c + \gamma_3 SI_c^* R_c + \gamma_4 X_c + \gamma_5 S_c + v_c \quad (2)$$

where  $m_c$  is the average annual homicide rate per 100,000 people between 2000 and 2007 at the county level, overall and by white offenders,  $SI_c$  is the proportion of Scots-Irish settlers in the total county population in the 1790 Census, and  $R_c$  is a vector of

regional dummies for North, Border South and Deep South. In 1790, the Deep South consists of Virginia and the Carolinas; and the Border South of Delaware, Maryland and West Virginia. The vector  $X_c$  includes historical and contemporary controls, such as number of slaves and population density in 1790, literacy, agricultural output, and manufacturing wages in 1900, and income, education, urbanization, inequality, racial composition, and ethnic fragmentation in 2000.  $S_c$  is a vector of state dummies.  $u_c$  and  $v_c$  are error terms. In all specifications, standard errors are robust to heteroskedasticity.<sup>23</sup>

Identification requires “as good as random” assignment of the Scots-Irish in 1790. A particularly worrying situation is if the Scots-Irish had certain characteristics that are associated with crime, such as poverty and lack of education, and selected into different areas based on such characteristics. Persistent low education and income, and not cultural norms, would explain contemporary crime. To address this concern, I first provide descriptive evidence that strongly argues against such a selection bias. Table A.2 in the Online Appendix shows that Scots-Irish presence in 1790 is actually *positively* correlated with education and income both historically and today. It is uncorrelated with historical presence of slavery, which could influence crime through other channels, and with population density in 1790 or today. Second, I control for historical and contemporary income and education in all regressions, as well as all for additional controls described previously.

Even though the relationship is robust to controlling for a large number of observable characteristics, one might still be worried that the presence of unobservable characteristics drives both historical Scots-Irish presence and contemporary homicide. To address this issue, state fixed effects are included in all specifications. This removes any variation at the state level that could be correlated with the pattern of historical settlements and with contemporary homicide, such as differences across states in the legal system or in the leniency of courts towards specific crime, which may have been influenced by the cultural composition of different states. However, it is still possible that selection on unobservables operates at a more local level. A particular concern is that only the most violent settlers specifically migrated to certain areas that are also more prone to contemporary violence. I rely on an instrumental variable estimation strategy and on falsification tests in order to rule this out.

#### 4.2. OLS Baseline Estimates

Table 2 reports OLS estimates of specifications (1) and (2) for overall homicide rate and homicide rate by white offenders. For each dependent variable, results are first presented without any controls, with the full set of contemporary and historical controls, and then adding state dummies. There is no significant relationship between the proportion of Scots-Irish settlers in 1790 and contemporary homicide rates when controls and state dummies are included. However, this hides substantial regional

23. The results are robust for clustering at the state level. Given the small number of states, clustering of standard errors by state may lead to an underestimation of standard errors and is therefore not preferred here.

TABLE 2. Homicide and Scots-Irish settlers in 1790.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Homicide rate						White offender					
Prop. SI 1790	7.20*	3.04	-5.82	4.70	0.26	-8.61*	2.38	0.86	-2.72	0.91	-0.46	-4.05
	[4.20]	[4.00]	[4.80]	[3.68]	[3.59]	[4.58]	[1.58]	[1.85]	[2.47]	[1.41]	[1.69]	[2.48]
Border South	3.07***	-0.58	-0.39	4.09**	-3.70	-2.89	0.94***	-0.05	0.20	0.14	-1.86**	-1.19
	[0.96]	[1.53]	[2.09]	[2.01]	[2.36]	[2.69]	[0.32]	[0.51]	[0.74]	[0.58]	[0.76]	[0.91]
Deep South	4.51***	-2.00	5.91	-1.20	-6.99**	-0.33	0.92***	-0.72	2.68*	-1.12*	-2.76***	0.10
	[1.05]	[1.83]	[4.09]	[2.12]	[2.68]	[4.19]	[0.35]	[0.60]	[1.41]	[0.65]	[0.77]	[1.43]
Border South*Prop. SI				-16.70	42.91**	34.23*				12.12	24.89***	19.27***
				[21.98]	[19.61]	[17.88]				[9.27]	[9.29]	[7.31]
Deep South*Prop. SI				167.45***	126.04**	86.84*				58.93***	48.14**	33.93**
				[63.15]	[59.87]	[52.24]				[20.31]	[19.25]	[16.39]
Historical controls	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
2000 controls	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
State dummies	no	no	yes	no	no	yes	no	no	yes	no	no	yes
Observations	147	145	145	147	145	145	147	145	145	147	145	145
R-squared	0.19	0.53	0.63	0.29	0.58	0.64	0.09	0.35	0.51	0.21	0.44	0.54

Notes: The table reports OLS or 2SLS estimates. The unit of observation is a county. All homicide rates are yearly averages for 2000–2007, per 100,000 people. “White offender” is defined as the number of homicides for which a white offender has been arrested, over the white population. “Prop. SI 1790” or “Prop. SI” is the proportion of Scots-Irish settlers in the 1790 county population. “2000 controls”: log of aggregate earnings, proportion of the population residing in urban areas, proportion of the population black, ethnic fragmentation, income Gini coefficient, proportion of whites with a high school degree, proportion of blacks with a high school degree. “Historical controls”: number of slaves and population density in 1790, proportion of whites literate in 1900, proportion of blacks literate in 1900, log of manufacturing wages in 1900, log of agricultural output in 1900. The excluded regional category is North. All regressions are with a constant. Robust standard errors are reported in brackets.

\*\*\* Significant at 1%; \*\* significant at 5%; \* significant at 10%.

Source: US Census, UCR.

heterogeneity. Within the South, Scots-Irish settlements are strongly and positively associated with homicide. This holds even if state fixed effects are controlled for in columns (6) and (12). The effect is more robust statistically and largest in magnitude in the Deep South. At the mean, in the Deep South, keeping 2000 and 1790 characteristics constant, a 1 percentage point increase in the proportion of Scots-Irish settlers in the Deep South in 1790 (a 30% increase) is associated with 17% higher homicide rate today and 25% higher homicide rate by whites.<sup>24</sup> When state fixed effects are controlled for, the respective increases in overall homicide rates and homicide rates by whites remain sizable, at 12% and 18%.

Another way to assess the magnitude of the estimates is to calculate the proportion of the total variance that is explained. When equation (1) is run for the Deep South sample only, the inclusion of the proportion of Scots-Irish settlers increases the *R*-squared from 0.49 to 0.59 for white offender rates. In other words, Scots-Irish settlements explain 10% of the total variation in white offender rates in the Deep South and nearly 20% of the residual variation left unexplained by the contemporary and other historical explanatory variables.<sup>25</sup>

The results are robust to controlling for a large number of additional contemporary or historical determinants of crime, such as terrain characteristics, mining discoveries, historical land use, ethnic fragmentation, and agricultural output. Some of these results are displayed in Online Appendix Table A.4. Controlling for contemporary law enforcement capabilities, such as police numbers and budgets, which are arguably endogenous, does not affect the results. Results are robust to including interaction terms between every control and regional dummies and the squared value of the proportion of Scots-Irish settlers in order to control for potential nonlinear effects, as well as to alternative specifications of the main independent variable of interest (Online Appendix Table A.5).

Despite the absence of evidence supporting that the Scots-Irish selected into areas with characteristics that are otherwise conducive to crime, and the robustness of the results to controlling for such characteristics, an explanation for the positive association between Scots-Irish settlers and homicide is that areas where they settled experience more crime in general, which in turn leads to more homicide. In other words, the observed homicide may have nothing to do with a culture of honor, but rather with general disorder. For example, homicide may be higher because of more frequent robberies or differences in propensities to carry weapons or drink. To rule this out, rates of weapon carry, drunkenness offenses and robberies are included as additional controls. Results are in Online Appendix Table A.6. As expected, homicide is positively and significantly associated with the prevalence of these offenses, and particularly with

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24. When standardized coefficients are considered, an increase in one standard deviation of the proportion of Scots-Irish settlers is associated with an increase in homicide rates by 1.80 standard deviations in the Deep South and 0.61 in the Border South and an increase in white offender homicide rates by 2.13 standard deviations in the Deep South and 1.10 in the Border South. When state fixed effects are included, the respective figures are 1.24 and 1.50 in the Deep South and 0.49 and 0.85 in the Border South.

25. This is computed as  $(0.59 - 0.49)/(1 - 0.49) = 0.196$ , or 19.6%.



robbery. But including these controls hardly affects the significance or the magnitude of the coefficient associated with Scots-Irish presence in the Deep South.

### 4.3. *Instrumental Variable Estimation*

Even though the relationship proves very robust to controlling for a large number of observable characteristics, as well as to state fixed effects, it is still possible that selection on unobservables operates at a more local level and that within a given state, only the most violent settlers specifically migrated to certain counties that are also more prone to contemporary violence. I rely on an instrumental variable estimation strategy and, in the next section, on falsification tests in order to rule out this possibility.

The majority of the Scots and Scots-Irish made their entry to America through Philadelphia, Chester, or New Castle and continued their way on the Great Philadelphia Wagon Road. A good candidate for an instrumental variable for Scots-Irish settlements is the distance to one of the main crossroads on this road: Shallow Ford, a shallow point of crossing on the Yadkin River. In contrast with ports of entry, which are still important,<sup>26</sup> Shallow Ford today is an undeveloped area. There is thus little reason to believe that its location should influence contemporary crime in other ways than through its influence on historical migration patterns. The other instrument consists of the total stock of Scots-Irish migrants in 1790. This is expected to be strongly correlated with the proportion of Scots-Irish, but to only influence contemporary crime through its effect on Scots-Irish settlement patterns, making it a relevant and valid instrument.

Table 3 displays the results of this two-stage least-squares estimation. The excluded instrument for Scots-Irish regional shares consists of the interaction between the set of instruments and the regional dummies. Instruments have a strong predictive power, with *F*-stats displayed in Panel B of Table 3 well above conventional levels. The instrumented proportion of Scots-Irish settlers remains robustly and significantly associated with homicide in the Deep South.<sup>27</sup>

Another way to rule out that the results are solely driven by selection on unobservables is to gauge how much greater the influence of unobservable factors would need to be, relative to observable factors, to explain away the full positive relationship between Scots-Irish settlers and homicide. This is based on a comparison of the coefficients obtained from two regressions, one with a restricted set of controls and the other with the full set of controls (Altonji, Elder, and Taber 2005). The full set of controls includes all 2000, 1900, and 1790 controls. The restricted set includes either no controls or 1790 controls only. Explaining away the full positive relationship

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26. Distance to major cities and ports is an invalid instrument, as it is potentially correlated with other determinants of contemporary crime, such as contraband networks, thereby violating the exclusion restriction.

27. An alternative possibility to the approach presented here is to estimate separate instrumental variable specifications in each region (North, Border South, Deep South) independently of one another. The two approaches are equivalent and yield similar results. Hansen *J*-statistics indicate that the null hypothesis of validity of the overidentification restrictions cannot be rejected in all cases but one: in the Border South when state dummies are included.

TABLE 3. Homicide and Scots-Irish settlers in 1790: IV results.

	(1)	(2)	(3)	(4)		
<i>Panel A: second stage</i>						
	2SLS					
Estimation method	Homicide rate		White offender			
Prop. SI 1790	6.96 [4.44]	2.67 [2.26]	−5.43 [7.65]	−2.83 [3.90]		
Border South*Prop. SI 1790	62.61* [35.16]	5.61 [12.51]	66.26* [38.94]	2.39 [13.23]		
Deep South*Prop. SI 1790	163.48** [65.94]	73.57*** [21.54]	87.75 [59.47]	48.72*** [17.94]		
Historical controls	yes	yes	yes	yes		
2000 controls	yes	yes	yes	yes		
Region dummies	yes	yes	yes	yes		
State dummies	no	yes	no	yes		
Observations	145	145	145	145		
R-squared	0.60	0.46	0.65	0.54		
	(1)	(2)	(3)	(4)		
<i>Panel B: First stage: the dependent variable is the proportion of Scots-Irish in:</i>						
	North		Border South		Deep South	
Region*Total stock Scots-Irish	3.25*** [0.57]	4.36*** [1.41]	3.39*** [0.49]	3.11*** [0.61]	4.70*** [1.48]	3.65*** [0.48]
Region*Distance Shallow Ford	−0.20*** [0.05]	−0.35*** [0.08]	−0.08*** [0.02]	−0.26** [0.12]	−0.19*** [0.07]	−0.09*** [0.03]
Historical controls	yes	yes	yes	yes	yes	yes
2000 controls	yes	yes	yes	yes	yes	yes
State dummies	no	yes	no	yes	no	yes
Observations	145	145	145	145	145	145
R-squared	0.79	0.93	0.96	0.80	0.94	0.96
F-stat of excluded instruments	40.89	20.85	11.84	14.27	73.92	50.95

Notes: See notes to Table 2.

between the Scots-Irish and contemporary homicide rates by whites in the Deep South would require unobservable factors to be about three to 32 times greater than observable factors.<sup>28</sup>

28. The ratios are obtained from the comparison of “restricted” coefficients obtained in columns (1) and (6) for total and white offender rates respectively with the “full” coefficients obtained in columns (2) and (7) of Table 3.

These additional results suggest that selection either on observable or unobservable factors are unlikely to drive the main result of this paper. The next section adds a number of falsification tests and investigates in more details the characteristics of homicide associated with historical Scots-Irish presence.

#### *4.4. Type of Crime and Falsification*

The culture of honor is a private justice system and a self-protection ethic, whose purpose is the defense of a reputation. It should predict homicide but not indiscriminate violence or general lawlessness. Accordingly, regression results in columns (1)–(4) of Table 4 show that neither robberies nor drunkenness offenses are systematically higher in counties settled by the Scots-Irish. In other words, the legacy of the Scots-Irish is not lawlessness in general but, rather, a specific kind of lethal violence, which is investigated further in Table 4. The Supplementary Homicide Report (SHR) gives more detailed information on the nature of the relationship between offender and victim and the weapon used, which reveals information on the motivation of homicide. Homicides perpetrated in defense of one's reputation are more likely to involve people who, although not directly related, know one another. And indeed, the homicide legacy of the Scots-Irish in the South is specific to homicide between acquaintances (columns (5) and (6)), perpetrated with a handgun or pistol or, in a rather demonstrative way of one's virility, with a blunt object, such as a hammer or a club (columns (7) and (8)). SHR data are unfortunately sparser than UCR so that the precision of the estimates is affected and the effects are barely significant when state fixed effects are controlled for.

The relationship between homicide and historical settlements in the South is specific to the Scots-Irish. Online Appendix Table A.7 presents the results of specification (2) that considers settlers from Germany instead of the Scots-Irish. As explained in Section 2, the Germans migrated at a similar time period and for similar reasons of economic difficulty and religious discrimination and are therefore a good comparison group to the Scots-Irish.<sup>29</sup> However, their presence in the Border or Deep South is never significantly associated with homicide rates.

The fact that the relationship holds only for the Scots-Irish and only for violence specific to the protection of male honor rules out the possibility that the relationship between historical settlements and contemporary homicide in the South is entirely driven by systematic migration of the most violent settlers to crime-ridden counties. It is, indeed, hard to fathom why migration would have been selective only for the Scots and Scots-Irish and not for the Germans; and, if it was true that only the most violent and antisocial Scots-Irish migrated, why other crime and general disorder are not also higher. This, in addition to instrumental variable results, indicates that the relationship between historical Scots-Irish settlements and contemporary homicide in the South is

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29. An earlier version of the paper considered all settlers from England, Wales, France, Germany, and Holland together, finding no effect. Restriction to the Germans is justified by the fact that they are a more comparable group to the Scots-Irish.

TABLE 4. Type of crime and Scots-Irish settlers in 1790.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Drunkenness offenses, white male offender		Robbery, white male offender		Victim and offender acquaintances		Homicide by blunt object or handgun/pistol	
Prop. SI 1790	197.62* [105.11]	-60.85 [87.35]	8.56 [9.48]	-26.71** [11.35]	0.78 [1.00]	-0.49 [0.91]	-0.06 [0.41]	-0.34 [0.45]
Border South*Prop. SI	-564.49* [299.45]	29.26 [267.16]	82.60 [71.35]	156.42** [59.88]	21.47*** [7.17]	12.79 [9.19]	1.45 [2.71]	-0.09 [3.09]
Deep South*Prop SI	-269.86 [812.29]	590.23 [1,068.59]	-46.77 [54.80]	-2.41 [52.90]	77.38* [46.10]	30.62 [34.99]	22.34* [11.55]	13.75+ [9.40]
Historical controls	yes	yes	yes	yes	yes	yes	yes	yes
2000 controls	yes	yes	yes	yes	yes	yes	yes	yes
Region dummies	yes	yes	yes	yes	yes	yes	yes	yes
State dummies	no	yes	no	yes	no	yes	no	yes
Source:	UCR		UCR		SHR		SHR	
Observations	145	145	145	145	138	138	138	138
R-squared	0.43	0.54	0.29	0.50	0.58	0.67	0.37	0.42

Notes: The table reports OLS estimates. The unit of observation is a county. All reported dependent variables are yearly average rates for 2000–2007, per 100,000. “White male offender” refers to the rate of white offenders over the white male population, per 100,000. All controls are as in Table 2. All regressions are with a constant. Robust standard errors are reported in parentheses.  
\*\*\* Significant at 1%; \*\* significant at 5%; \* significant at 10%; + significant at 15%.  
Source: US Census, Supplementary Homicide Report (SHR), UCR.

causal. The next section investigates what is specific to the South that explains why the relationship is observed there only.

## 5. Institutional Quality and the Culture of Honor

In the beginning of the 19th century, historical records indicate that the Scots-Irish were equally violent in Virginia and in New England (Roth 2009). However, the findings here indicate that the Scots-Irish culture of honor has persisted in the South only. A large literature discussed in Section 2 examines the relationship between interpersonal violence and the quality of formal institutions. Wyatt-Brown (2001) depicts how in the North of the United States, formal and impersonal institutions substituted for the ethic of honor as the cement of social and political order in the 19th century; but not in the South. The hypothesis that is tested here is that the culture of honor, which is a private justice system, persisted as a substitute for public law and order. One should thus expect the culture of honor to persist only where formal institutions were weak historically.

### 5.1. Estimating Equation and Identification

Cultures of honor are common adaptations among populations that live in regions with weak states.<sup>30</sup> To investigate to what extent heterogeneous institutional quality in the late 18th and 19th century United States explains whether and where the Scots-Irish culture of honor has persisted, I estimate the following equation:

$$m_c = \phi_0 + \phi_1 SI_c + \phi_2 IQ_c + \phi_3 SI_c^* IQ_c + \phi_4 R_c + \phi_5 X_c + \phi_6 S_c + w_c, \quad (3)$$

where  $IQ_c$  denotes institutional quality in county  $c$ , measured by newspapers circulation and county antiquity.  $R_c$  is a vector of regional dummies and  $S_c$  a vector of state dummies.  $SI_c$  is the proportion of Scots-Irish settlers in 1790 as in equations (1) and (2) and  $X_c$  is the same set of control variables, with the addition of total county population in 1840.  $w_c$  is an error term. In all specifications, standard errors are robust to heteroskedasticity.

30. The prevalence of cultures of honor is also explained by economic vulnerability. In a previous version of the paper, I investigate the role played by herding in the persistence of the culture of honor in the United States. I include in equation (3), instead of measures of institutional quality, a measure of livestock per capita in county  $c$ , from the 1840 Census. The analysis focuses on sheep and hogs, which were the main animals herded by the Scots and Scots-Irish. The historical prevalence of herding, in itself or even in combination with Scots-Irish presence, is not found to be statistically associated with violence. The coefficient associated with the interaction between livestock per capita and Scots-Irish settlements is not significantly different from zero in the entire population. However, it is positive and significant only in the South. Hence, even though the influence of Scots-Irish settlements on homicide is more pronounced in Southern counties where herding was more prevalent, the survival of the culture of honor cannot be accounted for by economic occupations or settlers' cultural background alone. For this reason, this version of the paper focuses on the role played by institutional quality.

A challenge to identification is that the measures of institutional quality postdate, at least partly, 18th century settlements and may thus be correlated with, or worse, endogenous to the proportion of Scots-Irish settlers. Several strategies are used to rule out this concern. First, as discussed previously and shown in Online Appendix Table A.2, the measures of institutional quality in the early 19th century are uncorrelated with the proportion of Scots-Irish settlers in 1790. The main determinant of county formation and of newspaper circulation was total county population, which is included as a control variable in equation (3). Second, in order to gauge the presence of a potential selection bias due to the endogeneity of historical institutions or to the presence of unobservable characteristics that affect both historical institutions and crime today, I undertake two robustness tests in the Online Appendix. First, Table A.8 compares the coefficients associated with the institutional quality variables in specification (3) when Scots-Irish presence is taken in or out of the specification. They hardly change. Second, plots in Online Appendix Figures A.1 and A.2 show that the residuals of equation (3) are uncorrelated with the residuals of a specification that regresses historical institutional quality on Scots-Irish share in the 1790 population. Third, the results are robust to instrumenting the proportion of Scots-Irish settlers by the set of instruments described in Section 4.3.

To address the potential concern that newspaper circulation also captures the general degree of development and education, controls for historical and contemporary income and education are included. Adding or omitting these controls does not affect the estimates.

## 5.2. OLS and Instrumental Variable Estimation Results

Regressions in columns (1)–(4) (overall homicide) and (5)–(8) (white offender rates) of Table 5 investigate the relationship between homicide, Scots-Irish settlements, and historical institutional quality, proxied by county antiquity and newspaper circulation. When interactions between proxies for institutional quality and proportion of Scots-Irish settlers in 1790 are included, the main effect of Scots-Irish settlement becomes statistically significant and positive, while the coefficients on the interaction terms are negative and statistically significant. In other words, historical Scots-Irish presence is associated with higher homicide today, but only in counties in which formal institutional quality was historically poor. To address the potential concern that institutional quality in the 19th century is correlated with unobservable state characteristics that also influence the quality of institutions and contemporary homicide rates, state fixed effects are included in columns (2) and (6). The results are robust.<sup>31</sup>

In the average county, which was created in 1734 (mean date of county creation) and had the mean number of newspapers in 1840 (8.6), a 1 percentage point increase

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31. Results are also robust to controlling for the squared proportion of Scot-Irish in 1790 in order to account for potential nonlinearity and to relying on the first principal component of the two measures, which alleviates the issue that the two proxies measure different dimensions of institutional quality. These results are not displayed here for economy of space.

TABLE 5. Institutional quality and persistence of the culture of honor.

Estimation method	Homicide rate			White offender						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
	OLS			2SLS			OLS		2SLS	
Prop. SI 1790	301.27*** [110.20]	255.04*** [86.81]	86.03*** [38.95]	72.38+ [45.60]	96.98** [39.19]	72.33** [30.99]	31.06** [13.86]	24.60+ [15.38]		
Newspapers pc 1840	1.01*** [0.37]	0.22 [0.45]	0.37* [0.19]	-0.42 [0.51]	0.43*** [0.15]	0.00 [0.17]	0.24*** [0.08]	-0.17 [0.18]		
Prop SI* Newspapers pc 1840	-18.27*** [7.06]	-15.25** [6.15]	-6.85*** [3.30]	-7.20+ [4.42]	-6.77*** [2.44]	-5.60*** [2.01]	-2.91** [1.25]	-3.02*** [1.51]		
County antiquity 1790	1.43 [1.91]	1.77 [1.97]	0.37 [1.11]	1.39 [1.17]	0.44 [0.58]	0.59 [0.54]	-0.28 [0.42]	0.17 [0.47]		
Prop SI* County antiquity 1790	-41.11** [16.95]	-38.94*** [14.32]	-6.97* [4.10]	-6.68* [3.88]	-9.75+ [6.33]	-6.31 [5.93]	-0.27 [1.33]	0.70 [1.68]		
Historical controls	yes	yes	yes	yes	yes	yes	yes	yes		
2000 controls	yes	yes	yes	yes	yes	yes	yes	yes		
Total pop. in 1790	yes	yes	yes	yes	yes	yes	yes	yes		
Total pop. in 1840	yes	yes	yes	yes	yes	yes	yes	yes		
Region dummies	yes	yes	yes	yes	yes	yes	yes	yes		
State dummies	no	yes	no	yes	no	yes	no	yes		
Observations	144	144	141	141	144	144	141	141		
R-squared	0.63	0.68	0.61	0.69	0.46	0.57	0.43	0.56		
F-stat. excluded instruments for:										
Prop. SI 1790			96.28	71.15			96.28	71.15		
Prop SI* Newspapers pc			85.79	61.21			85.79	61.21		
Prop SI* County antiquity			49.55	19.83			49.55	19.83		



in the proportion of Scots-Irish settlers (which represents a 15% increase) is associated with 18% and 15% higher contemporary homicide rate overall and by white offenders, respectively. In the newest county, which, hypothetically, would also have the *minimum* value of newspapers (2.9), the corresponding figures jump up to 54% and 80%.<sup>32</sup> In the oldest county (created in 1634) with the *maximum* number of newspapers (14.7), by contrast, the net effect would actually be negative.

In columns (3), (4), (7), and (8) of Table 5, Scots-Irish presence is instrumented with the same set of instruments as in Section 4.3. The interaction terms between Scots-Irish settlement and institutional quality are instrumented by interactions between the instruments and the institutional quality measures. The predictive power of the first-stage regressions is satisfactory across the board, with *F*-stat displayed in the bottom panel of Table 5 well above conventional levels. Overall, the results prove rather robust to the instrumentation strategy. The coefficient on the main effect of Scots-Irish settlement remains positive and significant, albeit marginally so when state dummies are included. The coefficients on the interaction terms between institutional quality and Scots-Irish share in the 1790 population remain negative and significant, although the interaction with county antiquity falls short of statistical significance when white offender rates are considered.

A related and noteworthy result is that bad-quality institutions are not a sufficient condition to observe higher prevalence of interpersonal violence. Indeed, in specifications in which institutional quality is considered alone,<sup>33</sup> the coefficients on the institutional quality measures are not statistically significantly different from zero and very small in magnitude. Only where Scots-Irish were also present, is poor institutional quality associated with higher prevalence of interpersonal violence.

Taken together, these results point to institutional quality as the driver of the survival and persistence of the culture of honor. Heterogeneity in institutional quality and lower institutional quality in the South (see Table 1) explain in turn why the culture of honor has persisted there only. However, in the absence of instrumental variables for historical institutional quality measures as well, it is impossible to fully rule out the presence of endogeneity, so that the results should be interpreted with caution.

## 6. Cultural Persistence

This section explores the mechanisms of cultural transmission, which explain how settlements 200 years ago are still associated with homicide today. It provides evidence that vertical cultural transmission within families played a role in the persistence of the Scots-Irish culture of honor, but only where such cultural traits paid off, that is to say in areas with weak formal institutions. I also find that, consistently with the premise that institutional quality between North and South has converged over time (Berkowitz and Clay 2011), the influence of the culture of honor is waning.

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32. These are computed by taking the average of the coefficients with and without state fixed effects.

33. The results are not displayed here for economy of space.

### 6.1. *Cultural Transmission*

Several mechanisms may explain why we still observe a significant influence of Scots-Irish settlements more than 200 years later.

A first possibility arises from models of social interactions (Glaeser, Sacerdote, and Scheinkman 1996), which predict that the propensity to commit violent acts co-varies across agents. In this view, the violent ways of 18th century Scots-Irish fed on themselves and persisted until today. This interpretation is, however, inconsistent with the fact that persistence is not observed everywhere where the Scots-Irish settled but is specific to areas with weak formal institutions.

A second possibility consists of a simple cultural transmission story, according to which Scots-Irish settlers transmitted their beliefs to their descendants, who still live in areas of original settlement and indulge in their violent ways. The presence of Americans of Scots-Irish ancestry in 2000 is indeed strongly correlated with Scots-Irish settlements in 1790, and actually much more so than for other nationalities. The presence of one Scots-Irish settler in 1790 in a given county is associated with, on average, 16 individuals of self-declared Scots-Irish ancestry in 2000. By contrast, only 2 individuals report English ancestry for each 1790 English settler and 8 for Germans. The socio-psychological literature and paternalistic cultural transmission models à la Bisin and Verdier (2001) explain cultural persistence by the hysteresis of cultural norms that are transmitted from one generation to the next. The main idea of this literature is that the backward looking behavior of parents, who transmit their own values to their children, explains the slow adaptation of cultural values to new economic environments. An implication of these models of vertical cultural transmission from parents to children is that agents internalize cultural norms within families so that even today, Americans of Scots-Irish ancestry should display cultural traits that are consistent with a culture of honor. To test this, equations (1) and (2) are estimated with the proportion of Americans who report Scots-Irish as first or second ancestry in the 2000 Census instead of the historical proportion of Scots-Irish.<sup>34</sup> Regressions are performed in the entire continental US population for which crime data and 1900 controls are available (more than 2,800 counties). A concern is that not controlling for Scots-Irish historical presence may lead to an omitted variable bias since it may have contributed both to the presence of individuals of this ancestry and to homicide rates, through other channels. For robustness, historical presence is included as a control, with the drawback that the sample size is reduced to the 1790 Census population.

Results are reported in Table 6. The presence of Americans of Scots-Irish ancestry today is associated with higher homicide but, again, only in Southern states. This vertical transmission story hence faces the same shortfall as the social interactions

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34. To address possible doubts as to the reliability of self-reported ancestry information in the Census, in additional specifications not reported here, the proportion of individuals of self-declared Scots-Irish ancestry is instrumented by the proportion of white native Presbyterians in the 1900 Census, which is itself strongly correlated with Scots-Irish share in 1790 but available in more counties. The instrument has a strong predictive power and the coefficient on the instrumented variable remains significant and positive at the 5% level in explaining murder rates by white offenders in the Deep South.

TABLE 6. Homicide and Americans of Scots-Irish ancestry in 2000.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Homicide rate				White offender		
Prop SI 2000	21.93*** [7.80]	0.37 [12.78]	5.30 [30.56]	-26.11 [19.67]	-3.59 [6.93]	-4.82 [6.61]	-6.87 [8.81]	-26.71*** [8.80]
Border South*Prop SI 2000		41.60* [24.40]		66.10 [132.08]		32.05* [18.63]		64.99* [36.77]
Deep South*Prop SI 2000		38.07** [17.11]		96.16 [80.91]		-0.83 [10.37]		55.70** [22.47]
West*Prop SI 2000		-14.20 [19.54]				-22.89 [14.12]		
Midwest*Prop SI 2000		4.58 [15.69]				7.98 [7.73]		
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes
2000 controls	yes	yes	yes	yes	yes	yes	yes	yes
Prop SI 1790	no	no	yes	yes	no	no	yes	yes
1790 controls	no	no	yes	yes	no	no	yes	yes
Population	2000 Census		1790 Census		2000 Census		1790 Census	
Observations	2,845	2,845	147	147	2,845	2,845	147	147
R-squared	0.26	0.26	0.49	0.50	0.06	0.06	0.34	0.38

Notes: The table reports OLS estimates. The unit of observation is a county. "Prop. SI 2000" is the proportion of Americans of first or second Scots-Irish ancestry in the 2000 Census, as a proportion of the 2000 county population. "Homicide rate", "White offender", "2000 controls"; as in Table 2. "1900 controls": proportion of whites literate in 1900, proportion of blacks literate in 1900, log of manufacturing wages in 1900, log of agricultural output in 1900. "1790 controls": number of slaves and population density in 1790. Border South: DC, DE, KY, MD, OK, WV, Deep South: AL, AR, FL, GA, LA, MS, NC, SC, TX, VA, West: CA, OR, WA, ID, MT, WY, AZ, NM, CO, NV, UT. Midwest: IL, IN, KS, MI, MN, MO, NE, ND, SD, OH, WI. The excluded regional category is North. All regressions are with a constant. Robust standard errors reported in parentheses. \*\*\*Significant at 1%; \*\*Significant at 5%; \*Significant at 10%.

Source: US Census, 2000 Census of State and Local Law enforcement agencies, UCR.

explanation. They are both unable to explain why, although Scots-Irish in 1790 were well scattered across different areas of the United States, persistence is only observed in the South.

A third potential explanation for the results is that interpersonal violence was a best response in an environment with weak formal institutions and that the persistence of poor institutions in the South underlies higher violence in the South today. If that was the case, more violence today should be observed in all areas with weak institutions historically, regardless of Scots-Irish presence. This is not what is found here.

Instead, the results in this paper point to a mechanism that combines this third explanation with a cultural transmission of preferences in the following way. The idea is that violent cultural norms prevailed and were transmitted to subsequent generations only in areas where they paid off, that is to say where formal institutions were all but absent at the time of Scot-Irish original settlement and persistently weak thereafter.<sup>35</sup> The first part of this proposition is consistent with the results in the paper so far. In order to test the second part of the proposition, I estimate specification (3) in which the presence of Americans of Scots-Irish ancestry today is interacted with the quality of historical institutions. Table 6 presents the results with the measures of institutional quality discussed previously: newspapers circulation and county antiquity in the 19th century (measured as the difference between 2000 and the original date of incorporation). The interaction between institutional quality and presence of Americans of Scots-Irish ancestry in 2000 is consistently negative and statistically significant when region dummies are included. In other words, Americans of Scots-Irish ancestry, today, are associated with higher homicide in areas where formal institutions were historically weak. These results point to complementarities between institutional and cultural persistence. Scots-Irish cultural traits persisted, and were transmitted to subsequent generations, but only where they were adaptive because of the weakness of formal institutions. This is very close to the theoretical mechanism in Tabellini (2008a), in which parental transmission of preferences is shown to depend on the spatial pattern of external enforcement.

## 6.2. *Evidence from Attitudinal Data*

I argue that a culture of violence, which had emerged as a response to centuries of lawlessness in the Scottish Highlands and the Anglo-Scot borderlands, survived as a system of private justice in some of similarly lawless regions of the United States. This section explores whether Southerners of Scots-Irish ancestry also display a value system that is consistent with the reliance on private justice and that is characterized by the defiance of central institutions (Leeson 2009). Individual attitudes towards self-reliance and centralized institutions are regressed on Scots-Irish ancestry. All the data are from the General Social Survey (GSS). Results in Table 8 confirm that Americans of Scots-Irish ancestry have a higher propensity to have a weapon at home (rifle or

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35. Berkowitz and Clay (2006) document enduring lower judicial quality in Southern states in the early 21st century.

TABLE 7. Historical institutional quality and transmission of the culture of honor.

	(1)	Homicide rate	(2)	(5)	White offender	(6)
Prop SI 2000	461.31*** [149.27]		269.82* [158.60]	163.75** [65.75]		76.72 [69.93]
Newspapers pc 1840	0.26*** [0.09]		0.71*** [0.22]	0.10** [0.04]		0.15*** [0.06]
Prop SI 2000*Newspapers pc	-10.50*** [2.59]		-2.13 [3.55]	-3.44*** [1.13]		-1.84 [1.49]
County antiquity	2.92** [1.22]		3.72* [2.08]	0.80 [0.54]		1.21 [0.74]
Prop SI 2000*County antiquity	-66.41** [28.60]		-47.32 [30.03]	-23.85* [12.50]		-11.74 [13.38]
1900 controls	yes		yes	yes		yes
2000 controls	yes		yes	yes		yes
Total pop. in 1840	yes		yes	yes		yes
Region dummies	yes		yes	yes		yes
State dummies	no		yes	no		yes
Observations	1,032		1,032	1,032		1,032
R-squared	0.45		0.53	0.19		0.27

Notes: See notes to Table 5. “Newspapers per cap”: number of daily, weekly, or tri-weekly newspapers per capita in 1840 (in Northern States: 10.30, in Border South: 5.58, in Deep South: 6.83, in West: non-available in 1840 Census, in Midwest: 11.16). “County antiquity” is the log of the difference between 2000 and the county original incorporation date (in Northern States: 5.71, in Border South: 5.27, in Deep South: 5.33, in West: 4.96, in Midwest: 5.10). Source: US Census, UCR, National Association of Counties. (<http://www.naco.org/Pages/default.aspx>)

TABLE 8. Cultural attitudes of Americans of Scots-Irish ancestry.

Sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All	Weapon at home	Born <1953	Born >1953	Confidence Exec. Branch Fed. Gov.	Confidence Exec. Branch Fed. Gov.	Born <1953	Born >1953	All	Confidence US Supreme Court	Born <1953	Born >1953
Scots-Irish ancestry	-0.02** [0.01]	-0.01** [0.01]	-0.02 [0.02]	0.01 [0.01]	0.01 [0.02]	0.01 [0.01]	0.03*** [0.01]	-0.01 [0.03]	0.04** [0.02]	0.04*** [0.02]	0.04*** [0.01]	0.04 [0.04]
BS* Scots-Irish	0.01 [0.01]	0.00 [0.01]	0.01 [0.02]	-0.04*** [0.01]	0.00 [0.02]	0.00 [0.02]	0.01 [0.03]	-0.01 [0.03]	-0.05*** [0.02]	-0.05*** [0.02]	-0.05* [0.03]	-0.04 [0.05]
DS* Scots-Irish	0.06*** [0.01]	0.06*** [0.01]	0.07*** [0.02]	0.02 [0.01]	-0.06** [0.03]	-0.06** [0.03]	-0.08*** [0.02]	-0.02 [0.07]	-0.06+ [0.04]	-0.06+ [0.04]	-0.09*** [0.01]	-0.02 [0.08]
W* Scots-Irish	0.02 [0.03]	0.01 [0.03]	0.02 [0.04]	-0.02 [0.01]	0.02 [0.05]	0.02 [0.04]	0.00 [0.03]	0.06 [0.07]	-0.02 [0.03]	-0.02 [0.03]	-0.02* [0.01]	-0.02 [0.04]
MW* Scots-Irish	0.01 [0.01]	0.01 [0.01]	0.02 [0.02]	-0.02 [0.02]	0.00 [0.04]	0.00 [0.04]	-0.02 [0.02]	0.03 [0.06]	-0.03+ [0.02]	-0.04+ [0.02]	-0.05*** [0.01]	-0.02 [0.05]
Individual controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
GSS year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
State dummies	no	yes	no	no	no	yes	no	no	no	yes	no	no
Observations	32427	32427	16044	16383	19424	19424	9781	9643	19201	19201	9601	9600
R-squared	0.13	0.13	0.14	0.1	0.04	0.04	0.04	0.05	0.02	0.02	0.02	0.02
Value dep. variable	0.24	0.28	0.29	0.84	0.84	0.84	1.19	1.16	1.22			

Notes: The table reports OLS estimates. The unit of observation is an individual. All regressions are with a constant and year and region dummies. "BS" stands for Border South, "DS" stands for Deep South, "W" stands for West, "MW" stands for Midwest. Weapon at home: takes value 1 if the respondent owns a pistol, rifle or shotgun. The sample average is 0.23 (North: 0.15, BS: 0.35, DS: 0.26, W: 0.22, MW: 0.25). The GSS asks: "Would you say you have a great deal of confidence (coded 2), only some confidence (coded 1), or hardly any confidence at all (coded 0) in [these institutions]?" "Confidence Exec. Branch Fed. Gov.", respectively "Confidence US Sup. Court", is the answer to this question about the executive branch of the federal government, respectively the U.S. Supreme Court. The sample averages are 0.84 (North: 0.87, BS: 0.83, DS: 0.86, W: 0.82, MW: 0.80) and 1.19 (North: 1.23, BS: 1.11, DS: 1.17, W: 1.22, MW: 1.18), respectively. "Scots-Irish ancestry" or "Scots-Irish" takes value one if respondent reports Scots-Irish ancestry in the GSS. "Individual controls" are: age, income, working status, self-employed, sex, race, born in US, size of place of residence. Robust standard errors clustered at the state level reported in parentheses (46 clusters).

\*\*\* Significant at 1%; \*\* significant at 5%; \* significant at 10%; + significant at 15%.

Source: US General Social Survey (GSS) 1972–2008 Cumulative dataset.

pistol) (columns (1) and (2)) and are less trusting of the federal government (columns (5) and (6)) as well as of formal law enforcement (the Supreme Court) (columns (9) and (10)), but only those who live in the Deep South. Americans of Scots-Irish ancestry in the Deep South are 6 p.p. (or 25% more likely than the sample mean) to own a weapon at home. By contrast, no consistent pattern for homicide, or for cultural attitudes, is found in falsification tests that consider Americans of German ancestry (Online Appendix Tables A.9 and A.10).

### 6.3. *Cultural Decay*

The Scots-Irish culture of honor still explains the prevalence of homicide, but, if culture is adaptive, its effect should slowly disappear over time and in the face of economic and institutional convergence across regions of the United States. Accordingly, evidence from the GSS indicates that the relationship between, on the one hand, Scots-Irish ancestry and, on the other, handgun or rifle ownership, lack of confidence in the Federal government and in the US Supreme Court, is stronger for older cohorts. Columns (3), (4), (7), (8), (11), and (12) of Table 8 present separate results for cohorts born before and after 1953, the median of the distribution of birth years across the different GSS waves.<sup>36</sup> The coefficient on the interaction between the Deep South dummy and Scots-Irish ancestry is, on average, more than four times as large in magnitude for the cohort born before 1953 than for the younger cohort, as well as consistently statistically significant.

Turning back to homicide, county-level data are available only since the beginning of the 1980s from UCR, although earlier data suffers from missing observations. To study how the variation in homicide that is explained by Scots-Irish settlements has evolved since 1980, yearly homicide rates are regressed on the proportion of Scots-Irish settlers in 1790 interacted with regional dummies, for every available year from 1980 to 2007.<sup>37</sup> Obtained coefficients are in Online Appendix Table A.11. Coefficients on the interaction between the proportion of Scots-Irish settlers in 1790 and regional dummies are slowly decreasing over time. The average “depreciation rate” of the culture of honor over the period is about 3.4% yearly in the South (taking four-year beginning and end of period averages). Applying this depreciation rate and extrapolating to the beginning of the 20th century gives estimates that are in the ballpark of the coefficients from a regression of the number of inmates held for homicide, taken from the 1904 Special Report to the Bureau of the Census on Prisoners and Juvenile Delinquents in Institutions, on the proportion of Scots-Irish settlers (Online Appendix Table A.11, column (27)).

36. All regressions control for age.

37. 1984 and 1989 are missing.



## 7. Conclusion

This paper tests a popular hypothesis, which holds that the Southern taste for violence is inherited from the Scots-Irish herders who settled the region in the 18th century. It is found instead that the Scots-Irish settled homogeneously across the United States but that their taste for violence survived in the South only. The Scots-Irish culture of honor, shaped by a history of lawlessness in the Anglo-Scot borderlands, Ulster, and the Scottish Highlands has thrived only in areas of the United States where the institutional environment was similarly weak. Southerners of Scots-Irish ancestry in the Deep South also display attitudes that stress self-reliance and mistrust of formal and centralized institutions. The interpretation is that such cultural norms have persisted as a private justice system, which substituted for formal law enforcement. This substitutability between interpersonal violence and formal institutions is the first main message of this study.

The second main message of the paper is that cultural persistence is conditional on the quality of formal institutions. Culture is adaptive: the culture of honor persisted only in areas with weak formal institutions, and its influence is waning in the face of institutional convergence across different regions of the United States.

Overall, the implication for crime policy is that the strengthening of formal institutions and formal dispute adjudication mechanisms is expected to reduce the prevalence of interpersonal violence.

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## Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

Online Appendix