

A History of Violence:
The Culture of Honor as a Determinant of Homicide in the US South

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Abstract

According to the culture of honor hypothesis, the high prevalence of homicides in the US South originates from the settlement of the region by herders from the fringes of Britain. This paper confirms that Scot or Scots-Irish settlements are associated with higher homicide today, but only in the South. The effect is confined to white offenders and more pronounced where herding was more prevalent and institutional quality lower. Results indicate that other white settlers adopted the Scots-Irish culture. The interpretation is that the culture of honor persisted in the South as an adaptive behavior to economic vulnerability and weak institutions. Evidence also suggests that the Scots-Irish culture of honor continues to adapt: it is slowly depreciating over time. A positive effect of the culture of honor is to deter violent crime against women.

Keywords: Cultural Persistence, Homicide, Institutions, Migration, Scots-Irish, US South

JEL codes: K42, N31, O15, Z13

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1. Introduction

It is by now established that historical events have a lasting influence on economic outcomes and behavior (see Nunn 2009 for a review). The hysteresis of formal institutions has been the first and foremost explanatory factor behind such persistence (Engerman and Sokoloff 1997, Acemoglu, Johnson and Robinson 2001). Recently, an emerging body of evidence has pointed to culture, embodied in individual values and attitudes, as another channel of persistence.¹ However, culture is a pervasive concept and still little is understood on what outcomes are influenced, how culture changes and how formal institutions and culture interact. This paper explores the role of culture in explaining a specific behavior, which scholars have long struggled to reconcile with traditional socio-economic or institutional determinants: homicide. The average homicide rate per 100,000 people between 2000 and 2007 in the South of the United States was 8.55, nearly twice as high as in the rest of the country², a discrepancy that seems unexplainable by income or institutional differences alone (Cohen and Nisbett 1994, 1996). The inelasticity of homicide rates to income levels has also been interpreted as a limitation of cost-benefit analysis of criminal behavior³ (Levitt and Miles 2006). More recent economic analyses of crime appear similarly unsuitable to explain the Southern homicide specificity, which is essentially a white offender phenomenon.⁴ Some authors have suggested instead that the high Southern homicide rate is a product of cultural values condoning the use of lethal violence. Gastil (1971) and Wyatt-Brown (1982, 2001) namely highlight conditions in the pre-Civil war South, characterized by an “institutionalization of dueling” and an “exaggerated sense of honor”.⁵

¹ This conclusion is reached largely from observing differences that can be linked to different immigrants' countries of origin or to historical difference within a given set of formal institutions. See, among others: Algan and Cahuc (2010), Fernandez and Fogli (2009), Guiso, Sapienza and Zingales 2008, Grosjean (2011a and 2011b), Nunn and Wantchekon (forth.), Tabellini (2008a and 2008b).

² Source: Uniform Crime Reporting (UCR) Program Data by the United States Department of Justice and Federal Bureau of Investigation and author's calculations.

³ Such as Becker (1968).

⁴ Over the period 1980-2007, white offender rates in the Deep South have been 2.8 times what they have been in Northern states. Black offender rates are ‘only’ 1.4 times higher, a difference that is no longer significant since the end of the 1980s. None of the explanatory factors discussed in Levitt (2004) and Levitt and Miles (2006) -higher number of police, rising prison population, legalized abortion and receding crack epidemics- seems to apply more obviously to the Northern part of the country rather than the South. Moreover, the analysis by Levitt (2004) and Levitt and Miles (2006) is mostly focused on explaining the sharp decline of homicide rates in the 1990s, a decline which was mainly confined to black offender rates: black offender rates declined 1.32 times more than white offender rates, which remained relatively stable over the period (source of data: UCR).

⁵ In Messner et al. (2005), p. 634.

This paper explores the origins of the cultural factors underpinning interpersonal violence and the conditions under which they have persisted. The idea is that past ecological, economic and institutional conditions influence cultural values, which perdure and underlie contemporary criminal behavior. Cohen and Nisbett (1994, 1996) hypothesize that the root of the Southern culture of honor lies with economic differences among early settlers' activities. Whereas the North of the United States was settled by farmers, they argue, the South was settled by people from Scotland and from Ulster- the so-called Scots-Irish, whose livelihood was based primarily on herding.⁶ The tendency of a herding society to develop a culture of honor, where any slight or insult leads to violence, has been described in the historical (Braudel, 1949; Pitt-Rivers 1966) and anthropological literature (Edgerton 1992, Pigliaru 1959).⁷ A herder's livelihood is precarious in a way that a farmer's is not: he can easily lose most of his wealth through theft. Aggression and a willingness to kill can be essential to build a reputation for toughness and deter animal theft.

To investigate this hypothesis, this paper uses historical Census data on early settlements to the United States and examines how much and under what circumstances Scot or Scots-Irish settlements in the late 18th and early 19th century and herding explain contemporary homicide. Since most settlers from Ireland prior to the 1840s' Potato Famine were Presbyterian Ulster Scots and because Ulster is not differentiated from the rest of Ireland among recorded countries of origin, I identify Scots-Irish settlers from the only pre-1840 Census that contains information on countries of origin: the 1790 Census. For robustness and to increase the population size, Presbyterian US natives in the 1900 Census of Religious Bodies are also used as a proxy for the Scots and Scots-Irish. Contemporary homicide data at the county level comes from the Uniform Crime Reporting (UCR) Program Data by the United States Department of Justice and Federal Bureau of Investigation.

⁶ Average homicide rates in Scotland and Northern Ireland between 2003 and 2007 were, respectively, 2.3 and 1.92 per 100,000. In comparison, the homicide rate in England and Wales was 1.5, in France: 1.5 and in Germany: 0.92.

⁷ Robert 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. Antonio Pigliaru (1959) describes the codes of honor and the reliance on interpersonal violence among Sardinian herdsmen in a book with an evocative title: "La Vendetta Barbaricina Come Ordinamento Giuridico". Fernand Braudel (1949) describes the mountainous herding people of the Mediterranean rim, their reputation for violence and warfare and the lack of order and hierarchy in such societies.

The Nisbett and Cohen hypothesis predicts that the North-South difference in homicide rates is due to pastoralism among the Scots-Irish relative to other settlers and the greater presence of the Scots-Irish in the US South. The results in this paper illustrate something slightly different. Scot or Scots-Irish presence indeed explains higher homicide and aggravated assaults today, but in the South only. The effect is specific to white offenders and to homicide between acquaintances, as opposed to violence between strangers or lovers. This is consistent with the culture of honor interpretation since homicides perpetrated in defense of one's reputation should involve people who, although not directly related, know one another. By contrast, homicide in the context of sexual assaults and rape by white offenders are actually less likely in Southern counties settled by Scots-Irish settlers, suggesting a positive effect of culture of honor in deterring violence against women, possibly because of the fear of retaliation by male relatives. Differences in pastoralism also matter to explain homicide but only in the South and when present simultaneously with Scot or Scots-Irish settlements. In other words, there is evidence of persistence of violent cultural norms but such persistence is not unconditional. This may explain the shortcoming of previous literature on the Cohen-Nisbett hypothesis, which, by focusing on different factors in isolation of each other, has struggled to establish a robust link between, ecological conditions⁸, specific groups of people or social organization⁹ alone and homicide.

If the culture of honor only survived in the South, the question that arises and that is investigated next is: What are the conditions of such cultural selection?¹⁰ Wyatt-Brown (2001) depicts how in the North, formal and impersonal institutions quickly substituted for the ethic of honor as the cement of social and political order in the 19th century. A reason why the culture of honor only survived in the South may have to do with the weakness of the institutional environment, which provided the fertile ground for the reliance on violent private justice. Leeson (2009) describes how the Scots-Irish culture emerged as a response to the lawlessness, intergroup banditry and large-scale cattle theft that characterized for centuries the Anglo-Scot border where the Scots-

⁸ Chu, Rivera and Loftin (2000) question the empirical validity of the link between pastoralism and homicide discussed namely in Reaves (1992).

⁹ Lee et al. (2007), Rivera, Chu and Loftin (2002) and Loftin and Mcdowall (2003).

¹⁰ By the term selection, I mean the process of "natural selection of cultural variations" in the sense of Richerson and Boyd (2005, page 76) and not selection as traditionally understood by economists. Richerson and Boyd (2005) argue that the logic of natural selection applies to cultural traits: "Cultural variation affects people's behavior in ways that affect the probability that they transmit their beliefs to others" (page 76). Such "others" can be children or peers. Indeed, in addition to vertical transmission of cultural traits from parents to children, which operates in an identical way to the natural selection of genes, another transmission process affects the selection of cultural traits: horizontal transmission, which operates through learning and imitation.

Irish originated. In the absence of formal law enforcement, honor and reputation were of central importance and provided the main enforcement mechanism of customary law.¹¹ In the frontier South, also a lawless environment, such informal institutions may have provided the best adaptive response and became the prevailing norm.

Consistently with this interpretation, I find the culture of honor to be more persistent in areas of the South with low historical population density, where one could expect institutional development to be slower and formal law enforcement more costly and difficult. Testing directly the link between institutional quality and the persistence of the culture of honor is impaired by the lack of historical data on institutional quality at a disaggregated enough level. The 1840 Census however contains information on newspaper circulation. Following Besley and Prat (2006) and Gentzkow et al. (2006), this is used as a proxy for institutional quality and is found to sever the link between Scot or Scots-Irish presence and homicide. Analysis with more recent data on court quality at the state level confirms that the quality of institutions is an important driver behind the persistence of the Scots-Irish culture of honor. Abstaining from ad-hoc regional distinctions, Scot or Scots-Irish settlements are positively associated with homicide, but not where historical newspaper circulation or the quality of the formal justice system are higher.

Alternative channels of cultural transmission are investigated in order to explain how Scots-Irish cultural traits have become a prevailing social norm.¹² First, vertical socialization from parents to children implies that agents internalize cultural norms within families so that even today Americans of Scots-Irish ancestry should display cultural traits consistent with a culture of honor. I test whether homicide rates are higher today in counties with high proportions of Americans of Scots-Irish ancestry, as self-reported in the 2000 Census.¹³ This, again, is true only in areas with weak formal institutions: the South and the Mountain West. I also find evidence of vertical transmission, among Southerners of Scots-Irish ancestry, of a value system that is consistent with the prevalence of private justice and is characterized by strong beliefs in self-reliance and a mistrust of centralized institutions. Second, oblique or horizontal socialization through peer effects and learning implies that the initial culture of the Scot and Scots-Irish

¹¹ For example, individuals who did not conform to customary law were publicly denounced and challenged to duels, a practice called “bawling”. For an example of similar cultural codes as a response to lawlessness and banditry in a different context, see Pigliaru (1959).

¹² See Bisin and Verdier (2008) for a review of the literature on cultural transmission.

¹³ The proportion of Americans of Scots-Irish ancestry is slightly higher in the Deep South and the West (1.8% to 2%) compared to the rest of the country (1.47%).

settlers still prevail in certain areas of the South because other settlers, regardless of their origin, improved their fitness by adopting such violent cultural traits. Indeed, settlers from other countries of origin are found to be associated with more violence in counties where the proportion of Scots and Scots-Irish was higher.

Last but not least, the Scots-Irish culture of honor is slowly decaying over time. Scots-Irish settlements explained a much more substantial part of the variation in homicide rates at the beginning of the 20th century, in 1904. The Scots-Irish culture of honor has decayed over time, at a rate of about 3.4% yearly since the beginning of the 1980s, when county level homicide data starts to be available, a rate that is consistent with 1904 data.

The effect of the Scot and Scots-Irish presence in the Southern United States on contemporary homicide rates is still sizeable. Controlling for a wide number of contemporary socio-economic and demographic characteristics, police numbers, as well as for the influence of slavery, every extra hundred Scot or Scots-Irish settlers in a county of the Deep South in 1790 is associated with an increase in the yearly homicide rate between 2000 and 2007 by 10% overall and by 16% for white offenders.¹⁴ By contrast, Scots-Irish settlements in the Deep South are not significantly associated with homicide by offenders of another ethnicity when all controls are included.

An alternative explanation to the results is that the Scots and Scots-Irish migrated to counties, the characteristics of which still lead to high prevalence of homicides. Several strategies are pursued in order to establish that the relationship between Scot or Scots-Irish settlements and homicide related violence is causal. First, the results are robust to controlling for lawlessness and other contemporary determinants of crime, such as poverty, inequality, racial composition, ethnic fractionalization and police numbers and budgets. The results are also robust to controlling for county geographical and terrain characteristics, historical land use and agricultural output. Second, several falsification tests are performed. The positive relationship between early settlers and contemporary homicide in the South does not hold for settlers that originated from other countries, such as England, Holland, Germany or France or for other religious denominations in 1900. It is confined to violence related to a self-protection ethic: homicide between acquaintances and aggravated assaults and is of a reverse sign for violence against women. Third, applying the approach by Altonji, Elder and Taber (2005) and Nunn and Wantchekon

¹⁴ In counties in the Deep South, the average number of Scot or Scots-Irish settlers in 1790 is 412 and the average total population is 12,256.

(forth.) shows that it is highly unlikely that the estimate can be fully attributed to unobserved heterogeneity. Last, results are robust to the instrumentation of Southern settlements by the distance to Shallow Ford, a major crossroads on the settlers' historical road to the backcountry.

This paper complements the findings of a number of recent studies that show that culture matters in explaining how long distant historical events may still affect norms and beliefs such as trust (Guiso et al. 2008, Nunn and Wantchekon forth, Tabellini 2008a and 2008b), and behavior such as fertility (Fernandez and Fogli 2007) or firm management practices (Bloom, Sadun and Van Reenan 2008). The contribution of this paper is to begin to understand how culture evolves and in particular how it co-evolves with formal institutions. The main message of this paper is not only that violent cultural norms are inheritable and persistent but, more importantly, that such cultural persistence is not unconditional. Culture is adaptive: the culture of honor thrived in areas with weak formal institutions and it shows signs of disappearance over time.

Section 2 provides some historical background. Section 3 presents the data and descriptive statistics. Section 4 presents the empirical methodology and the results, the robustness of which is investigated in Section 5. Section 6 discusses the determinants of selection of the culture of honor in the South and cultural transmission channels. Section 7 concludes.

2. Historical Background

The theory developed by Cohen and Nisbett deals with settlers from the fringes of Britain, areas not suitable for intensive farming, and most particularly the "Scots-Irish". The term "Scots-Irish" was coined in the US in the 19th century to differentiate the Protestant –mainly Presbyterian– people from the Irish northern province of Ulster, the Ulster Scots, from the Catholic Irish. The Ulster Scots originated from the Anglo-Scot borderlands, which extended from the River Cree to the North Sea on the Scottish side and from the coast of Cumberland to the coast of Northumberland on the English side. The marshes were a conflict-ridden and lawless environment and the borderers "embraced banditry as a way of life [...]: unlike common bandits, for them raiding, arson, kidnapping, murder and extortion were an important part of the social system" (Leeson 2009, p. 477). The "border reivers" were resettled to Ulster after James VI of Scotland became James I King of England in 1603. The objective of this "Plantation" was to bring peace to the Anglo-Scot borderland and provide fighting men to suppress the native Irish.

Prior to the 19th century, the vast majority of migrants from Ireland consisted of Ulster Scots. Protestants were only one-third of the population of Ireland, but represented three-quarters of all emigrants leaving between 1700 and 1776 (Adamson 1982). Their migration was completed over the course of the 18th century. It is estimated that over 200,000 Ulster Scots migrated to the Americas between 1717 and 1775 and the reasons behind such migration were both religious and economic (Adamson 1982). Indeed, according to Harris (2006, page 507), even after the Glorious Revolution of 1688, “the Protestant squirearchy who dominated the Irish Parliament [...] showed themselves almost as concerned by the threat of Protestant dissent and especially the Scottish Presbyterians in Ulster, as they were about popery”. Things were particularly difficult for the Presbyterians in the last years of Queen Anne’s reign in the early 18th century. In particular, the 1704 English Test Act required all office-holders in Ireland to take the sacramental test. Presbyterians could no longer serve in the army, the civil service, teaching professions or the police. On the economic side, the Navigation Act had prohibited all exports from Ireland to the colonies and the export of Irish cattle to England since 1660.¹⁵ Around the turn of the century, additional restrictive economic laws were passed. 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. Last, the practice of rack-renting by landlords, the majority of whom were English, led to exorbitant land rents in Ulster. All of these enactments were particularly detrimental to the Ulster Scots and provoked a first mass migration to the New World at the beginning of the 18th century. They first settled in New York, where they founded the Orange and Ulster counties. The first wave of migration to Pennsylvania occurred in 1717-1718. By 1738, Ulster Scot settlers had made their way from Pennsylvania into Virginia. Three subsequent waves of migration occurred in 1739-1740, 1754-1755 and 1771-1775.

Other important groups of settlers around the same time were Highland Scots, driven from their homeland by the defeat of Bonnie Prince Charlie (Charles Edward Stuart) in 1745, as well as Germans and Dutch. As a late and impoverished arriving group, Ulster and Highland Scots and, to a large extent, the Germans, found land in the coastal areas of the English colonies already owned or too expensive and left for the back country on “The Great Philadelphia Wagon Road”,

¹⁵ A prohibition made permanent in 1666.

along the Appalachian Mountains southward to the Carolinas. The hilly terrain reinforced herding as the basis of the economy of the Scots and Ulster Scots: it was often unsuitable for intensive agriculture, and even when it was, they tended to farm in low efficiency horticultural fashion.¹⁶

Although migration from Ireland consisted primarily of Ulster Scots prior to the 19th century, the mass migration that followed the 1840s' Irish Potato Famine consisted mainly of Irish Catholics whose cultural and economic bases were very different. This newer wave of Irish Catholics often worked as laborers and tradesmen and typically settled in the coastal urban centers before many migrated to the interior to labor on large-scale 19th century infrastructure projects. Their interactions with the –rural based- Ulster Scots were very rare.

Anecdotic evidence on the ruthlessness and violence of the Scots-Irish and the Scots in the Southern United States abound. Wyatt-Brown (2001) describes how the upbringing of President Andrew Jackson by his Scots-Irish parents nurtured his acute sense of honor, which made him the epitome of the Southern culture of honor (Wyatt-Brown, 2001, chapter 3). He writes that: “The Scots-Irish were more prone to personal violence and more conscious of honor than any other group then¹⁷ settled in the country”. McDonald and McWhiney (1975) also recount how “[the Scots-Irish herdsman] is deadly if provoked, and the readiest way to provoke him is to treat him or his kin disrespectfully; he never forgot or forgave an insult” (page 166). A contemporaneous witness of the Scots-Irish settlements, St John de Crevecoeur described how: “The Irish [...] love to drink and to quarrel; they are litigious, and soon take to the gun” (St. John de Crevecoeur 1782, Letter 2). Historical crime data from the 18th century support this depiction. Roth (2009) reports that the Irish represented less than 4% of the population but 13% of homicide assailants in New England and Virginia between 1676 and 1800. The Scots were nearly as violent: they represented 20% (New England) to 26% (Virginia) of homicide assailants but only 12% of the population. Similarly high ratios of homicide assailants to population of Scots and Irish settlers persisted in the 19th century. Homicide rates were high too, at about 13.6 per 100,000 colonists in the Shenandoah Valley of Virginia between 1645 and 1775 (Roth 2009).

¹⁶ Cohen and Nisbett (1996), page 8.

¹⁷ The author refers to the time period around President Jackson's (1767-1845) childhood.

3. Data Sources and Description

3.1. Crime Data

Crime data comes from the Uniform Crime Reporting (UCR) Program Data by the United States Department of Justice and Federal Bureau of Investigation. The unit of observation is the monthly count of occurrences of different offenses in each reporting agency. The UCR data provide information on 43 offenses and the counts of arrests by age, sex, and race¹⁸ for each offense in more than 17,000 reporting agencies throughout the country. With the data on arrests by age, sex and race and the number of offenses, it is possible to link offenses to the characteristics of a person arrested. The process is however not perfect: there is no information on conviction and the number of arrests does not always coincide with the count of offenses. When this is the case, the minimum value between arrests and offenses is considered.¹⁹

The main offense of interest to test the culture of honor hypothesis is “Murder and non-negligent manslaughter”. Homicide by white offenders is retained as the main dependent variable of interest.²⁰ The white offender homicide rate is defined as the number of homicides for which a white offender has been arrested, as a percentage of the white population. Data on aggravated assaults and other types of violent crime or offenses are also retained.

More precise information on the type of homicide is available from the Supplementary Homicide Reports (SHR) of the Uniform Crime Reporting data. The SHR provide information on the relationship between offenders and victims of murders.

Data collection by the UCR started in the 1960s but data at the county level is only available since 1980. The number of reporting agencies has been increasing over the years and for this reason, the analysis relies mostly on more recent and complete data, for 2000-2007. Data since 1980 is used for robustness and to explore how the influence of Scots-Irish settlements has evolved over time (Section 6.3.). The unit of observation is a county. Data is available in more than 2900 counties.²¹ The 1904 Special Report to the Bureau of the Census of “Prisoners and Juvenile Delinquents in Institutions” is also used in the discussion of the evolution of the

¹⁸ But not ancestry.

¹⁹ This results in a lower number of total offenses by categories of offenders than the total count of offenses.

²⁰ This is the approach in most of the literature, such as Cohen and Nisbett (1994, 1996) and Rivera et al. (2002) among others.

²¹ The results are robust to using earlier data from 1985 to 2000.

influence of the culture of honor over time. This Census records the number of inmates held for homicide, a proxy for homicide, but only at the state level

The UCR data is merged with the 2000 Census to obtain crime rates per 100,000 people. Other determinants of crime, such as contemporary demographic, racial and socio-economic county characteristics are taken from the 2000 US Census. Number of police officers and police budget per capita at the county level are taken from the 2000 Census of State and Local Law Enforcement Agencies (US Dept. of Justice 2000).

The average yearly crime rate per 100,000 people in 2000-2007 is 5.8. States with the highest crime rate are North and South Carolina and the lowest are Maine and New Hampshire.²² The most violent county is Kenedy County in Texas, followed shortly by Clay and Taliaferro counties in Georgia. The US-wide average yearly homicide rate by white offenders is 2.5 per 100,000. This is more than twice the average *total recorded* homicide rate in the EU-12.²³ All descriptive statistics for the sample used in the rest of the analysis are in Table A1.

3.2. Historical Data on Settlements

Historical Census data is from the National Historical and Geographical Information System and IPUMS (Ruggles et al. 2010). The first US Census was recorded in 1790. Censi were then carried out every ten years. However, not all Census waves contain information on countries of origin and the first Census to contain such information after the 1790 Census is in 1870.

As detailed in Section 2, the settlement of Ulster Scots in the US was roughly completed by 1775. The ensuing massive emigration from Ireland in the 1840s' consisted of culturally very different people, Catholics from the South of Ireland. In order to identify the Scots-Irish, the analysis relies on the only pre-1840 Census that contains information on countries of origin: the 1790 Census. Settlers' age, family sizes and slaveholding are recorded in 286 counties. Information on the country of origin is available only in 150 counties in 11 states according to the 1790 states boundaries, 13 according to contemporary boundaries.²⁴ Census data is matched

²² Alaska and Hawaii are excluded.

²³ The comparison of the two figures 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 the UNODC.

²⁴ Some counties were carved out of Massachusetts and Virginia and reallocated to, respectively, Maine and West Virginia at the creation of these two states in 1862 and 1820. The 13 States are Connecticut, Maryland, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia and West Virginia.

to crime data and a match is obtained for 150 counties. Among those, the most violent are in South Carolina: Marlboro for overall homicide and Orangeburg for homicides by whites.

The culture of honor hypothesis relates to the Scots-Irish most particularly but generally to all “people from the fringes of Britain” (Cohen and Nisbett, 1996, page 7) that is, not only Ulster, but also Scotland and Wales. The 1790 Census records as countries of origin of settlers: “England and Wales”, “Ireland”, “Scotland”, “France”, “Holland”, “Hebrew” and “All other nationalities”. An important drawback is that the Welsh settlers are not distinguished from the English, who are the majority in this group. In the rest of the paper, the main group of interest is the Scots grouped together with the Ulster Scots and is referred to as “Scot or Scot-Irish”.

Important information on economic, farming and herding activity was recorded for the first time in the 1840 Census. Hog and sheep were the traditional animals herded by the Scots-Irish (McDonald and McWhiney 1975). Data on herds of hogs and sheep are matched to the 1790 Census ancestry information in 148 counties.

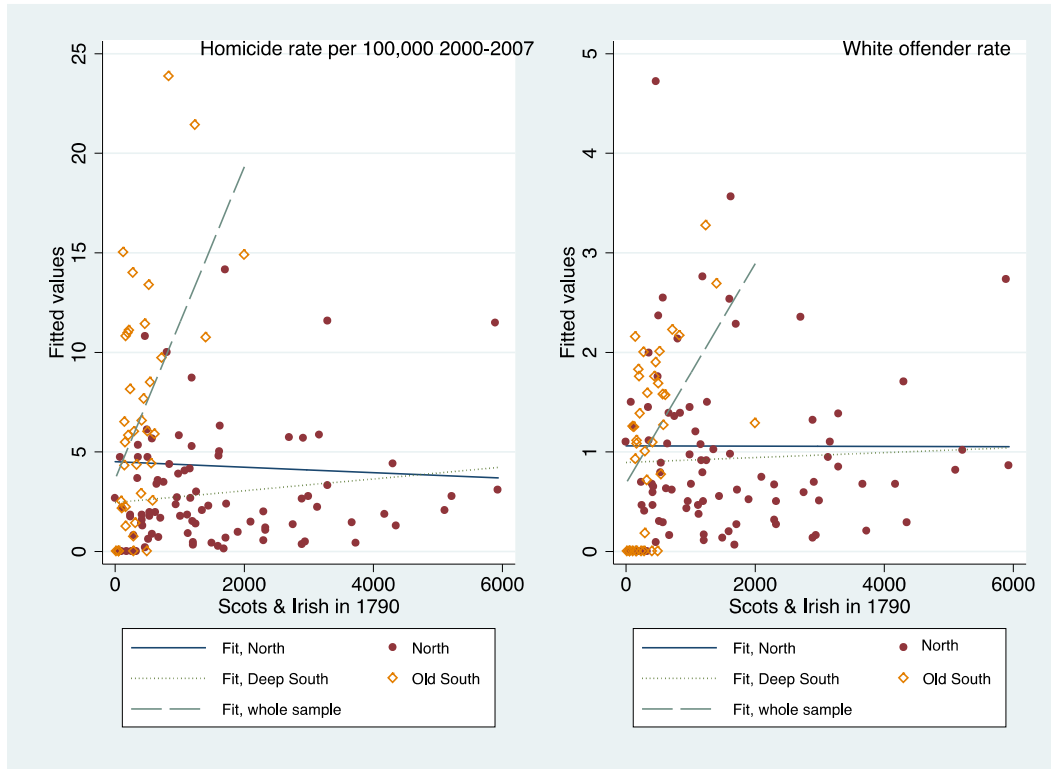
The main drawback of the 1790 Census is the small population size. For robustness and to increase the population size, the 1900 Census of Religious Bodies, which records information on religious denominations in more than 2600 counties is also used in the analysis. Presbyterian US natives in 1900 are used as a proxy for the descendent of the 18th century Scots-Irish settlers. Of course, settlers from other backgrounds may also have been members of the Presbyterian Church and this is an imperfect measure. Correlation coefficients between members of different Presbyterian denominations and the number of Scots-Irish settlers from earlier Censi are presented in the Supplementary Appendix. Members of the Presbyterian Church in the USA correlate best with the 1790 Scots-Irish population and other proxies for Scots-Irish settlements. White native members of the Presbyterian Church in the USA are therefore used as a proxy for the 1900 descendants of the Scots-Irish settlers. Because of conversions, the 1790 Census provides a much cleaner source of identification of the Scots and Scots-Irish.

3.3.Descriptive Statistics

Figure 1 displays the relationship, at the county level, between the average 2000-2007 homicide rate per 100,000 by all (left) and white offenders only (right) and settlers of Irish or Scottish origin in 1790. In both figures different scatter plots and associated fits are reported for the whole sample (full line), Deep South (long dash) and non-Southern states (dotted line). The

relationship between homicides and Scots-Irish settlers is clearly of a different nature in the Deep South compared with the rest of the US. In the Deep South, the contemporaneous level of homicides is higher in the counties with more numerous Scots-Irish settlers in the 1790. This is confirmed in regression analysis. No outlier seems to be driving the relationship.

Figure 1: Homicide Rates and Scots-Irish settlers



Source: UCR, US Census

4. Empirical Specification and Results

4.1. OLS Baseline Estimates: Scot or Scots-Irish settlers and violence

As the starting point of the analysis, contemporary homicide rates are regressed on settlements in 1790, a wide array of socio economic and demographic controls and regional dummies. The second main specification includes an interaction term between settlers and regional dummies.

The baseline equations are:

$$m_c = \beta_0 + \beta_1 S I_c + \beta_2 r e g i o n_c + \beta_3 X_c + \varepsilon_c \quad (1)$$

$$m_c = \beta_0 + \beta_1 S I_c + \beta_2 S I_c * r e g i o n_c + \beta_3 X_c + \varepsilon_c \quad (2)$$

where m_c is the average annual homicide rate per 100,000 people (based on 2000 population) between 2000 and 2007 at the county level. The overall homicide rate and the white offender homicide rate are considered in turn as the dependent variable in the main specification. S_c is the number of settlers from Scotland and Ireland at the county level from the 1790 Census.²⁵ In all specifications, the total county population and the population density in 1790 are included as controls. An alternative is to include directly the proportion of settlers as the main independent variable. Results are robust to using proportions as the main independent variable, as well as to using log-log or log-linear specifications (see Table C1 in Supplementary Appendix).

Regional dummies for the South as a whole and for the Border South and Deep South are considered. In 1790, the Deep South consists of the Old South only: Virginia and the Carolinas; and the Border South of Delaware, Maryland and West Virginia. The excluded regional category is non-Southern states. X_c include, in addition to the 1790 controls, contemporary socio-economic and demographic county level characteristics from the 2000 Census: aggregate earnings, the proportion of the population at or below the poverty line, the proportion of population in urban or rural areas, income Gini coefficient, racial composition and ethnic fractionalization indices. Number of police officers and police budget per capita in 2000 are used as additional controls. The influence of slavery is unlikely to confound that of the Scots-Irish since, according to McDonald and McWhiney (1975), the majority of the Scots-Irish neither owned slaves nor did they aspire to, given that herding was rather profitable. The correlation between Scots or Scots-Irish settlements and slave numbers at the county level is, indeed, negative and significant at the 10% level (Table B1, Supplementary Appendix). The number of slaves at the county level in 1790 is nevertheless included as a control. Results are unchanged whether slaves or the total black 1790 population are considered. In all specifications, standard errors are clustered at the state level. Supplementary Appendix B presents results of identical specifications using Presbyterian white natives in 1900 as a proxy for the Scots-Irish. Regressions using the 1900 data are performed on a much bigger sample of more than 2600 counties.²⁶

²⁵ Alternative specifications with settlers from Ireland only (the Scots Irish) are considered. All the results discussed in the paper hold for this sub-group.

²⁶ Regional distinctions are made between the Border South, Deep South, Midwest and West.

Panel (a) and (b) of Table 1 presents baseline estimates for the overall homicide rate and white offender rate, respectively. Column 1 includes settlers and regional dummies only, Column 2 adds all historical and contemporary socio-economic controls. Column 3 also includes police figures. The coefficient on Scots-Irish settlements, although positive and marginally statistically significant in the absence of additional controls, loses significance when contemporary controls are included. Hence, in contrast with the Cohen and Nisbett hypothesis, differences in the presence of Scots or Scots-Irish settlers per se do not contribute to explain the North-South difference in homicide rates.

Table 1: Homicides and Scots-Irish Settlers in 1790 - Panel (a) All Offenders

	1	2	3	4	5	6	7	8	9
	Annual homicide rate per 100,000, 2000-2007 average								
Scots&Irish 1790	0.35*	0.28	0.10	0.20**	0.21	0.03	0.31**	0.22	0.04
	[0.17]	[0.21]	[0.19]	[0.09]	[0.14]	[0.11]	[0.13]	[0.13]	[0.12]
Border South	3.41***	1.05	0.38				2.82***	0.44	-0.91
	[0.50]	[0.78]	[0.77]				[0.53]	[1.68]	[1.12]
Deep South	4.91**	0.07	-0.66				1.38**	-2.62**	-2.89**
	[1.78]	[1.40]	[1.32]				[0.52]	[1.08]	[0.97]
South				2.71***	-1.53	-2.20**			
				[0.68]	[1.18]	[0.87]			
South*Scots&Irish				2.37	3.34***	3.28***			
				[2.22]	[1.04]	[0.76]			
Border South*Scots&Irish							0.34	1.49	2.09**
							[0.25]	[1.07]	[0.83]
Deep South*Scots&Irish							7.31***	7.70***	6.36***
							[0.87]	[1.08]	[1.11]
Log agg earnings 2000		0.02	0.45		-0.24	0.19		-0.28	0.14
		[0.46]	[0.28]		[0.48]	[0.33]		[0.43]	[0.30]
Prop pop urban 2000		-2.33	-3.32		-2.34	-3.34		-2.41	-3.33
		[2.51]	[2.12]		[2.37]	[2.03]		[2.35]	[2.15]
Prop pop poor 2000		12.58	28.79*		10.52	26.78*		2.33	20.20
		[14.95]	[14.09]		[14.71]	[13.08]		[15.01]	[13.99]
Prop pop black 2000		12.21**	9.13**		10.81**	7.68**		10.96***	7.85***
		[4.82]	[4.07]		[4.15]	[3.24]		[3.05]	[2.34]
Ethnic fragm.2000		1.92	5.99**		4.06	8.08***		5.29*	8.74***
		[3.56]	[2.32]		[3.27]	[1.82]		[2.95]	[1.93]
Income Gini 2000		13.49	6.58		14.20	7.16		10.53	4.90
		[11.65]	[12.61]		[12.45]	[13.05]		[10.81]	[12.15]
Police officer per cap			0.78			0.53			0.30
			[1.07]			[0.99]			[1.01]
Police budget per cap			0.00*			0.00			0.00
			[0.00]			[0.00]			[0.00]
Pop. density 1790		-0.20**	-0.27**		-0.21**	-0.28***		-0.16**	-0.24**
		[0.09]	[0.11]		[0.07]	[0.09]		[0.07]	[0.09]
Slave pop 1790		0.01	0.01		0.00	0.00		-0.01	-0.01
		[0.01]	[0.01]		[0.01]	[0.01]		[0.01]	[0.01]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	147	147	144	147	147	144	147	147	144
R-squared	0.21	0.48	0.54	0.22	0.51	0.57	0.31	0.53	0.58

Panel (b): White Offenders

	1	2	3	4	5	6	7	8	9
	White offender rate per 100,000, 2000-2007 average								
Scots&Irish 1790	0.14*	0.04	-0.03	0.10*	0.02	-0.05	0.13*	0.02	-0.04
	[0.07]	[0.07]	[0.05]	[0.05]	[0.05]	[0.03]	[0.07]	[0.04]	[0.03]
Border South	1.03***	0.45	0.20				1.23**	0.84	0.35
	[0.27]	[0.26]	[0.20]				[0.50]	[0.61]	[0.47]
Deep South	1.02*	0.11	-0.16				-0.05	-0.90**	-0.99***
	[0.54]	[0.46]	[0.42]				[0.19]	[0.30]	[0.28]
South				0.47	-0.28	-0.52			
				[0.32]	[0.43]	[0.33]			
South*Scots&Irish				0.80	0.91	0.89*			
				[0.66]	[0.56]	[0.44]			
Border South*Scots&Irish							-0.30	-0.12	0.10
							[0.35]	[0.37]	[0.32]
Deep South*Scots&Irish							2.26***	3.00***	2.48***
							[0.23]	[0.69]	[0.73]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes	yes
Socio-eco controls 2000	no	yes	yes	no	yes	yes	no	yes	yes
Police controls 2000	no	no	yes	no	no	yes	no	no	yes
County & slave pop, pop. density 1790	no	yes	yes	no	yes	yes	no	yes	yes
Observations	147	147	144	147	147	144	147	147	144
R-squared	0.11	0.39	0.47	0.13	0.41	0.49	0.20	0.45	0.51

Notes: All regressions with a constant. Robust standard errors clustered at the state level. ***Significantly different from 0 at the 1% level, **significantly different from 0 at the 5% level, *significantly different from 0 at the 10% level. Homicide rates are yearly average for 2000-2007, per 100,000 people. “White offender homicide rate” is the yearly homicide rate average for 2000-2007 by white offenders, per 100,000 people. Number of Scots-Irish settlers and slave population in 1790 scaled by 1,000. “Socio-eco controls in 2000”: log of aggregate earnings, proportion of population in urban areas, proportion of population below or at poverty level, proportion of the population black, fractionalization index, Gini index

Source: 1790 and 2000 Censi, UCR. 2000 Census of Law Enforcement Agencies.

The remaining columns include, in addition to respective main effects, the interaction between regional dummies and Scots-Irish settlers. The interaction term between the South (Columns 4 to 6) and, a fortiori, the Deep South (Columns 7 to 9) and Scots-Irish settlers is a positive and highly statistically significant explanatory factor of overall homicide rates. Scots-Irish settlements are positively and strongly associated with white offender rates in the Deep South, more weakly so in the South as a whole (Panel b). The effect of the interaction terms is robust,

and generally becomes stronger, when the full set of historical and contemporary socio-economic and demographic controls are included. The results are robust to controlling for education indicators²⁷ and for county level terrain characteristics, such as mean elevation, differences in elevation and total area, as well as for extra 1790 controls, such as ethnic fragmentation in 1790 (considering each country of origin and black population as distinct groups in the construction of the fragmentation index).²⁸ The results are also robust to the inclusion of state fixed effects (See Table A3 in Supplementary Appendix).

The magnitude of the interaction term between Scot or Scots-Irish settlements and Deep South on homicide rate is far from negligible. The value of the coefficient of the interaction between Scot or Scots-Irish settlers and Deep South when all controls are included in Column 9 is 6.36, for the overall homicide rate, and 2.48 for homicide by white offenders. Every extra hundred Scot or Scots-Irish settlers in a county of the Deep South in 1790 is associated with a 10% increase in yearly homicide rates overall and a 16% increase of white offender rates (for counties in the Deep South, the average number of Scot or Scots-Irish settlers is 412 and the average total population is 12,256).²⁹ The discrepancy between the coefficients in the total homicide or homicide by white offenders specifications is explained by the fact that white homicide numbers are much smaller than total homicide, both because of homicide by other ethnicities but also because of unresolved homicide. Scot or Scots-Irish settlements in the Deep South are neither significantly associated with homicides by Asian, Hispanic or Indian ethnicities nor by black offenders when the black population in 1790 and police numbers and budgets are controlled for (see Section 5.1. and Supplementary Appendix Table A4). The difference thus comes from unresolved homicides.

The goodness of fit of the full specification of the baseline equation is satisfactory. Information on settlers' regional distribution together with current socio economic and demographic characteristics explains about 50% of the variation of homicide rates across counties. Poverty rates are positively associated with homicide rates. So is the proportion of black population. By contrast, ethnic fragmentation is not significantly associated with homicide rates.

²⁷ Namely the proportion of people with a high school degree, overall and broken down by race.

²⁸ Results not reported here for space economy but available upon request. I thank Stelios Michalopoulos for providing terrain data.

²⁹ Standardized 'beta' coefficients for the interaction between Scots or Scots-Irish settlements and Deep South are 0.40 and 0.48 for the overall homicide rate and homicide rate by white offenders, respectively, when all controls are included (Column 9); 0.48 and 0.58 when police numbers and budgets are omitted (Column 8).

Similar results are obtained using Presbyterian natives in the 1900 Census of Religious Bodies as a proxy for Scots and Scots-Irish settlers (Table B2 in the Supplementary Appendix). A higher population of native white Presbyterians in 1900 is significantly associated with higher homicide rates today, overall and by white offenders, but only in the South.

Next, the Supplemental Homicide Report (SHR) is used in order to provide more details on the most common type of homicide in counties with larger Scot or Scots-Irish settlements. The SHR provides information on the relationship between offender and victim. Cultures of honor are characteristic of societies based on kinship. It is more likely that homicides perpetrated in defense of one's reputation involve people who, although not directly related, know one another. This is confirmed by the results of regressions that investigate the specific nature of the relationship between the offender and the victim in Table 2. It is specifically homicides involving non-family related acquaintances that are more likely in Southern counties with high proportion of Scots and Scots-Irish in 1790. By contrast, homicide involving lovers are not more likely in Southern counties heavily settled by the Scots-Irish and homicide by strangers are actually less likely in such counties.

Table 2: Type of Homicide

	1	2	3	4	5	6
	Homicide rate - non family related acquaintances	Homicide rate - non family related acquaintances	Homicide rate - lovers	Homicide rate - lovers	Homicide rate - undetermined relation (strangers)	Homicide rate - undetermined relation (strangers)
Scots&Irish 1790	0.16*	0.14**	0.02	0.02	0.16***	0.17***
	[0.09]	[0.07]	[0.01]	[0.01]	[0.04]	[0.05]
Border South	-0.06	-0.15	-0.20	-0.09	-0.78	-0.82
	[0.33]	[0.31]	[0.16]	[0.17]	[0.51]	[0.81]
Deep South	0.70	-0.48*	0.10	0.05	-0.78	0.26
	[0.66]	[0.25]	[0.26]	[0.19]	[0.83]	[0.58]
Border South*Scots&Irish		0.47*		-0.12		-0.27
		[0.25]		[0.07]		[0.40]
Deep South*Scots&Irish		3.25**		0.15		-2.88*
		[1.36]		[0.57]		[1.41]
County and slave pop. 1790	yes	yes	yes	yes	yes	yes
Pop density 1790	yes	yes	yes	yes	yes	yes
Socio-eco & police controls 2000	yes	yes	yes	yes	yes	yes
Observations	138	138	138	138	138	138
R-squared	0.50	0.54	0.26	0.26	0.44	0.46

Notes: See Notes to Table 1..

Source: 1790 and 2000 Censi, UCR Supplementary Homicide Report.

4.2. The Herding Base of the Culture of Honor

Cultures of honor prevail in pastoralist societies (Braudel, 1949; Edgerton 1992; Pitt-Rivers 1966). A herder's livelihood is precarious in a way that a farmer's is not: he can easily lose most of his wealth through theft. Aggression and a willingness to kill can be essential to build a reputation for toughness and deter animal theft. Data on livestock counts at the county level from the 1840 Census is matched to settlers' country of origin data in order to test whether the link between Scot or Scots-Irish settlers and homicide is associated with herding. A similar approach is performed on the 1900 Census, which also contains information on herding.

First, livestock counts are included as an independent variable in order to investigate to what extent historical herding activity contributes to homicide. Second, interactions between herding and regional dummies are included to capture to what extent herding explains violence within the South. The specifications are thus identical to (1) and (2) above, but with livestock counts per capita instead of settlers. Third, a three-way interaction between the number of Scot or Scots-Irish settlers, the number of animals per capita and regional dummies, controlling for any two-way interactions between the variables, is included. The null hypothesis is that the coefficient on the three-way interaction is not significantly different from zero. Rejecting the null would confirm the link between herding and the prevalence of the culture of honor in the South and point to the complementarity between Scot or Scot-Irish cultural background and economic factors as determinants of violence within the South.

Columns 1 and 2 of Table 3 explore the effect of herding alone. Herding on its own does not contribute to violence in general, or in the South relatively to the North, or even within the South. Quite to the contrary, in the Deep South, the number of sheep and hogs per capita is negatively associated with homicide rates, although the relationship is only marginally statistically significant. The remaining columns include an interaction between Deep South, Scot or Scot-Irish settlers and animals per capita. A two-way interaction between Scot or Scot-Irish settlers and animals per capita is not significantly different from zero (Column 3). However, within the South, the interaction between Scot or Scot-Irish settlers and herding is highly significant in explaining homicide today (Column 3). In all specifications, the sum of hogs and sheep per capita is included, but individual results with either animal are similar. By contrast, a similar interaction with agricultural output is never significantly associated with homicide rates.

Table 3: The Herding Base of the Scots-Irish Culture of Honor

	1	2	3	4
	White offender homicide rate			
Scots&Irish 1790			-0.05 [0.15]	0.01 [0.16]
Deep South	-0.23 [0.36]	1.26 [1.23]	-0.25 [0.36]	0.83 [1.35]
Seep&hogs per capita (1840)	-0.04 [0.05]	-0.01 [0.05]	-0.04 [0.07]	0.02 [0.07]
Scots&Irish*Sheep&hogs			-0.00 [0.03]	-0.02 [0.04]
Deep South*Sheep&hogs		-0.68 [0.47]		-1.06** [0.46]
Deep South*Scots&Irish				-1.00 [1.32]
Deep South*Scots&Irish*Sheep&hogs				2.02*** [0.71]
County and slave pop 1790, pop density 1790	yes	yes	yes	yes
Socio-eco and police controls 2000	yes	yes	yes	yes
Observations	145	145	145	145
R-squared	0.43	0.45	0.43	0.52

Notes: see Notes to Tables 1 and 2.

Source: 1790, 1840 and 2000 Censi, UCR

Similar results are obtained with the population of Presbyterian natives in the 1900 Census. The interaction term between Deep South, Presbyterians and the number of sheep and hogs per capita is significantly associated with higher homicide, overall and by white offenders (Table B3).

To sum up, the results establish a link between lethal violence and early Scots and Ulster Scots settlements, but only within the South. The results also highlight the link between herding and the culture of honor: a higher intensity of Scot or Scots-Irish settlements at the county level is associated with higher murder rates today, all the more so in counties where herding was more prevalent. Again, this is true in the South only. This contrasts with the hypothesis spelled out by Nisbett and Cohen: it is not herding or cultural background alone that explains the distribution of homicide but the interaction between such characteristics and the South. The role of institutions in explaining the selection and prevalence of the culture of honor in the South is discussed in Section 6. However, at this point, the results do not unequivocally establish the causal impact of the Scot and Scots-Irish culture on homicide. This is the object of the next Section.

5. Identifying Causal Relationships

5.1. First Falsification test: Does the relationship between homicides, South and early settlers hold for other countries of origin?

The above results do not provide sufficient evidence to establish the claim that the specific cultural and economic background of a certain type of settlers caused higher homicide rates. One has to show that the relationship between homicide and early settlers in the South holds for the Scots or Scots-Irish specifically and not for any country of origin of settlers. Else, the results may have nothing to do with a specific cultural background, but rather to the specificities of the US South and/or the type of settlers it attracted, regardless of their cultural background.

Additional specifications include as the main independent variable of interest settlers from other countries of origin in the 1790 Census and other religious denominations in the 1900 Census. The null hypothesis is that the interaction term between Deep South and country of origin is not significant for any country of origin other than Scotland and Ireland. Failure to reject the null would cast doubt on the main proposition of this paper.

Table 5 presents the results of specification (2) where settlers from countries other than Ireland and Scotland, such as France, Germany, Holland, or England and Wales are considered. Their presence in the Deep South is never significantly associated with homicide rate by white offenders (Columns 1 to 4) or homicides in which the offender and the victim are acquaintances (Column 5). Similar results are obtained using the 1900 Census: the interaction between Deep South and any other religious denominations apart from Presbyterians is never significantly and positively associated with homicide rates (Table B4, Supplementary Appendix).

In sum, the relationship between early settlers and the contemporary high homicide rate by whites in the South is specific to the Scots and Scots-Irish. This provides support for the main proposition of this paper in two ways. First, it indicates that it is something specific to the cultural background of a specific group of settlers that is at play in explaining high levels of homicide. Second, and equally important, rejecting the null suggests that there is not something specific to the Southern United States and the type of settlers it attracted, which explains high homicide. Instead, high homicide rates in the South, particularly by white offenders are by the interaction between the particularities of the South *and* the cultural background of a specific type of settlers.

Table 5: Falsification I: Homicides by White Offenders and Other Settlers in 1790

	1	2	3	4	5
	White offender				Homicide rate-non family related acquaintances
	Holland	France	Germany	England & Wales	Non Scots or Irish
Settlers	0.01	0.83	0.12***	-0.04	0.05*
	[0.052]	[0.631]	[0.013]	[0.055]	[0.024]
Border South*Settlers	-1.29	-5.03**	-0.16**	-0.03	0.02
	[6.987]	[2.265]	[0.055]	[0.067]	[0.090]
Deep South*Settlers	9.85	0.44	0.20	0.15	0.06
	[22.391]	[1.816]	[0.479]	[0.139]	[0.162]
Socio- eco controls 2000	yes	yes	yes	yes	yes
County pop 1790	yes	yes	yes	yes	yes
Pop density 1790	yes	yes	yes	yes	yes
Observations	149	149	149	149	138
R-squared	0.38	0.39	0.45	0.42	0.50

Notes: See Notes to Tables 1 and 2. All settlers scaled by 1000. “Non Scots-Irish” is the sum of Dutch, French and German settlers.

Source: 1790 and 2000 Censi, UCR and UCR Supplementary Homicide Report

5.2.Second Falsification Test: Other violent crime

The culture of honor is a self-protection ethic, whose purpose is the defense of a reputation. It should thus act as a determinant of homicide, as established above, and of aggravated assaults, which is confirmed by the regression results in Table A2, but not of any type of violent act. The rationale for this falsification test is to verify that the relationship between violence and Scot or Scots-Irish settlements in the South does not derive from a highest propensity of the Scots-Irish towards violence in general but towards a specific type of violence aimed at protecting one’s reputation. The null hypothesis is that the interaction term between Scot or Scots-Irish settlers and Deep South does not significantly explain other violent crime unrelated to a self-protection ethic, such as rape.

Table 6 presents the results of regressions in which the outcome variable is the annual average rape rate per 100,000 people by white offenders. A problem with relying on rape figures is under-reporting. Homicide perpetrated in the context of sexual assaults is used as another a proxy for violent crime against women. If anything, the relationship between Scot or Scots-Irish settlers in the South and rape committed by white offenders is negative. When only the Scots-Irish are considered, this coefficient is not only negative but also significant at the 5% level.

Scots-Irish settlers in the Deep South are also significantly associated with lower rates of homicide perpetrated in the context of sexual assault. This suggests a positive effect of the Scots-Irish culture of honor in deterring violence against women, possibly because of the fear of retaliation by male relatives.

Table 6: Falsification II: Are the Scots-Irish associated with non-culture of honor related violence?

	1 Rape, white offender rate				2 Homicide in context of sexual assault	
1709 settlers from:	Scotland and Ireland		Ireland		Scotland and Ireland	
Settlers	-0.008 [0.018]	-0.009 [0.017]	-0.107 [0.083]	-0.089 [0.073]	-0.00 [0.00]	-0.00 [0.00]
Border South*Settlers		0.097 [0.161]		0.915 [0.550]		-0.03 [0.06]
Deep South*Settlers		-0.165 [0.215]		-1.141** [0.516]		-0.06* [0.03]
County & slave pop., pop. density 1790	yes	yes	yes	yes	yes	yes
Socio-eco & police controls 2000	yes	yes	yes	yes	yes	yes
Observations	144	144	144	144	138	138
R-squared	0.328	0.332	0.333	0.355	0.04	0.05

Notes: see notes to Tables 1 and 2. “Rape, white offender rate” corresponds to rape rates by white offenders. Rape rates are yearly average for 2000-2007, per 100,000 people. Number of settlers scaled by 1,000. All regional dummies included.

Source: 1790 and 2000 Censi, UCR, Supplementary Homicide Report, 2000 Census of Law Enforcement Agencies.

Similar results are obtained with the 1900 Census. The interaction terms between Presbyterians and Deep South, or between Presbyterians in the Deep South and herding are not significantly and, if anything, negatively associated with rape committed by white offenders (Supplementary Appendix, Table B5).

5.3. Selection on Observables: Robustness to Lawlessness

Even though no legacy of Scot or Scots-Irish settlements on violent crime unrelated to a self-protection ethic was found, it could still be the case that the counties in which the Scots and Scots-Irish settled experience higher levels of general crime, which in turn could lead to more homicide. If the legacy of Scots-Irish settlements was crime in general – and not only lethal violence – the effect on homicide rates should not be robust to additional controls for contemporary crime. In Table 7, other measures of crime and offenses are included as additional

controls in the baseline specification described in Section 4. For example, homicide may be higher because of differences in the propensity to carry weapons, so offenses related to weapon carry are included. Also, property crime may be higher, and homicides associated with property crime could drive the result, so arrests for robberies and burglaries are controlled for. Note that this is unlikely to be the case as it was already established that the driver of the result was homicides between acquaintances.

Individual controls for the rate of weapon carry offenses³⁰, property crime (burglaries and robberies) as well as drunkenness offenses, which are all reported in the UCR database, are included, first individually, then together. For homicides by white offenders, included controls are other offenses committed by whites only. The effect of Scot or Scots-Irish only settlements on homicide rates is robust to the inclusion of all these controls and the coefficient remains statistically significant from zero at the 1% level when all controls are included together.

Table 7: Robustness to Lawlessness

	1	2	3	4	5	6	7	8
	Homicide rate				White offender			
Scots&Irish	0.14 [0.156]	0.11 [0.171]	0.09 [0.112]	0.02 [0.140]	0.04 [0.061]	0.04 [0.070]	0.01 [0.063]	0.01 [0.067]
Border South* Scots&Irish	1.25 [1.275]	1.25 [1.294]	1.58 [1.719]	1.52 [1.432]	-0.12 [0.504]	-0.13 [0.437]	-0.43 [0.676]	-0.36 [0.681]
Deep South*Scots&Irish	4.45*** [0.728]	6.79*** [1.000]	3.60** [1.340]	4.13*** [1.139]	1.49*** [0.351]	1.57*** [0.464]	1.26*** [0.377]	1.29*** [0.378]
Weapon carry, total (Col 1 to 4) and white (Col 5 to 8)	0.04*** [0.010]			0.03** [0.011]	0.02*** [0.005]			0.01 [0.008]
Drunkenness, total (Col 1 to 4) and white (Col 5 to 8)		0.01 [0.003]		0.00* [0.002]		-0.00 [0.002]		0.00 [0.001]
Property crime, total (Col 1 to 4) and white (Col 5 to 8)			0.02* [0.009]	0.01 [0.009]			0.01** [0.005]	0.01 [0.006]
Socio-eco controls 2000	yes	yes	yes	yes	yes	yes	yes	yes
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Pop density 1790	yes	yes	yes	yes	yes	yes	yes	yes
Observations	149	149	149	149	149	149	149	149
R-squared	0.60	0.53	0.57	0.63	0.46	0.42	0.47	0.48

Notes: see Notes to Tables 1 and 2. All offenses rates are yearly average rates for 2000-2007, per 100,000 people. White rates are computed as the share of offenses committed by whites over the white population. All regional dummies included.

³⁰ The rate of offenses related to weapon carry by white offenders is not higher in Southern counties more heavily settled by Scots-Irish settlers. Neither are offenses related to drunkenness.

As noted in Section 4, the results are also robust to controlling for a wide array of county level terrain characteristics, such as mean elevation, differences in elevation and total area, for historical land use characteristics (improved vs. unimproved land, wooden area) and agricultural output of all different crops taken from the 1840 and 1870 Censi as well as for mining discoveries at the state level.³¹

5.4. Selection on unobservables

Following Altonji, Elder, and Taber (2005) and Nunn and Wantchekon (forth.), ratios are computed that reflect how much greater the influence of unobservable factors would need to be, relative to observable factors, to explain away the full positive relationship between the Scot or Scots-Irish settlers and contemporary homicides. Table 8 reports the ratio of coefficients of regressions including full or restricted sets of coefficients. For the overall homicide rate, explaining away the full positive relationship between the Scots and Scots-Irish or Scots-Irish only settlers and contemporary homicides would require unobservable factors to be 5.4 to 6.3 times greater than observable factors, making it unlikely that the estimate can be fully attributed to unobserved heterogeneity. For white offender rates, the ratio is actually negative, implying that adding controls actually makes the influence of Scot or Scots-Irish settlers more salient.

Table 8: Assessing the Bias due to Selection on Unobservables

		Homicide rate	White offender
		Deep South*Scots-Irish	Deep South*Scots-Irish
Controls, full set:	Controls, restricted set:		
Full set from equation (1)	none	5.39	-10.63
Full set from equation (1)	Total pop. and pop. density in 1790	6.30	-11.27

Notes: Each cell reports ratios based on the coefficients for the interaction between Deep South and Scots and Irish settlers from two regressions, one with a restricted set of controls: $\hat{\beta}^R$, the other with the full set of controls: $\hat{\beta}^F$. The ratio is calculated as: $\hat{\beta}^F / (\hat{\beta}^R - \hat{\beta}^F)$. In all regressions, the samples are identical. The full set of controls include all 2000 socio-economic determinants and police numbers as well as all 1790 controls (slave numbers, population density).

³¹ I thank Matthieu Couttenier for providing such data.

5.5. Instrumental variable estimation

Establishing the causal impact of Scots and Scots-Irish settlements on contemporary violence in the South requires an instrument that is correlated with settlements in the South but uncorrelated with contemporary violence. As most settlers made their way South from Pennsylvanian ports of entry on the Great Philadelphia Wagon Road, a good candidate is the distance to one of the main crossroads on this road: Shallow Ford, a shallow point of crossing on the Yadkin River.³² Shallow Ford today is an undeveloped area and there is thus little reason to believe that its location should influence contemporary crime. The average distance between the geo-center of each Southern county and Shallow Ford is used as an instrument for settlements in the Deep South. Because of traveling costs, it is expected that the further away from Shallow Ford, the smallest settlements should be.

Instrumental variable regression results are reported in Table 9. First stage estimates are reported in the bottom panel and second stage estimates in the top panel. The first stage estimates show that, as expected, distance to Shallow Ford is negatively correlated with Scot or Scots-Irish settlements in the South. The relevance of the instrument is satisfactory, with a F-stat above 18. The second stage estimates confirm the positive and significant relationship between Scots and Scots-Irish settlers and contemporary homicide rates, overall and by white offenders. All regressions include 1790 total white county population, number of slaves as well as population density, thereby addressing the potential concern that Scots-Irish settlers might self select to low density areas.

³² Distance to the ports of entry would not be a good instrument as it is likely that distance to the sea and to ports may influence crime in other ways, thereby violating the exclusion restriction.

Table 9: Instrumental Variable Estimation

Second stage		
	1	2
	Homicide rate	White offender
Scots&Irish	29.20***	8.05***
	[9.01]	[1.89]
County pop, slave pop, pop density1790	yes	yes
Socio-eco controls, 2000	yes	yes
Police numbers	yes	yes
Observations	39	39
R-squared	0.45	0.52
First stage		
Scots&Irish		
ln(distance Shallow Ford)	-40.99***	
	[9.55]	
County pop, slave pop, pop density1790	yes	
Socio-eco controls, 2000	yes	
Police numbers	yes	
Observations	39	
R-squared	0.96	
F-stat of excluded instruments	18.41	

Notes: see notes to Tables 1 and 2. Distance to Shallow Ford is computed using the great circle formula, between geocenters of counties and Shallow Ford. Deep South sample only.

Source: 1790 and 2000 Censi, UCR and Google Earth for Shallow Ford geographic coordinates.

6. Cultural Selection and Transmission

6.1. Institutional Quality and the Survival of the Culture of Honor in the South

Roth (2009) describes high homicide assailant rates by the Scots and the Scots-Irish in the 19th century not only in Virginia but in New England as well (see Section 2). The relationship documented indicates that the culture of honor has persisted, but only in the South. This points to more subtle cultural transmission mechanisms than the simple Cohen and Nisbett hypothesis according to which, essentially, cultural traits were brought along by settlers, transmitted intact to the next generations and dictate violent behavior regardless of the current environment. Instead, it seems that cultural traits pertaining to the use of interpersonal violence have only survived under the specific conditions of the South.³³ What could such conditions be?

³³ Additional evidence confirms that this result has indeed to do with the ‘selection’ of the culture of honor in the South in the sense of Richerson and Boyd (2005) and not with the current institutional environment of the South. This hypothesis namely implies that those born and raised in the South should behave more violently than those raised elsewhere, particularly when facing weak institutions. In accordance with this, I find that homicide rates are higher in counties of the West that, in the 1880s, received large influxes of migrants born and raised in the South,

Historical accounts suggest that the early institutional environment of the US strongly influenced the survival of the culture of honor. Wyatt-Brown (2001) depicts how in the North, formal and impersonal institutions quickly substituted for the ethic of honor as the cement of social and political order in the 19th century. Homicide historian Roth (2009) argues that among the main determinants of homicide are disrespect and mistrust for formal institutions and law enforcement. According to this view, the reason why the culture of honor survived in the South has to do with the weakness of formal and political institutions. The culture of honor characterizes a private justice system, which persisted as a substitute for public law and order. One should thus expect the persistence of the culture of honor to be stronger where formal institutions were weak.

Consistently with this interpretation, regression results displayed in Table 10 show that the culture of honor persisted most particularly in areas of the South with lower historical population density, where one could expect institutional development was slower and law enforcement more costly and difficult. Table 10 also shows that Scots-Irish settlements are associated with higher homicide today in counties with higher ethnic Fragmentation in 1790.³⁴ This is true overall as well as within the Deep South. A natural interpretation has to do with social conflict. Another has to do with poor institutional quality (Easterly and Levine 1997).

and most particularly in regions with major Scot and Scots-Irish settlements such as the Carolinas and the Virginias. Results are included in Supplementary Appendix, Table A6.

³⁴ The ethnic fragmentation index is computed by considering the proportions of countries from different countries of origin separately (England and Wales, France, Germany, Ireland, Scotland and 'other') as well as the black population.

Table 10: Population Density and Ethnic Fragmentation

	1	2	4	5	6	8
	White offender rate					
Scots-Irish 1790	0.03	-0.06	-0.09*	-0.01	-0.09***	-0.08**
	[0.075]	[0.066]	[0.042]	[0.012]	[0.030]	[0.029]
Pop. density 1840	-0.01**	-0.03***	-0.03***			
	[0.002]	[0.005]	[0.004]			
Scots-Irish*Pop. density		0.01**	0.01***			
		[0.004]	[0.003]			
Border South*Scots-Irish			0.24			-0.33**
			[1.248]			[0.137]
Deep South*Scots-Irish			5.03***			-0.41
			[0.373]			[0.335]
Border South*Scots-Irish*Pop.Density			-0.31			
			[0.513]			
Deep South*Scots-Irish*Pop.Density			-1.92***			
			[0.374]			
Ethnic Fragmentation 1790				0.85	-0.85	-0.25
				[0.783]	[1.115]	[0.890]
Scots-Irish*Fragmentation					0.16**	0.12*
					[0.062]	[0.057]
Border South*Scots-Irish*Fragmentation						0.62**
						[0.231]
Deep South*Scots-Irish*Fragmentation						1.43**
						[0.550]
County pop and slave pop 1790	yes	yes	yes	yes	yes	yes
Socio-eco controls 2000	yes	yes	yes	yes	yes	yes
Observations	146	146	146	149	149	149
R-squared	0.35	0.38	0.53	0.38	0.42	0.53

Notes: See Notes to Tables 1 and 2. All regional main effects and interactions included. The Ethnic Fragmentation 1790 index is computed by considering the proportions of countries from different countries of origin separately (England and Wales, France, Germany, Ireland, Scotland and 'other') as well as the black population in 1790.

Testing directly the link between institutional quality and the persistence of the culture of honor is impaired by the lack of historical data on institutional quality as a disaggregated enough level. However, the 1840 Census contains information on newspaper circulation. Following Besley and Prat (2006) and Gentzkow et al. (2006), this is used as a proxy for institutional quality and political competition. Regressions displayed in Table 11 investigate the influence of institutional quality not only on homicide but also on the link between Scots-Irish settlements and homicide. The main variable of interest is the interaction between the proxy for institutional quality and Scot or Scots-Irish settlements. The coefficient on the interaction term is negative and significant while the main effect of Scots-Irish becomes positive and significant. In other words, even

abstaining from any ad-hoc regional differentiation in Column 1 and 3, counties with larger Scots or Scots-Irish settlements at the end of the 18th century are more violent today, but not those that benefited from better institutional quality in 1840. The counterbalancing effect of better institutional quality on the Scots or Scots-Irish culture of violence is present everywhere and within the South as well (see Columns 2 and 4, which include a triple interaction between Scot or Scots-Irish settlers, newspapers and Deep South).

Table 11: Institutional Quality: Newspapers

	1	2	5	6
	Homicide rate		White offender	
Number newspaper per capita, state 1840	0.55	-0.07	0.17	0.02
	[0.448]	[0.255]	[0.117]	[0.080]
Scots&Irish 1790	0.58**	-0.22	0.14**	-0.07
	[0.219]	[0.187]	[0.059]	[0.069]
Newspapers* Scots&Irish	-0.05**	0.02	-0.01**	0.01
	[0.020]	[0.018]	[0.005]	[0.007]
Scots&Irish *South		1.11***		0.32**
		[0.287]		[0.126]
Newspapers*South		0.22		0.08
		[0.287]		[0.131]
Newspapers* Scots&Irish *South		-0.09**		-0.03*
		[0.032]		[0.014]
Socio-eco controls 2000	yes	yes	yes	yes
1790 controls	yes	yes	yes	yes
Observations	144	144	144	144
R-squared	0.488	0.527	0.394	0.422

Notes: See Notes to Tables 1 and 2. *newspapers* is the average, at the state level, of a dummy variable that indicates the presence of weekly or daily newspapers. All regressions control for Southern dummy.

Source: 1790 Census, 1840 Census, UCR

The main advantage of the *newspapers* proxy is its historical availability. Its main drawback is that it may not proxy well what may matter most for the persistence of the culture of honor: the quality of the formal justice system. Data on court quality at the state level is only available for recent periods. The disadvantage of relying on recent data is that the evolution of institutions may itself be an endogenous outcome of settler's background and occupations. Still, data from the National Center for State Courts (2005), which provides information on the number of cases filed and disposed in State Courts, is used in order to test whether the Scots-Irish culture of honor persisted in regions where court quality is lower. The first year for which such data is available for trial courts is 1997. I use as a proxy of court efficiency the ratio of cases disposed over cases

filed, averaged across criminal and civil cases. Regression in Table 12 show that again, even abstaining from ad-hoc regional distinctions, Scots-Irish settlements are found to positively associated with homicide, but not where the quality of state courts is better. The same result is obtained when using proportions instead of number of settlers for either proxy of institutional quality (Supplementary appendix Tables A7 and A8). The interpretation of this result is that the quality of the formal justice system is a major determinant of the persistence of the Scots-Irish culture of honor. Institutional quality may thus affect criminal behavior in the long run through the selection of cultural traits.

Table 12: Institutional Quality: State Courts

	1	3
	Homicide rate	White offender
Court Efficiency	11.095*** [2.729]	3.212*** [0.700]
Scots&Irish 1790	0.286*** [0.082]	0.051** [0.021]
Court Efficiency*Scots&Irish	-0.264*** [0.070]	-0.054*** [0.017]
Socio-eco controls 2000	yes	yes
1790 controls	yes	yes
Observations	147	147
R-squared	0.499	0.407

Notes: See Notes to Tables 1 and 2. *Court Efficiency* is the ratio, at the state level, of the number of cases disposed over filed, average across civil and criminal cases. All regressions control for regional dummies.

Source: 1790 Census, UCR, National Center for State Courts (2005).

The relationship between institutional quality and homicide may explain the specificity of the Scots and Scots-Irish with regards to homicide pattern. The Scots-Irish had developed informal institutions characterized by a high reliance on honor, reputation and interpersonal violence as an adaptive response to the lawlessness and economic vulnerability that characterized the Anglo-Scot border where they originate (Leeson 2009). Scottish highlands were also areas where formal institutions were weak. In the similarly lawless environment of the frontier South, the cultural traits of the Scots and Scots-Irish may have provided the best adaptive response. The next subsection explores the cultural transmission mechanisms that explain how such culture could become the prevailing cultural norm in the South.

6.2. Cultural Transmission

If the Scots-Irish culture of honor was selected in the South as the best adaptive behavior to lawlessness and economic vulnerability, a question that immediately arises is how it has persisted, despite changes in economic and institutional conditions. The socio-psychological literature and the 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, generates hysteresis that can explain the slow adaptation of cultural values to new economic environments.³⁵ In accordance with this thesis, Cohen and Nisbett (1996) document differences in children's socialization by Southerners vs. Northerners. For example, Southerners are more likely to defend corporal punishments and to "advocate spanking to discipline their children" (Cohen and Nisbett 1996, page 67). In parallel, studies have shown that socialization for aggression in boys in childhood is a strong predictor of higher rates of homicide and assault (Ember and Ember 1994).

Vertical cultural transmission from parents to children implies 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 for the relevance of such a transmission mechanism, contemporary homicide rates are regressed on the proportion of Americans who report Scots-Irish as first or second ancestry in the 2000 Census.³⁶ Results are reported in Table 12. As can be seen in Column 1, it is not the case that Americans of Scots-Irish ancestry are associated with more violence regardless of their geographic distribution. Again, it is only the case in areas with weak institutional environments: the South and the Mountain West (Column 2). The culture of honor may have been as much of an appropriate behavior in the lawless environment of the Mountain West as it had been in the South.

³⁵ See Fernandez and Fogli (2009) in the context of work and fertility decisions, Tabellini (2008a and 2008b) for social trust, Hauk and Saez Marti (2001) for corruption.

³⁶ One could raise doubts about the reliability of self-reported ancestry information in Census data. The results are nonetheless robust to the instrumentation of Americans of self-declared Scot or Scots-Irish ancestry by white, native Presbyterians in the 1900 Census. Results are not reported here, but the instrument has a strong predictive power (F stat of 863) and the coefficient on the instrumented variable is significant and positive at the 5% level in explaining murder rates by white offenders in the Deep South.

Table 13: Vertical Transmission

	1	2
	White offender homicide rate	
Scots-Irish 2000	-0.80 [2.64]	-5.75** [2.30]
Border South*Scots-Irish 2000		10.96** [2.30]
Deep South*Scots-Irish 2000		3.86** [1.88]
West*Scots-Irish 2000		3.97 [3.26]
Mountain West* Scots-Irish 2000		11.29*** [3.38]
Midwest*Scots-Irish 2000		5.44 [3.26]
Population, 2000	yes	yes
Socio-eco controls, 2000	yes	yes
Observations	2,845	2,845
R-squared	0.063	0.064

Notes: All regressions with a constant and regional main effects. Robust standard errors clustered at the state level. ***Significantly different from 0 at the 1% level, **significantly different from 0 at the 5% level. “Socio-eco controls, 2000”: usual controls. “Scots Irish 2000”: people reporting Scots-Irish as first or second ancestry in the 2000 Census, per 100,000. Border South: DC, DE, KY, MD, OK, WV. Deep South: AL, AR, FL, GA, LA, MS, NC, SC, TX, VA. West: CA, OR, WA. Mountain West: ID, MT, WY, AZ, NM, CO, NV, UT. Midwest: IL, IN, KS, MI, MN, MO, NE, ND, SD, OH, WI.

Source: 2000 Census, UCR.

If a culture of violence was selected in the South as a system of private justice in response to lawlessness and large-scale theft, it was precisely the Scots-Irish culture that may have proved to be the most adequate. It is not suggested here that the culture of honor was designed specifically as a response to the circumstances of the herding economy of the Southern United States. Instead, such cultural traits were preexisting among a certain category of settlers. Because such traits were the best adaptive response to economic vulnerability and lawlessness, they were selected and transmitted to other and subsequent settlers and became the prevailing cultural norm. Leeson (2009) describes how the Scots-Irish cultural norms emerged as a decentralized response to the lawlessness, intergroup banditry and large-scale cattle theft that characterized, for several centuries, the Anglo-Scot borders where the Scots-Irish originated.³⁷ The Scots and

³⁷ The author specifically refers to the 250-year period between the first War of Scottish Independence in 1296 and the Treaty of Norham in 1551, England and Scotland were in open conflict with one another and the borderland was in anarchy. Even after the 1551 Treaty, even though there was no official war, the tradition of enmity between various clans continued, “with each group’s members viewing the other’s as targets whom they might murder,

Scots-Irish were historically defiant of centralized institutions (Leeson 2009). Such attitudes may have been caused or at least reinforced by pastoralism. Burnham (1979) namely describes how capital mobility in pastoral societies inhibits the development of both political centralization and class stratification. Tendencies to self-rule and to develop an informal order as a substitute for formal law enforcement may have been exacerbated in the weak institutional environment of the South. Regressions displayed in Table 13 explore whether Southerners of Scots-Irish ancestry, beyond being associated with more violence, also display a value system that is consistent with the reliance on private justice. I use attitudinal data from the *General Social Survey* and explore whether American of self-reported Scots-Irish ancestry differ significantly in their attitude towards self-reliance and centralized institutions. The results confirm that Southerners of Scottish and Scots-Irish ancestry have a higher propensity to own guns and to be less trusting of the federal government and of formal law enforcement (the Supreme Court). It is also worth noting here that there is no evidence in the data that out-migration rates for people of Scots-Irish ancestry was any different from out-migration rates for people of other European ancestry, such as English or German.³⁸

Table 14: Attitudes of the Scots-Irish towards self-reliance and centralized institutions

	1 Weapon at home	2	3 Confidence Sup. Court	4 Confidence Sup. Court	5 Confidence Fed. Gov.	6 Confidence Fed. Gov.
Scots or Scots-Irish (SI)	-0.002 [0.010]	-0.021*** [0.003]	0.008 [0.040]	0.166*** [0.013]	-0.027 [0.016]	-0.007 [0.016]
Border South*SI		0.051 [0.028]		-0.318*** [0.025]		-0.064 [0.040]
Deep South*SI		0.033*** [0.005]		-0.145** [0.057]		-0.047** [0.015]
West*SI		0.014 [0.029]		-0.168 [0.114]		0.034 [0.035]
Midwest*SI		0.001 [0.011]		-0.180* [0.088]		0.021 [0.041]
Socio- eco controls 2000	yes	yes	yes	yes	yes	yes
Observations	39,559	39,559	3,526	3,526	26,338	26,338
R-squared	0.067	0.067	0.013	0.015	0.005	0.005

Notes: All regressions with a constant, year dummies and regional main effects. Robust standard errors clustered at the state level. * indicates usual levels of significance. “Scots or Scots Irish”: people reporting Scot or Scots-Irish ancestry in the GSS, per 100,000. Weapon at home: takes value 1 if the respondent owns a pistol, rifle or shotgun. The GSS asks: “Would you say you have a great deal of confidence (coded

kidnap, and despoil without compunction” (Leeson 2009, page 475). Pigliaru (1959) describes similar systems of informal justice based on honor, reputation and interpersonal violence among Sardinian herdsmen.

³⁸ Historical settlements in 1790 or 1900 do not have a different predicting power on contemporary populations of self-declared Scots-Irish ancestry compared with other European ancestries, such as English or German.

1), only some confidence (2), or hardly any confidence at all (3) in [these institutions]? “Confidence Sup Court”, respectively “Confidence Fed. Gov”, is the answer to this question about the U.S. Supreme Court, respectively the executive branch of the federal government. “Socio-eco controls 2000”: respondent’s income, working status, marital status, sex, race, whether born in the US and size place of residence.

Source: US General Social Survey 1972-2008 Cumulative data set.

In addition to vertical transmission mechanisms, the literature on cultural transmission discusses the influence of oblique and horizontal socialization mechanisms through peer effects and learning (see Bisin and Verdier 2008 for a review). To test for the presence of horizontal transmission mechanisms, I investigate whether settlers of countries of origin other than Ireland and Scotland are associated with more violence in counties where the proportion of Scot or Scots-Irish is higher. The tested hypothesis is: if settlers imitated the Scots-Irish cultural norm, those living in counties with higher proportion of Scots-Irish should be associated with more violence. Failure to reject the null hypothesis that such an interaction is not different from zero is interpreted as a sign of horizontal cultural transmission. The coefficient of interest is that of the interaction between Deep South, the proportion of Scots or Scots-Irish settlers and the number of settlers from Holland, France or Germany. Results are reported in Column 1 of Table 14. The null is rejected: Dutch, French or German settlers in counties with high proportions of Scots or Scots-Irish are associated with more violence than those in counties with lower proportions of Scots or Scots-Irish. This provides evidence for horizontal transmission of cultural norms from the Scots and Scots-Irish to other settlers and illustrates how, through imitation by other settlers, the culture of violence could have become the prevailing cultural norm in the South.³⁹ Column 2 shows that the positive effect of the culture of honor in deterring crime against women has also been transmitted to other – non Scot or Scots-Irish settlers. This is in line with the interpretation that crime against women is reduced because of fears of retaliation by male relatives.

I then investigate similar issues regarding transmission to African Americans. Wyatt-Brown (2001) argues that culture of honor prospered in the South because of the lack of formal and institutionalized social order and adds that, a fortiori, the culture of honor prevailed in slave

³⁹ For example, Roth (2009) writes: “[The Scots and Scots-Irish] appear to have brought fighting techniques like biting and eye-gouging to the colonies, [...] meant to show ferocity and humiliate the victim [...] and they were immediately adopted by non-Scots”.

barracks, which he describes as the “mirror image of the quarters of the patriarchal, male dominated, honor-obsessed rankings of the white society” (Wyatt-Brown 2001, page 23). If the culture of honor was transmitted to African Americans, one should expect higher homicide rates –especially by black offenders- in counties where black populations cohabited with high proportions of Scots or Scots-Irish settlers. Columns 3 and 4 of Table 14 present results where contemporaneous homicide rates, overall and by black offenders, are regressed on an interaction between blacks and the proportion of Scots or Scots-Irish settlers in the Deep South. The effect of the interaction is not significant when the variable is the overall homicide rate and is actually negative when the dependent variable is black offender rates. Similar results hold whether black population in 1790 or today is considered. In sum, the culture of honor was transmitted to other white European settlers of non-Scot or Scots-Irish ancestry but not to African Americans.

Table 15: Horizontal Transmission: Other white settlers and African Americans

	1	2	3	4
	Other white settlers 1790		Blacks 1790	
	White offender	Rape, white offender	Homicide	Black offender
Prop Scots&Irish	1.43	1.43	4.93	1.76
	[1.056]	[1.056]	[3.603]	[2.154]
Other white settlers /Blacks	0.15***	-0.03	-0.86	-0.61
	[0.030]	[0.101]	[0.656]	[0.367]
Prop Scots&Irish *other settlers / Blacks	-0.62***	0.05	0.142	0.399
	[0.198]	[0.867]	[0.343]	[0.457]
Deep South*other settlers / Blacks	-2.44***	1.15**	1.41*	1.03**
	[0.194]	[0.475]	[0.701]	[0.380]
Deep South*prop Scots&Irish	13.44	4.12	204.82	100.69
	[8.147]	[18.143]	[133.743]	[59.391]
Deep South*prop Scots&Irish*other settlers / Blacks	74.30***	-38.36**	-14.35	-15.86**
	[6.283]	[9.019]	[11.357]	[6.465]
County pop 1790, Pop. density 1790	yes	yes	yes	yes
Socio- eco controls, 2000	yes	yes	yes	yes
Observations	149	149	149	149
R-squared	0.55	0.29	0.52	0.49

Notes: See Notes to Tables 1 and 2. All main effects and two-way interactions controlled for. “Black offender” corresponds to homicide rates by black offenders (over total population). “Other settlers” is the sum of Dutch, French and German settlers. All settlers scaled by 1,000. Proportions are over total county population in 1790.

6.3. Cultural Decay

The evidence discussed above explains the persistence of the culture of honor by its inheritability by the descendants of Scots-Irish settlers and its transmissibility to other white settlers in areas where such cultural traits were adaptive. This was the case in the Deep South, both because of economic vulnerability and the weakness of formal institutions. However, such conditions have changed with economic and institutional development, even if later, in the Deep South. The Scots-Irish culture of honor still explains the prevalence of homicide, but, if culture is indeed adaptive, one should expect it to explain less and less of it, in the face of changing conditions. I show here that this is precisely the case. Scots-Irish settlements explained a much more substantial part of the variation in homicide rates at the beginning of the 20th century, in 1904. The Scots-Irish culture of honor has decayed over time, at a rate of about 3.4% yearly since the beginning of the 1980s, a rate that is consistent with the 1904 data.

County level data is available since the beginning of the 1980s from UCR. The number of agencies reporting to the UCR has increased over time so that such early data has more missing observations than more recent data. However, it is still interesting to study how the variation in homicide that is explained by Scots-Irish settlements has evolved since 1980. To do so, I regress yearly homicide on the proportion of Scots-Irish settlers in 1790 for every year from 1980 to 2007⁴⁰, interacted with regional dummies. Obtained coefficients and smoothed lowess regressions, both on the main effect and on the interaction with the Deep South, are plotted in Figure 2. Both coefficients are slowly decreasing over time. The variation of homicide explained by Scots-Irish settlements in the South starts from a much higher base and actually decreases slightly faster than in the North, where the coefficient is not significantly different from zero, apart from the first 3 years⁴¹ (See Supplementary appendix Table A9 for the full set of results). The average ‘depreciation rate’ of the culture of honor over the period is about 3.4% yearly in the South and 2.6% in the North (taking a four years beginning and end of period averages).

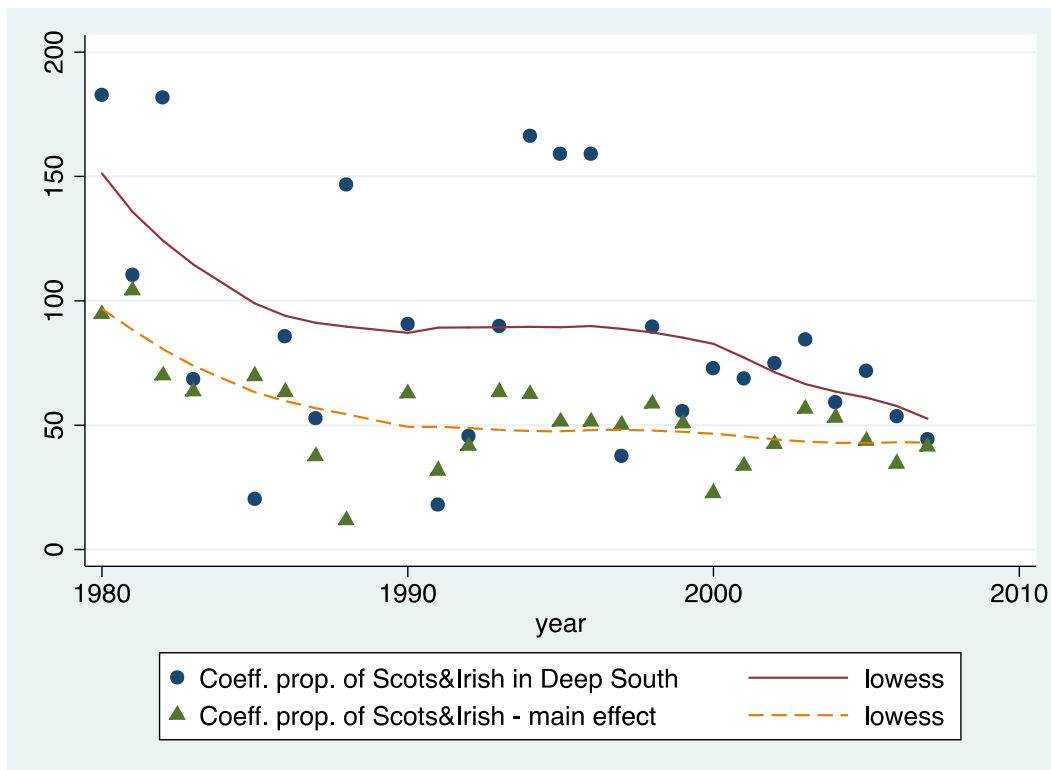
Applying this depreciation rate and extrapolating to the beginning of the 20th century implies that the coefficient on the proportion of Scots-Irish settlers should be 629 in the North and 1944 in the Deep South. An early source of crime statistics is a 1904 Special Report to the Bureau of the

⁴⁰ Except for 1984 and 1989, which are missing.

⁴¹ This is consistent with the main result of this paper since no other control is included in this analysis.

Census of “Prisoners and Juvenile Delinquents in Institutions”, which counts the number of inmates held for homicide, a proxy for homicide, at the state level. Regressing the number of inmates held for homicide in 1904 on the proportion of Scots-Irish settlers in 1790 gives a coefficient of 1404 in the North and 2205 in the Deep South (See Supplementary Appendix, Table A9, Column 27). These figures are in ballpark of the extrapolated coefficients, actually very closely so in the Deep South.

Figure 2: The Evolution of the Culture of Honor over Time: 1980 – 2007



Notes: Plotted points are point estimates of the coefficients when yearly homicides are regressed on the proportion of Scots or Scots-Irish settlers in 1790, interacted with regional dummies. No additional control is included (data not available for all years).

Source: 1790 Census, UCR (data at county level available for 1980-2007).

7. Conclusion

This paper examines the economic and cultural underpinnings of lethal interpersonal violence. A popular hypothesis is that the Southern taste for violence is inherited from the Scot and Scots-

Irish herders that settled the region. The results illustrate something broadly consistent with this but slightly different. Scot or Scots-Irish presence explains high homicide rates by white offenders but only within the South. Moreover, differences in pastoralism matter but, again, only within the South and when they are present simultaneously with the Scots or Scots-Irish. The Scots-Irish culture of inter-personal violence, shaped by a history of lawlessness in the Anglo-Scot borderlands and the Scottish Highlands has thrived only in areas where the institutional environment was weak. The interpretation is that such cultural norms have persisted as a private justice system, which substituted for formal law enforcement. Associated with such a culture of private violence is a value system stressing the importance of self-reliance and characterized by defiance of formal and centralized institution, which are still carried by Southerners of Scots-Irish decent.

The relationship between Scots and Scots-Irish settlers and homicides is very likely causal. The results are robust to the inclusion of a wide array of geographic, historical, and contemporary socio economic and demographic determinants of violence. The positive relationship between settlers and homicides does not hold when other countries of origin or when other violent crime that is unrelated to a self-protection ethic are considered. The results are robust to instrumenting Southern settlements by the distance to a major crossroads on the settlers' route to the South. Consistently with an ethic based on kinship and the defense of a reputation, Scot or Scots-Irish settlements in the South do not explain violence in general but only homicides in which the offender and the victim are acquaintances. By contrast, homicide in the context of sexual assaults as well as rape by white offenders are actually less likely in Southern counties settled by Scots-Irish settlers, suggesting a positive effect of the Scots-Irish culture of honor in deterring violence against women, possibly because of the fear of retaliation by male relatives.

This paper contributes to the literature on long-term persistence by highlighting the persistence of cultural norms related to interpersonal violence. The culture of honor is shown to be inheritable: it was transmitted from Scots-Irish settlers both to their descendents and to other white settlers. However, the main message of this paper is that such cultural persistence is not unconditional. Culture is adaptive: the culture of honor thrived in areas with weak formal institutions and it shows signs of disappearance over time.

8. References

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9. Appendix:

Table A1: Descriptive Statistics

Variable		Obs	Mean	s.d.	Min	Max
Homicide rate	Average annual homicide rate per 100,000, 2000-2007	150	4.29	4.36	0	23.86
Homicide rate white offender	Average annual homicide rate per 100,000, 2000-2007. White offender	150	1.40	1.41	0	8.83
Scots&Irish	Scots or Scots Irish in 1790	150	1166	1222	0	5934
All non Scots Irish	All non Scot, Irish, English or Welsh, 1790	150	1647	3517	0	22483
Holland 1790	Dutch in 1790	150	513	1646	0	13563
France 1790	French in 1790	150	91	183	0	1516
Germany 1790	German in 1790	150	982	3038	0	22435
England&Wales 1790	English or Welsh 1790	150	12289	11845	340	54925
Proportion Scots Irish	Percentage Scots or Scots Irish in 1790	149	6.58	6.20	0	32.71
County pop 1790	Total county population 1790	149	18457	13361	1074	75980
Pop density 1790	Population density in 1790	149	2.46	6.88	0.05	72
Sheep&hogs per capita	Number of sheep or hogs per 1840 capita	148	2.24	1.69	0.01	12
Newspapers	Dummy presence of daily or weekly newspapers at state level in 1840	150	0.54	0.28	0	1
<u>Socio-eco controls from US 2000 Census:</u>						
Log agg earnings	log aggregate earnings	150	21.46	1.59	18.26	25
Prop pop urban	Proportion population urban (%)	150	61.16	31.23	0	100
Prop pop poverty	Proportion population below poverty line	150	9.43	4.35	2.48	25
Prop pop black	Proportion population black (%)	150	13.21	15.28	0.09	64
Fractionalization	Fractionalization index (%)	150	29.80	18.04	3.26	78
Gini	Gini inequality index	150	42.99	3.94	34.08	59

Source: 1790 and 2000 US Censi, UCR

Table A2: Aggravated Assaults

	1	2	3	4	5	6
	Aggravated assault rate			Aggravated assault, white offender rate		
Scots&Irish 1790	7.36 [6.90]	5.49 [5.47]	7.28 [6.54]	2.52 [2.79]	1.28 [2.25]	2.03 [2.55]
South*Scots&Irish		105.75*** [31.53]			69.39*** [15.08]	
Border South*Scots&Irish			-40.16 [33.79]			16.45 [24.23]
Deep South*Scots&Irish			193.93*** [54.00]			48.37** [19.18]
Socio-eco & police controls 2000	yes	yes	yes	yes	yes	yes
County and slave pop 1790	yes	yes	yes	yes	yes	yes
Pop density 1790	yes	yes	yes	yes	yes	yes
Observations	144	144	144	144	144	144
R-squared	0.39	0.28	0.47	0.42	0.31	0.43

Notes: See Notes to Table 1 and 2. Aggravated assault rates are yearly averages for 2000-2007, per 100,000 people. All regional main effects included.