

## **A History of Violence:**

### **The ‘Culture of Honor’ as a Determinant of Homicide in the US South**

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*Preliminary and Incomplete Version*

#### **Abstract**

This paper investigates the origins of lethal violence in the Southern United States. A debated hypothesis argues that the high prevalence of homicides in the US South stems from the fact that it was settled by herders, chief among them the Scots-Irish. Herding societies develop cultures of honor because of their precariousness: violence is a necessary condition to preserve a reputation for toughness and deter animal theft. Using historical census data and relating contemporaneous violence to early Scots-Irish settlers and livestock counts, this paper confirms that high numbers of Scots-Irish settlers to the US South are associated with higher homicide rates today, especially among whites and between acquaintances, and all the more so in counties more heavily engaged in herding in the early 19<sup>th</sup> century. Evidence suggests that the relationship is causal: the results are robust to a wide array of socio-economic controls and to controlling for the influence of slavery, they do not hold for other countries of origin of settlers or other offenses and are robust to instrumentation of Scots-Irish settlements by the distance to major crossroads on the settlers’ road to the South. Regarding cultural transmission, results suggest that horizontal transmission between early Scots-Irish settlers and their –white- peers and successors prevailed.

Keywords: crime, herding, migration, Scots-Irish, South, violence

JEL codes: K42, N31, O15, Z13

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*“If defeated everywhere else I will make my last stand for liberty among the Scots-Irish of my native Virginia” George Washington*

*“The Scots-Irish were more prone to personal violence and more conscious of honor than any other group then<sup>2</sup> settled in the country” Bertram Wyatt-Brown (2001)*

## **1. Introduction**

The average murder rate per 100,000 people between 2000 and 2007 in the Deep South of the United States was 8.55, nearly twice as high as in the rest of the country.<sup>3</sup> The respective roles of economic and cultural factors in explaining such a high prevalence of homicide-related violence in the South are still the object of a lively debate. It has been acknowledged that the South’s high murder rate can hardly be explained away by traditional socio-economic or institutional determinants of crime (Cohen and Nisbett, 1994, 1996). The inelasticity of homicide rates to income levels has been interpreted as a limitation of cost-benefit analysis of criminal behavior<sup>4</sup> (Levitt and Miles 2006). More recent economic analysis of crime<sup>5</sup> appear similarly unsuitable to explain the determinants of white offender homicide rates, which have remained remarkably stable over the last three decades (see Figure 1). Some authors have suggested instead that the Southern homicide specificity is a product of cultural values condoning the use of lethal violence. While Hackney (1969) stresses the role of the defeat in the civil war in forming a distinct “Southern identity”, Gastil (1971) and Wyatt-Brown (1982, 2001) highlight conditions in the pre-Civil war South, characterized namely by an “institutionalization of dueling” and an “exaggerated sense of honor”.<sup>6</sup>

The object of this paper is to reconcile economic and cultural theories of violent crime by highlighting the economic *origins* of such cultural differences. Authors Dov Cohen and Richard Nisbett (1994, 1996) hypothesize that the root of the Southern culture of honor lies with economic differences that led to cultural differences. Whereas the North of the United States was settled by farmers, the South was settled by people whose livelihood was based primarily on

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<sup>2</sup> The author refers to the time period surrounding President Jackson’s (1767-1845) childhood, referring to the President’s education by his Scots-Irish parents.

<sup>3</sup> Source: Uniform Crime Reporting (UCR) Program Data by the United States Department of Justice and Federal Bureau of Investigation and author’s calculations.

<sup>4</sup> Becker (1968)

<sup>5</sup> See Levitt (2004) and Levis and Miles (2006)

<sup>6</sup> In Messner et al. (2005), p 634.

herding. Chief among them were the “people from the fringes of Britain- the so called Scots-Irish” (Cohen and Nisbett, 1996, page 7). The tendency of pastoralist societies to develop cultures of honor has been extensively described in the historical (Braudel, 1949; Pitt-Rivers 1966) and anthropological literature (Edgerton 1967).<sup>7</sup> Herding societies develop cultures of honor for reasons to do with their precariousness and susceptibility to theft by others. A stance of aggressiveness and willingness to kill are essential to build a reputation for toughness and deter animal theft.

The main idea of this paper is that some of economic factors relevant for understanding criminal behavior may be found in the past. Past ecological and economic conditions influence cultural values, which persist over time and underlie contemporaneous behavior. Using historical census data on early settlements to the United States, this paper examines how much and under what circumstances Scots-Irish settlements and their herding activities in the late 18<sup>th</sup> and 19<sup>th</sup> century explain contemporaneous homicide.

Immigration of the Scots-Irish to the United States was completed over the course of the 18<sup>th</sup> century. Many Highland Scots emigrated at the same time, particularly after the defeat in 1746 of Charles Edward Stuart, the Jacobite claimer to the throne of England, Scotland and Ireland. The vast majority of migrants from Ireland prior to the 1840 Potato Famine were Protestant (mainly Presbyterian) Ulster Scots. The term Scots-Irish was actually coined in the US in the 19<sup>th</sup> century to differentiate Ulster Scots from later waves of Irish Catholics migrants, who were mostly farmers and urban dwellers and whose cultural background was very different from the Ulster Scots. Since the US Census does not distinguish which part of Ireland settlers originate from, the Scots-Irish are identified in data on settlements prior to the Potato Famine. The first US census, which was recorded in 1790 in 151 counties and 13 states, is the main source of data on Scots-Irish settlements. For robustness and to increase the sample size, the analysis also relies on the 1900 census, which records religious denominations as well as herd counts. Presbyterian US

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<sup>7</sup> Edgerton 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. 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 limitations of law enforcement on mountainous terrain fail to deter thieving, thereby creating favorable conditions for the prevalence of “private” law, also described by Edgerton as “machismo”. As described by Cohen and Nisbett, such private law in the case of Scots-Irish settlers in the United States was “lex talionis”, the rule of retaliation.

natives in the 1900 census are used as a proxy for the Scots and Ulster Scots. Contemporaneous homicide data at the county level is from the Uniform Crime Reporting (UCR) Program Data by the United States Department of Justice and Federal Bureau of Investigation for 2000 to 2007. Historical crime data from the 1904 Census of Prisoners and Rolph (2009) complete the analysis.

The Nisbett and Cohen hypothesis predicts that the North-South difference in homicide rates is due to differences in Scots-Irish presence, and the reason for this is the difference in prevalence of pastoralism among Scots-Irish relative to other settlers. The results illustrate something slightly different. The presence of Scots-Irish only matters to explain the prevalence of violence within the South. Moreover, differences in pastoralism matter only within the South and when they are present simultaneously with the Scots-Irish culture. This seems to indicate that the Scots-Irish culture of honor was “lost” in the North, whereas it still contributes to explaining the use of lethal violence in the South, especially in areas where pastoralism was most prevalent. Wyatt-Brown (2001) depicts how in the North, formal and impersonal institutions quickly substituted to the ethic of honor as the cement of social and political order in the 19<sup>th</sup> century in contrast with the more rural and economic laggard South where honor remained prevalent. Historical crime data from the end of the 19<sup>th</sup> century confirms this interpretation. The results in this paper hence illustrate the complementary nature of three potential determinants of violence: cultural background, economic activities and the institutional environment.

The effect of the Scots-Irish presence in the Southern United States on contemporary homicide rates is sizeable. Controlling for a wide number of contemporaneous socio-economic and demographic characteristics, Scots-Irish settlers in the Deep South are associated with 8 homicides per county yearly and 1.5 homicides by white offenders. This explains about 30% of the total average number of yearly homicides overall and by white offenders in the Southern counties included in the study. Moreover, consistently with a kinship-based culture of honor, Scots-Irish presence contributes only to homicides between acquaintances and not any type of violence.

An alternative explanation to the results is that the Scots-Irish migrated to counties, the characteristics of which still lead to a high prevalence of homicides. It could be the case, for example, that the Scots-Irish migrated to Southern counties where slavery was also high, and this confounds the relationship discussed in this paper. I pursue different avenues in order to establish

the causal relationship between Scots-Irish settlements and homicide related violence. Firstly, I check that the results are robust to controlling not only for the influence of slavery but also for a wide array of other potential contemporaneous determinants of crime, such as poverty levels, racial composition, ethnic fragmentalization or inequality. Controlling for such observable characteristics actually reinforces the result.

Secondly, several falsification tests are performed. Firstly, the positive relationship between early settlements and contemporaneous homicides in the South does not hold for settlers that originated from countries where farming was more developed, such as England, Holland, Germany or France or for other religious denominations in 1900. Secondly, the relationship between homicide and early Scots-Irish settlers does not hold for another type of violent crime, which is unrelated to a self-protection ethic, such as rape. Finding a positive effect may testify of a tendency –and legacy- of Scots-Irish settlers towards violence and lawlessness in general, and not specifically a culture of honor.

Thirdly, following Altonji, Elder, and Taber (2005) and Nunn and Wantchekon (2009), I calculate 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 Scots-Irish settlers and contemporaneous homicides. Obtained ratios make it highly unlikely that the estimate can be fully attributed to unobserved heterogeneity.

Finally, results are robust to the instrumentation of Southern Scots-Irish settlements by the physical distance to Shallow Ford, a major crossroads on the settlers' road to the backcountry, the "Great Valley Road".

The contemporaneous relationship between Scots-Irish settlements and interpersonal violence points to the persistence of the Scots-Irish culture of honor in the South. The precise mechanism of cultural persistence and transmission is investigated next. The evidence presented thus far assumes two potential situations. Either Scots-Irish descendents still live mostly in the South and have inherited cultural traits from their ancestors, or the initial culture of Scots-Irish settlers still prevail in certain areas of the South because other and subsequent settlers, regardless of their origin, improved their fitness by adopting such a violent cultural norm. These mechanisms are, respectively, consistent with two sources of cultural transmission discussed by the literature: direct 'vertical socialization' from parents to children and 'oblique and horizontal socialization'

through peer effects and learning (see Bisin and Verdier 2008 for a review).<sup>8</sup> I undertake three exercises in order to test the relevance of each potential transmission channel. Firstly, vertical transmission implies that agents internalize cultural norms within families, so that even today, Americans of Scots-Irish descent should display cultural traits consistent with a culture of honor, regardless of their geographic distribution in the country. I test whether homicide rates are higher today in counties with high proportions of Americans of Scots-Irish decent, as self-reported in the 2000 Census.<sup>9</sup> This is not strongly supported by the data. Secondly, to test for horizontal transmission, I investigate whether settlers of countries of origin other than Ireland and Scotland are associated with more violence in counties where the proportion of Scots-Irish was higher. This is strongly supported by the data. Last, I provide further evidence that it is not lawlessness and violence in general that were transmitted but characteristics specifically associated with the culture of honor.

One of the main contributions of this paper is to integrate economic and cultural evolutionary theories of crime. The main message is that the economic factors underlying criminal behavior are not necessarily contemporaneous but historical. This paper also provides a first direct empirical test of the Cohen and Nisbett hypothesis by relying on historical census data on Scots-Irish settlements.<sup>10</sup> In contrast with the well-asserted association between cultures of honor and violence, the results of empirical research on the origins of such cultural differences have so far been highly inconsistent and inconclusive.<sup>11</sup> This paper differs from previous studies by relying directly on historical data on Scots-Irish settlers and herding and by controlling for a wide

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<sup>8</sup> Of course, in this case, ‘oblique’ transmission mechanisms have to be coupled with vertical transmission to explain the relationship between contemporaneous crime and early settlers: even if the culture has been transmitted to settlers from other countries, they must have transmitted it to their descendents. Put simply, the question is whether the culture remained attached to the people or the geographic area.

<sup>9</sup> The proportion of Americans of Scots-Irish decent is slightly higher in the Deep South and the West (1.8% to 2%) compared to the rest of the country (1.47%).

<sup>10</sup> The proposition that a distinct ideology towards violence characterizes the South has been heavily documented. Hackney (1969) and Gastil (1971) highlight a Southern specificity in regression analysis that predicts homicide rates, even controlling for a number of socio-economic factors. Cohen and Nisbett (1994, 1996) provide an array of experimental evidence showing the higher propensity of Southerners not towards violence in general, but specifically towards violence in order to protect one’s or one’s family reputation.

<sup>11</sup> For example, Nisbett (1993), Cohen and Nisbett (1996) and Reaves (1992) document a positive correlation between homicide rates and the prevalence of herding as well as the topographic and climatic suitability of land to herding vs. farming. Yet, Chu, Rivera and Loftin (2000) and Henry (2009) highlight several statistical and methodological problems in these studies. The ‘suitability for herding’ variable is shown to hide considerable variation along topographic and climatic conditions and the robustness of the results to socio-economic controls is questioned.

number of socio-economic and demographic factors, such as inequality, poverty, or ethnic fragmentalization, as well as potential confounding factors, such as slavery.

The rest of the paper is organized as follows. Section 2 provides some historical background on the Scots-Irish and their settlement to the United States. 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 cultural transmission channels. Section 7 concludes.

## **2. Historical Background**

The theory developed by Cohen and Nisbett deals with settlers from the fringes of Britain, which were not suitable for large-scale agriculture. Cohen and Nisbett refer to the Scots and the Welsh, but the main focus of their discussion is the “Scots-Irish”. The term “Scots-Irish” was coined in the United States in the 19<sup>th</sup> century to differentiate Ulster Scots from Irish Catholics. Ulster Scots migrated from Scotland to Ulster during the 17<sup>th</sup> and early 18<sup>th</sup> centuries beginning around 1615. They were mainly protestant (Presbyterians) lowland Scots and consisted of the “Border Reivers”: raiders and cattle-thieves who were causing instability along the frontier between England and Scotland, and who became a problem for James VI of Scotland when he became King of England in 1603. The objective of the “Plantation”, the settlement of reiver families to Ireland, was to bring peace to the Anglo-Scot border country, and provide fighting men to suppress the native Irish.

Prior to the 19<sup>th</sup> century, the vast majority of migrants from Ireland consisted of Ulster Scots.<sup>12</sup> Their migration was completed over the course of the 18<sup>th</sup> century. It is estimated that over 200,000 Ulster Scots migrated to the Americas between 1717 and 1775 (Adamson 1982). The reasons for that mass migration were both religious and economic. First, the 1704 Test Act required all office holders in Ireland to take the sacrament of the Anglican Church. Presbyterian ministers were made inferior to Catholic priests and Presbyterians could no longer serve in the army, the civil service, teaching professions or the police. Secondly, the English "Navigation

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<sup>12</sup> Protestants were one-third the population of Ireland, but three-quarters of all emigrants leaving between 1700 and 1776 were Protestant and 70% of these Protestants were Presbyterians (Adamson 1982).

act" of 1660 prohibited all exports from Ireland to the colonies and the export of Irish cattle to England.<sup>13</sup> These acts ruined the Scots-Irish, whose economy was based on herding. Further restrictive economic laws were passed. In 1699, the English parliament prohibited wool or woolen goods exports to any ports but Liverpool, Milford and Chester, from any Irish ports except Drogheda, Dublin, Waterford, Youghal, Cork and Kinsale, none of which is in Ulster. Lastly, around the same time, the English parliament enacted the practice of rack-renting by landlords which led to exorbitant land rents in Ulster. All of these enactments were particularly detrimental to Ulster Scots and provoked a first mass migration to the New World right at the beginning of the 17<sup>th</sup> century. Ulster Scots 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 Scots 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, the 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", along the Appalachian Mountains southward to the Carolinas. The hilly terrain reinforced herding as the basis of the economy of the Ulster Scots and Scottish settlers: it was often unsuitable for intensive agriculture, and even when it was, they tended to farm in low efficiency horticultural fashion.<sup>14</sup>

Although migration from Ireland consisted primarily of Ulster Scots prior to the 19<sup>th</sup>, the mass migration from Ireland that followed consisted of Irish Catholics whose cultural and economic bases were very different from the Scots-Irish. This newer wave of Irish Catholics often worked as laborers and, to a lesser extent, tradesmen and typically settled at first in the coastal urban centers, although many migrated to the interior to labor on large-scale 19<sup>th</sup> century infrastructure projects. Their interactions with the –rural based- Ulster Scots were thus very scarce.

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<sup>13</sup> A prohibition made permanent in 1666.

<sup>14</sup> Cohen and Nisbett, 1996, page 8

Anecdotic evidence on the ruthless and violent Scots-Irish in the Southern United States abound. Wyatt-Brown (2001) namely 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 then<sup>15</sup> 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). Historical crime data from the 18<sup>th</sup> century support the depiction of the violent Scots-Irish. Roth (2009) reports that the Irish represented 13% of homicide assailants between 1676-1800 in New England and Virginia but only 3.7% of the population. Other people from the ‘fringes of Britain’ were almost as violent: Scots represented 20% (New England) to 26% (Virginia) of homicide assailants but only 12% of the population. Such high ratios of proportion of homicide assailants to population of Irish settlers persisted in the 19<sup>th</sup> century. Homicide rates were relatively high too, at about 13.6 per 100,000 colonists in the Shenandoah Valley of Virginia between 1645 and 1775, consisting in majority of ‘non political homicides’ between colonists’ (Roth 2009).

Probably contributing to such violence was the fact that the Scots-Irish were the main backcountry settlers. St John Crevecoeur, a contemporary of the settlement of the frontier relates:

“By living in or near the woods, their actions are regulated by the wildness of the neighbourhood. [...] This surrounding hostility, immediately puts the gun into their hands; they watch these animals, they kill some; and thus by defending their property, they soon become professed hunters. [...] The chase renders them ferocious, gloomy, and unsociable; a hunter wants no neighbour, he rather hates them, because he dreads the competition. [...] These new manners being grafted on the old stock, produce a strange sort of lawless profligacy, the impressions of which are indelible.”

Of Irish settlers in particular, he recounts:

“The Irish [...] love to drink and to quarrel; they are litigious, and soon take to the gun, which is the ruin of every thing” (St. John de Crevecoeur 1782, Letter 2).

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<sup>15</sup> The author refers to the time period surrounding President Jackson’s (1767-1845) childhood, referring to the President’s education by his Scots-Irish parents.

### **3. Data on Crime and History and Descriptive Statistics**

#### ***3.1.Data***

- Crime data:

Crime data is 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 each offense in every reporting agency. The UCR data provide information on 43 offenses and the counts of arrests by age, sex, and race for each offense in more than 17,000 reporting agencies. With the data on counts of 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 offense is considered. This results in a lower number of offenses by categories of offenders than the total count of offenses.

The offense of interest to test the culture of honor hypothesis is “Murder and non-negligent manslaughter”. Ideally, one would want to rely only on murders by offenders of Scots-Irish descent, but this is not possible, since arrest data does not include any information on ancestry. Relying on homicides by white offenders, i.e. for which a white person has been arrested is the next best approximation and has been used in most of the literature.<sup>16</sup> The white offender homicide rate in the analysis is defined as the number of homicides for which a white offender has been arrested as a percentage of the white population. All regression results are presented for the overall homicide rate as well as white offender homicide rate. 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 and non negligent manslaughters, as well as the weapon used and the circumstances of the crime.

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<sup>16</sup> Such as Cohen and Nisbett 1994, 1996; Rivera et al. 2002, Henry 2009, among others.

The number of reporting agencies to the UCR and SHR has been increasing over the years since the start of the program in the early 1980's. Therefore, the analysis relies mostly on more recent data, for 2000-2007 at the county level, which is available for 2499 counties.<sup>17</sup>

The UCR data is merged with the 2000 census to obtain crime rates (per 100,000 people). Potential determinants of crime, such as socio-economic characteristics, namely aggregate earnings, proportion of people living at or below the poverty line, proportion of people living in urban areas and Gini coefficients, and demographic and ethnic composition are obtained from the 2000 US census.

The average crime rate per 100,000 people for 2000-2007 is 5.8. States with the highest crime rate are North Carolina and South Carolina and the lowest: Maine and New Hampshire.<sup>18</sup> The most violent county is Kenedy County in Texas, shortly followed by Clay and Taliaferro counties in Georgia.

The homicide rate by white offenders is 2.5 per 100,000 whites. This is more than twice the average *total recorded* homicide rate in the EU-12.<sup>19</sup> <sup>20</sup>States with the highest murder rate by white offenders are Arizona and California, and the states with the lowest: Kentucky and South Dakota. All descriptive statistics are in Appendix.

- Historical data:

Historical census data is from the National Historical and Geographical Information System. The first US census was recorded in 1790 and is available at the county level. Censuses were then carried out every ten years. However, not all waves contain information on countries of origin and the first census to contain such information after the 1790 census is in 1870.<sup>21</sup>

The culture of honor hypothesis relates to the Scots-Irish settlers who settled in the frontier South. As detailed in Section 2, the settlement of Ulster Scots in the US was completed by 1775. The ensuing massive emigration from Ireland to the United States consisted of culturally very different people, generally poor urban dwellers and farmers, mainly from the South of Ireland.

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<sup>17</sup> The results are robust to using earlier data from 1985 to 2000.

<sup>18</sup> Alaska and Hawaii are excluded.

<sup>19</sup> This is a lower estimate of the difference since in one case, since unsolved crime are not considered in the US number but would be in the EU-12 number.

<sup>20</sup> The source of data on EU crime rate is the UNODC.

<sup>21</sup> Then the 1900 and 1910 census, 1930, 1960, 1980 and every ten years after that.

The analysis therefore mostly relies on the 1790 census. The 1790 census records information on countries of origin, age, family sizes and slaveholding in 286 counties. Information on country of origin is however available only in 150 counties in 11 states according to the 1790 states boundaries, 13 according to contemporaneous boundaries.<sup>22 23</sup> Table A1 lists the number of immigrants from each country of origin listed in the 1790 census, by state, as well as the total 1790 population. Figure A3 provides a map of settlements in 1790 by countries of origin. Census data is matched to crime data and a match is obtained for 150 counties. Among these counties, the most violent counties are in South Carolina: Marlboro for overall homicide and Orangeburg for homicides by whites.

Cohen and Nisbett formulate the culture of honor hypothesis in relation 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. 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 “Scots-Irish”. Results specific to the Irish only are also presented throughout. 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.

Census waves before 1840 only contain core demographic information. 1840 is the first census year in which important information on economic, farming and herding activity is recorded. Hog herding was the traditional activity of the Ulster Scots (McDonald and McWhiney 1975), as well as sheep herding. Data on herds of pigs and sheep are matched to the 1790 census ancestry information in 148 counties.

The main impediment of the 1790 census is the small sample size. For robustness and to increase the sample size, the analysis is also performed on the 1900 census. The 1900 census does not contain information on ancestry, but records information on religious denominations in 2799 counties. Presbyterian US natives in 1900 are used as a proxy for the Scots-Irish settlers of the 18<sup>th</sup> century. Of course, settlers from other backgrounds may also have been members of the

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<sup>22</sup> 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.

<sup>23</sup> The 13 States are Connecticut, Maryland, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia and West Virginia.

Presbyterian Church and this is an imperfect measure. Still, Table B1 presents correlation coefficients between members of different Presbyterian denominations and the number of Scots-Irish settlers from earlier Censi. Members of the Presbyterian Church in the USA correlate best with 1790 Scots-Irish population and are thus used as a proxy for the 1900 descendants of the Scots-Irish settlers.

Last but not least, historical crime data from the 1904 special report to the Bureau of the Census on “Prisoners and Juvenile Delinquents” is used in order to test the strength of the historical relationship between crime and Scots-Irish settlers in the past. This data includes the number of prisoners in county jails in 1904. Unfortunately, it does not include any information on the specific offenses committed by prisoners. Information on the number of people detained for homicide is available only at the state level.

### ***3.2.Descriptive Statistics: Relationship between homicides and early settlers***

Figures 2 and 3 display the relationship between homicides and early settlers. Figure 2 plots the relationship between the average annual murder rate per 100,000 people at the county level between 2000 and 2007 and the number of settlers of Irish and Scottish origin in 1790, and of Irish origin only. Figure 3 plots a similar relationship for homicides by white offenders only. In both figures different scatter plots and associated fits are reported for the whole sample (full line) and for each of the three regions: Deep South (long dash), Border South<sup>24</sup> (short dash) and non-Southern states (dotted line). It appears from these figures that the relationship between homicides and Scots-Irish settlers is of a different nature in the Deep South compared with the rest of the country. In the Deep South, the contemporaneous level of homicides is clearly higher in the counties with more numerous Scots-Irish settlers in the 1790. The same holds true for settlers from Ireland.

The distinctively positive relationship between homicide rates and early settlers in the Deep South does not hold when settlers of other countries of origin are considered. Figure 4 plots the relationship between the average annual murder rate per 100,000 people, at the county level

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<sup>24</sup> The Border South includes Kentucky, Maryland, Oklahoma, Tennessee, Washington D.C., West Virginia and Delaware and the Deep South: Alabama, Arkansas, Florida, Georgia, Louisiana, North Carolina, South Carolina, Texas, Virginia.

between 2000 and 2007, for all offenders (panel a) and white offenders only (panel b) and the number of settlers from countries of origin that are neither Scotland, Ireland, or -England and-Wales. The relationship between contemporaneous homicide rates and the number of such settlers in 1790 is positive, but does not seem to be significantly more so in the Deep South compared to non Southern states. Regression analysis will confirm this result.

It is also important for the validity of the test of the culture of honor hypothesis that the pattern observed for crime is not observed for other types of violent crime that are not directly related to a self-protection ethic. Figure A1 in Appendix plots the relationship between the annual average rape rate per 100,000 people between 2000 and 2007 and the numbers of settlers from Scotland and Ireland (panel a), Ireland only (panel b), and other countries of origin that are neither Scotland, Ireland nor Wales (panel c). The relationship pattern between contemporaneous rape and Scots-Irish (or Irish) settlers does not appear to be different from the relationship with other types of settlers.

#### 4. Empirical Specification and Results

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

While the above graphs are an informative starting point, a more formal regression set up makes it possible to control for a number of determinants of contemporaneous crime, such as contemporaneous socio-economic and demographic county characteristics.

As the starting point of the analysis, contemporaneous homicide rates are regressed on the number of early Scots-Irish (and Irish only) settlers in 1790, a wide array of socio economic and demographic controls and regional dummies for the Deep South, Border South and non-Southern states. The second main specification includes an interaction term between Scots-Irish settlers and regional dummies.

The two baseline equations are:

$$m_c = \beta_0 + \beta_1 SI_c + \beta_2 BS_c + \beta_3 DS_c + \beta_4 X_c + e_c \quad (1)$$

$$m_c = \beta_0 + \beta_1 SI_c + \beta_2 BS_c + \beta_3 DS_c + \beta_4 SI_c * BS_c + \beta_5 SI_c * DS_c + \beta_6 X_c + \varepsilon_c \quad (2)$$

where  $m_c$  is the average annual homicide rate per 100,000 people<sup>25</sup> 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.  $SI_c$  is the number of settlers from Scotland and Ireland at each county level according to the 1790 census. In all specifications, the county population in 1790 is included as a control.<sup>26</sup> For each outcome, additional specifications with settlers from Ireland only are performed.  $BS$  and  $DS$  are regional dummies for Border South and Deep South respectively. The excluded regional category is non Southern states.  $X_c$  include, in addition to the county population in 1790, contemporaneous county socio-economic and demographic characteristics from the 2000 census, such as log of aggregate earnings, the proportion of the population at or below the poverty line, the racial composition at the county level, the proportion of population in urban or rural areas, the Gini index or the ethnic fragmentalization index.<sup>27</sup>

Table 1 presents the baseline estimates for Scots-Irish settlers. Panel (a) presents the results for all homicides and Panel (b) for homicides by white offenders only. Table 2 presents the results of identical specifications with settlers from Ireland only. The first column in Table 1 includes settlers only, column 2 regional dummies only (for Deep South, Border South and non Southern states, the excluded category) and column 3 settlers and regional dummies together. The results confirm the Southern homicide specificity for total homicide: dummies for Border South and for Deep South are both significant and positive, with a larger coefficient for the Deep South dummy.<sup>28</sup> However, neither the coefficient on Irish nor on Scots and Irish settlers is significant. Hence, differences in the presence of Scots and Irish settlers per se do not contribute to explain the North-South difference in homicide rates.

Column 4 includes, in addition to respective main effects, the interaction term between regional dummies and the number of Scots-Irish settlers. The interaction term is positive and highly significant, both for the total homicide rate and for the homicide rate by white offenders only. The same holds true when settlers from Ireland only are considered in Table 2. Moreover, when

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<sup>25</sup> Based on 2000 county population recorded in the 2000 census.

<sup>26</sup> An alternative is to include directly the proportion of Scots and Irish settlers as the main independent variable. However, the proportion variables are noisier and more skewed on the right.

<sup>27</sup> I thank Giulio Zanella for raising concern about the impact of fractionalization and sharing the data.

<sup>28</sup> In this restricted sample, the Deep South dummy is not significant for white homicide rate, but it is strongly so (and positive) in the sample of all counties in the US.

the interaction is included, the coefficient on the Deep South dummy loses some significance and considerably drops in size. The Scots-Irish settlement distribution within the South thus explains a large part of the Southern specificity for violence. The effect of the interaction term is robust to the inclusion of the full set of contemporaneous socio-economic and demographic composition controls in Column 6.

The effect of the interaction term between Scots-Irish and Deep South on homicide rate is far from negligible. The value of the coefficient of the interaction between Scots-Irish settlers and Deep South is 0.65, for the overall murder rate, and 0.164 for murders by white offenders. This corresponds to an average of 8 homicides per county yearly and 1.5 homicides by white offenders. This is about 30% of the total average number of yearly homicides in the Southern counties included in the study.

The goodness of fit of the full specification of the baseline equation is satisfactory. Information on the number of early Scots-Irish settlers together with current socio economic and demographic characteristics explain about 50% of the variation of homicide rates across counties. As expected, poverty rates are positively associated with homicide rates, but the influence of poverty on homicide is explained away by information on racial composition of the county.<sup>29</sup> Indeed, the proportion of the population living below or at the poverty line and the proportion of blacks at the county level are highly correlated: the correlation coefficient is 0.53, significant at the 1% level for the sample of 150 counties; 0.76 in the Deep South counties.<sup>30</sup> More urbanized counties experience lower homicide rates, but the effect is not significant when included together with poverty rates, since urban counties tend to be richer (the correlation coefficient between urban rate and the log of aggregate earnings is 0.83, it is -0.20 with the proportion of population below the poverty line).<sup>31</sup>

Similar results are obtained using Presbyterian natives in the 1900 Census as a proxy for Scots-Irish settlers. Presbyterians in the Deep South are significantly associated with higher homicide rates, overall and by white offenders only. Table B2 presents results of specifications (1) and (2)

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<sup>29</sup> Regression results with each control included separately are not reported here.

<sup>30</sup> This is much higher than for the sample of US counties as a whole. For the sample of 3140 counties, it is 0.40 and 0.49 in the Deep South, both significant at the 1% level.

<sup>31</sup> Results of individual regressions with each control are not reported here but are available from the author upon request.

for the whole sample (2799 counties). Table B3 presents results for the subsample of Northern, border and Deep Southern states (1469 counties, 933 of which in the Deep South).

Next, the Supplemental Homicide Report (SHR) data is used in order to provide more details on the most common type of homicide in counties with larger settlements of Scots-Irish. The SHR provides information on the relationship between offender and victim. The Culture of Honor is 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 regression analysis. It is specifically homicides involving non-family related acquaintances that are more likely in counties with high proportion of Scots and Irish in 1790. By contrast, homicides between members of the same family, or by complete strangers are not more likely in such counties. Results are displayed in Table 3.

#### ***4.2. The Herding Base of the Scots-Irish Culture of Honor***

Cultures of honor prevail in pastoralist societies (Braudel, 1949; Edgerton 1967; Pitt-Rivers 1966). Data on livestock counts at the county level from the 1840 census is matched to ancestry information in order to test whether the link between Scots-Irish settlers and homicide is associated with herding activity in the early 19<sup>th</sup> century. A similar approach is performed on the 1900 Census, which contains information both on religion and on herding.

Again, the first approach is to simply include herding as a control in order to investigate to what extent herding itself contributes to understand homicide prevalence. Second, an interaction term between herding and South is included to capture to what extent herding explains violence within the South, as opposed to the North. The specifications are thus identical to (1) and (2) above, but with livestock counts instead of Scots-Irish settlers. Third, a three-way interaction between the number of Scots-Irish settlers (or Irish only), the number of sheep and pigs per capita and a Deep South dummy, 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 herding origins of the "Scots-Irish" culture of honor in the South, thereby indicating the complementarity between Scots-Irish cultural background, economic factors (herding) and the institutional environment of the South as determinants of violence.

Panel (a) of Table 4 explores the effect of herding alone. Herding on its own does not contribute to explain either violence in general, or in the South relatively to the North, or even within the South. Panel (b) includes an interaction between Deep South, Scots-Irish settlers and counts of pigs or sheep per capita. This interaction term is positively and significantly associated with murder rates today, overall and by white offenders only. In all specifications, the sum of pigs and sheep per capita is included, but individual results with sheep or pigs only are similar.

Similar results are obtained on the sample of Presbyterian natives in the 1900 Census. The interaction term between Deep South, Presbyterians and the number of sheep and pigs per capita is significantly associated with higher homicide, overall and by white offenders only (results are displayed in Table B4).

The results hence confirm the herding origins of the culture of honor: a higher intensity of 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. However, again, this is true in the South only. The results show that it is in the interaction between the cultural background of Scots-Irish settlers, their economic activity and the institutional conditions of the South that the culture of honor finds its root and contribute to higher homicide.

To sum up, the results establish a link between lethal violence and early Scots and Ulster Scots settlers, but only within the South. In contrast with the hypothesis spelled out by Nisbett and Cohen (1994, 1996), it is not in herding or cultural background alone that the effect is found but in the interaction between such characteristics and the South.

Of course, at this point, the results do not unequivocally establish either the specificity of the Scots-Irish culture, or its causal impact. This is the object of the next Section.

## **5. Identifying Causal Relationships**

### ***5.1. Selection on Observables: Robustness to Slavery***

Another explanation to the high prevalence of violence in the South that has extensively been discussed is slavery. Of course, this explanation is not contradictory to the culture of honor hypothesis but may rather be a complementary explanation to high levels of violence in the South. Nevertheless, it is necessary for the robustness of the above results to ensure that the

relationship between Scots-Irish settlers and homicides is not confounded by slavery. It would indeed be worrying if counties with high headcounts of Scots-Irish were also the counties where slavery was most widespread. This is however unlikely to be the case: herding was the main or sole activity of the Scots-Irish, who neither owned slaves nor aspired to become planters since they were economically very successful (McDonald and McWhiney 1975).<sup>32</sup> The correlation between headcount of Scots-Irish and number of slaves at the county level is indeed negative and significant at the 10% level (Table B2). Still, it is useful to check in regression analysis whether the relationship illustrated in Section 4 still holds when the number of slaves in each county in 1790 is included. This is done in Table 5. The interaction term between Irish settlers and Deep South still has a positive and significant effect on contemporaneous homicide rates when slavery is controlled for (see Table 5). Actually, the effect of Scots and Irish settlers is even more significant and stronger when slavery is controlled for. Results are unchanged whether slaves only or the total of slaves and freed individuals are considered.

It is also notable that Scots-Irish settlers to the South do no longer explain homicides by black offenders when the black population in 1790 is controlled for (results relating to black homicide rates are not displayed here).

All regressions with the 1900 sample presented in Appendix B include ethnic composition of the counties in the 1900 census.

### ***5.2. 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 support the claim that the specific cultural and economic background of a certain type of settlers, the Scots-Irish, explains higher homicide rates. One needs to show that the relationship between homicide and early settlers in the South holds for the Scots-Irish specifically and not for any country of origin of settlers to the US South. If that were the case, the results may have nothing to do with the specific cultural background of the Scots-Irish, but rather to the specificities of the US South and/or the type of settlers it attracted, regardless of their cultural background.

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<sup>32</sup> McDonald and McWhiney 1975 describes how the herdsmen of the South “reaped fortunes by grazing their hers on public lands” (page 156) until the end of the open range system, which did not occur until 1930 in South Carolina, or until after World War II in Texas, Louisiana, Florida or Georgia.

In what follows, identical specifications as in the above section are performed using as the main independent variable of interest settlers from other countries of origin, such as France, Germany and Holland in the 1790 Census and other religious denominations in the 1900 Census. The nil hypothesis is that the interaction term between Deep South and country of origin is not significant for any other country of origin than Scotland and Ireland. Failure to reject the nil would cast doubt on the main proposition of this paper.

Table 6 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. The interaction term between such settlers and Deep South is never significant in explaining homicide rate by white offenders. The interaction term between French, Dutch and English and Welsh settlers and Deep South is significant in explaining total homicide rates today at the 1% to 5% level, but is never significant when homicide by whites only is considered. Similar results are obtained on the 1900 sample: the interaction term between Deep South and any other religious denominations apart from Presbyterians is never significantly associated with homicide rates, overall or by white offenders (Table B5).

Similarly, the interaction between animal counts and early settlers from other countries of origin is not significantly associated with higher homicide rates today (Table 7), and settlers from other countries are not associated with more homicides in which the offender and the victim are acquaintances (Table 8).

In sum, the relationship between early settlers and contemporaneous highest homicide rates by whites in the South does not hold for non-Scots-Irish settlers. 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 Scots-Irish settlers that is at play in explaining high levels of homicide. Second, and equally important, rejecting the nil suggests that there is not something specific to the Southern United States, which would for example stems exclusively from geography, which explains high levels of homicide. Indeed, high homicide rates, particularly by white offenders in the South cannot be explained exclusively by the particularities of the South, but instead precisely in the interaction between the particularities of the South *and* the cultural background of a specific type of settlers: the Scots-Irish.

### ***5.3.Second Falsification Test: Other types of violent crime***

The culture of honor is a self-protection ethic, the purpose of which is to defend a reputation. It should thus act as a determinant of homicide or aggravated assaults, which is confirmed in Table A4, but not for any type of violent act. The rationale for this falsification test is to verify that the relationship between violence and Scots-Irish settlements in the South stems from such a self-protection ethic and not from a highest propensity of the Scots-Irish culture towards violence in general. The nil hypothesis is that the interaction term between Scots-Irish settlers and Deep South does not significantly explain another type of violent crime unrelated to a self-protection ethic: rape.

Panel (a) of table 9 presents the results of a regression in which the outcome viable is the annual average rape rate per 100,000 people. Results are alternatively presented for total rape rate and for rape rate by white offenders only. There is no significant relationship between Scots-Irish settlers in the South and rape by white offenders. The interaction between Scots-Irish settlers and Deep South is marginally significant for the overall rape rate, but not when rape by white offenders is considered. For Irish settlers, the interaction term is never significant. The interaction between intensity of Scots-Irish settlements in the South and herding never significantly affect rape rates (Table 10).<sup>33</sup>

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 never significantly associated with rape rates, overall or by white offenders only (Table B6).

### ***5.4.Selection on unobservables***

Following Altonji, Elder, and Taber (2005) and Nunn and Wantchekon (2009), 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 Scots-Irish settlers and contemporaneous homicides. Table 11 reports the ratio of coefficients of regressions including full or restricted sets of coefficients. Explaining away the full positive relationship between the Scots and Irish or Irish only settlers and contemporaneous homicides would require unobservable factors to be about 2 to 40 times greater than observable factors,

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<sup>33</sup> Similar results are obtained on the 1900 Census sample but are not reported here.

making it unlikely that the estimate can be fully attributed to unobserved heterogeneity. In many cases, the ratio is actually negative, implying that adding controls actually makes the influence of Scots-Irish settlers more salient.

### ***5.5. Instrumental variable estimation***

Establishing the causal impact of Scots-Irish settlements on contemporaneous violence in the South requires an instrument that is correlated with Scots-Irish settlements in the South but uncorrelated with contemporaneous violence. A good candidate is the distance to the main crossroads on the Great Philadelphia Wagon Road, such as Shallow Ford, a shallow point on the Yadkin river at which many paths crossed. The average distance between the geo-center of each Southern county and Shallow Ford is used as an instrument for Scots and Irish settlements in the South. Shallow Ford today is surrounded by forests and there is thus little reason to believe that its location should influence contemporaneous crime.

IV estimates are reported in Table 12. First stage estimates are reported in the bottom panel and second stage in the top panel. The first stage estimates show that distance to Shallow Ford is negatively correlated with Scots and Irish settlements in the South. The relevance of the instrument is satisfactory, with a F-stat between 12 and 22 in different regressions.

The second stage estimates report a positive and significant effect of Scots and Irish or Irish only settlements on contemporaneous homicide rates, overall and by white offenders. All the effects are robust to controlling for slavery in 1790.

I also check that the falsification tests performed above are still valid. When instrumented by distance to Shallow Ford, settlers of countries of origin other than Ireland, Scotland or Wales have no significant effect on contemporaneous homicide. Instrumented settlements of Scots and Irish settlers have no impact on rape (results not reported here).

## 6. Cultural Transmission

### *6.1. Historical Crime: Was the Link between Scots-Irish and Homicides stronger when herding was an important source of livelihood?*

An immediate puzzle that arises from the above results concerns the mechanism of cultural transmission. The link between homicide and Scots-Irish settlers in the South seems to have persisted despite the disappearance of herding as the main source of economic livelihood. If differences in murder rates are a remnant of history, one should expect the link between crime and Scots-Irish settlement to be stronger in the past, when herding was still an important source of livelihood. One of the earliest data set on crime is from the 1904 special report to the Bureau of the Census on “Prisoners and Juvenile Delinquents”, which records county jails and workhouses’ populations. An important limitation of this data is that there is no information on the type of crime committed by county jail prisoners. On average, about 24% of the prison population was sentenced for homicide or assault (based on state level statistics). Another limitation is that not every county has a county jail, and in particular Southern counties are underrepresented. A match is obtained for 98 counties for which 1790 data on ancestry is available and 729 counties for which 1900 data on religious denomination is available.

In Figure 5, the county jail population in 1904 is plotted against Scots-Irish settlers from the 1790 Census and Presbyterians from the 1900 Census. The positive relationship is confirmed by regression analysis.<sup>34</sup> However, exploring regional differences in Figure 6 reveals that in 1904, the positive relationship between crime and Scots-Irish settlers was not only present in the South but also in the North. Although the under representation of the South in the data set may imply an attenuation bias in that region, regression analysis confirms the absence of regional differences. A century later, this relationship is only observed in the South. It thus seems that the Scots-Irish culture of honor was present throughout the country in 1904 but only survived in the South. This is consistent with historical accounts. Wyatt-Brown (2001) depicts how in the North, formal and impersonal institutions quickly substituted to the ethic of honor as the cement of

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<sup>34</sup> Results of regression analysis are not reported here. There is a positive and significant between county jail population and other Scots-Irish or Presbyterian population, when standard errors are adjusted for clustering at the state level. An important limitation of such results is their lack of robustness to the inclusion of many 1900 controls. Moreover, one obtains also positive results between county jail population and other groups, in particular Catholics in the 1900 Census and English and Welsh in the 1790 Census.

social and political order in the 19<sup>th</sup> century, in contrast with the more rural and economic laggard South where honor remained prevalent.

### ***6.2. Vertical Transmission: Are Americans of Scots-Irish Descent more Violent?***

The socio psychological literature and cultural transmission models a 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 try and transmit their own values to their children generates hysteresis that can explain the slow adaptation to new economic environments.<sup>35</sup> In accordance with this thesis, Cohen and Nisbett (1996) document differences in children 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 the strongest socialization predictor of higher rates of homicide and assault (Ember and Ember, 1994). Still, the question remains as to why such differences are so persistent.

Vertical cultural transmission from parents to children implies that agents internalize cultural norms within families so that even today, Americans of Scots-Irish decent should display cultural traits consistent with a culture of honor, regardless of their geographic distribution in the country. I test whether homicide rates are higher today in counties with high proportions of Americans who report Scots-Irish ancestry in the 2000 census. Results are reported in Table 13. There is no strong evidence supporting this claim. To be sure, an obstacle to finding a significant result is the reliability of self-reported ancestry information in census data.

### ***6.3. Horizontal Transmission***

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 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 Scots-Irish is higher. The variable of interest here is an interaction between settlers of countries other than Ireland and Scotland and

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<sup>35</sup> See Fernandez and Fogli 2007 in the context of work and fertility decisions, Tabellini (2008a and 2008b) for social trust, Hauk and Saez Marti (2001) for corruption.

the proportion of Scots and Irish settlers at the county level. The tested hypothesis is that if settlers had to imitate the Scots-Irish cultural norm, those living in counties with higher proportion of Scots and Irish should be associated with more violence. Failure to reject the nil hypothesis that such an interaction is not different from zero is interpreted as a sign of horizontal cultural transmission.

Results are reported in Table 14. The coefficient of interest is that of the interaction between Deep South, the proportion of Scots and Irish and the number of settlers from Holland, France or Germany. The nil is rejected for all types of settlers. In other words, Dutch, French or German settlers who lived in counties with high proportions of Scots-Irish are associated with more violence than those who lived in counties with lower proportions of Scots-Irish. This provides evidence of horizontal transmission of cultural norms from the Scots-Irish to other settlers. Table 15 performs a falsification test akin to the one presented in Section 5.2. and shows that there is no evidence of cultural transmission from the Scots-Irish to other settlers for violent crime unrelated to a culture of honor, such as rape.

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 even, prior to the 19th century, of a strict religious order. He then argues that, a fortiori, the culture of honor prevailed in slave barracks. The author describes the “pecking order of the plantation - mirror image of the quarters of the patriarchal, male dominated, honor-obsessed rankings of the white society” (Wyatt-Brown, page 23). If the Scots-Irish 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-Irish. Specifications displayed in Table 16 consider the effect of an interaction between blacks and the proportion of Scots and Irish in the Deep South and homicide today, overall and by black offenders. The effect of the interaction is never significant, whether black population in 1790 or today is considered.

The results thus indicate that the culture of honor of the Scots-Irish was transmitted to other white European settlers of non-Scots-Irish descent who settled in areas with large proportions of Scots-Irish, but not to African Americans. However, maybe one of the reasons why no result is

obtained for African Americans is that their mobility, especially out of the South, was particularly high.

#### ***6.4. Horizontal Transmission: Lawlessness***

Last, I provide further evidence that the effect of Scots-Irish settlements on homicide is robust to controlling for any effects such settlements could have had on lawlessness. In Section 5, it was shown that there was no legacy of Scots-Irish settlements on another type of violent crime unrelated to a self protection ethic: rape. Still, the counties in which the Scots-Irish settled could still be characterized by more lawlessness.

If the legacy of Scots-Irish settlements was lawlessness in general – and not necessarily lethal violence only – the effect on homicide rates should not be robust to additional controls for lawlessness. In Table 17, other measures of crime and offenses are included as additional controls in the baseline specification from Section 4. For example, homicides 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 and not homicides perpetrated in the circumstances of a robbery.

Individual controls for the rate of weapon carry and drunkenness offenses and property crime (burglaries and robberies) are included first individually, then together. For homicides by white offenders, included controls are other offenses committed by whites only. All regressions control for the full set of contemporaneous socio-economic and demographic controls and the county population in 1790. The effect of Scots-Irish and Irish only settlements on homicide rates is robust to the inclusion of all these controls and remains significant at the 1% level when all controls are included together.

### **7. Conclusion**

This paper examines the economic and cultural underpinnings of lethal interpersonal violence. Some authors have hypothesized that the Southern taste for violence is inherited from the fact that the region was settled by Scots-Irish herders. The results illustrate something consistent with this but slightly different. Scots-Irish presence explains high homicide rates, by all offenders as

well as by white offenders, but only within the South. Moreover, differences in pastoralism matter, which confirms the herding origins of the culture of honor, but again, only within the South and when they are present simultaneously with the Scots-Irish culture. Consistently with an ethic based on kinship and the defense of a reputation, Scots-Irish settlements in the South do not explain violence in general but only homicides in which the offender and the victim are acquaintances.

The relationship between Scots-Irish settlers and homicides is very likely causal. The results are robust to the inclusion of a wide array of contemporaneous socio economic and demographic determinants of crime and alternative historical determinants of violence, such as slavery. The positive relationship between settlers and homicides does not hold with other countries of origin, or when other types of crime, including violent crime, are considered. The results are robust to instrumenting Scots-Irish settlements in the South by the distance to a major crossroads on the settlers' route to the South.

This paper integrates economic and cultural evolutionary theories of crime. The results show that it is in the interaction between the cultural background of Scots-Irish settlers, their economic activity and the institutional environment of the South that the culture of honor finds its root and contribute to explain high homicide in the South.

This paper also suggests a source of instrumentation for violence. The study of the causal impact of violence on economic or political development has been so far severely impaired by the lack of an appropriate instrument for violence. This paper puts forward a potential candidate: past economic occupations and ecological suitability for herding vs. agriculture. This is the object of future research, both in the United States and in Central Asia.

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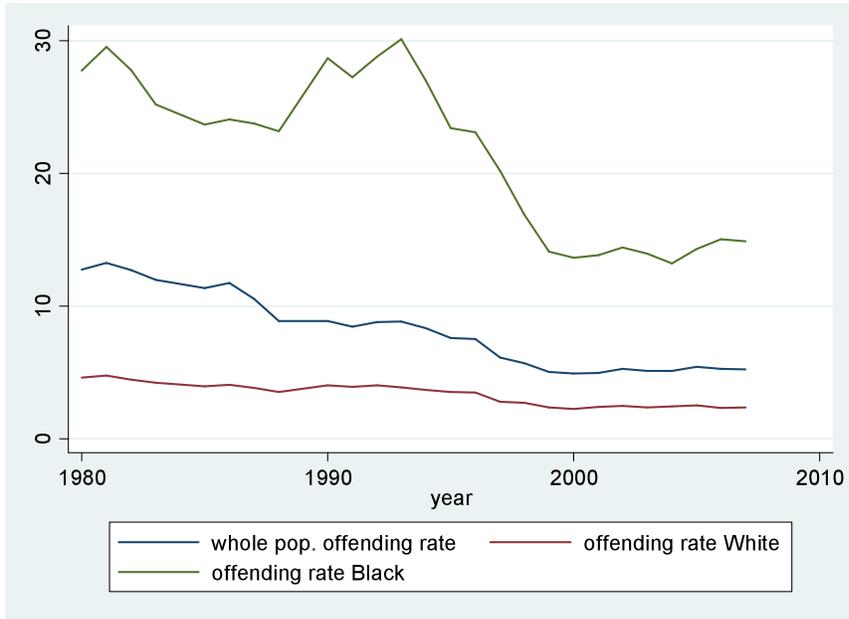
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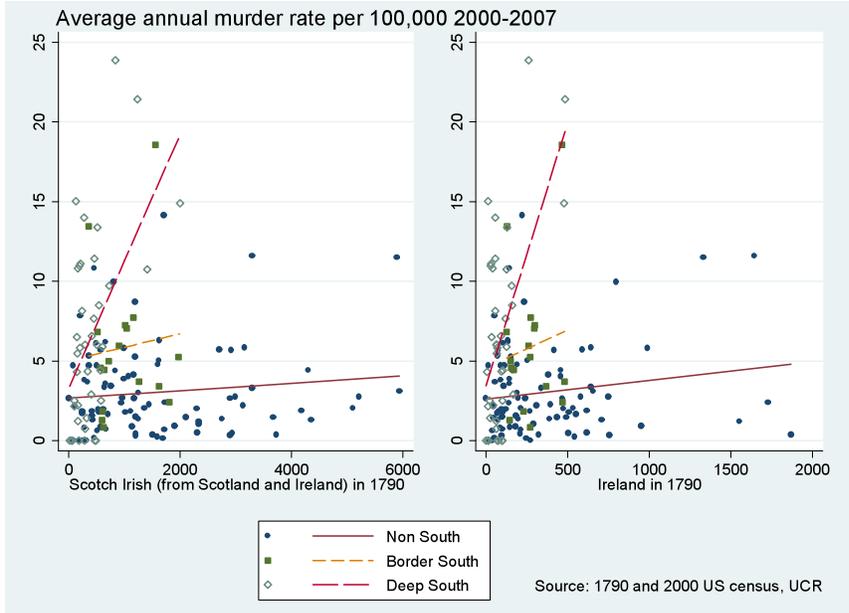
## 9. Figures and Tables

**Figure 1: Homicide Offending Rates, by Race: 1980-2007**



Source: UCR

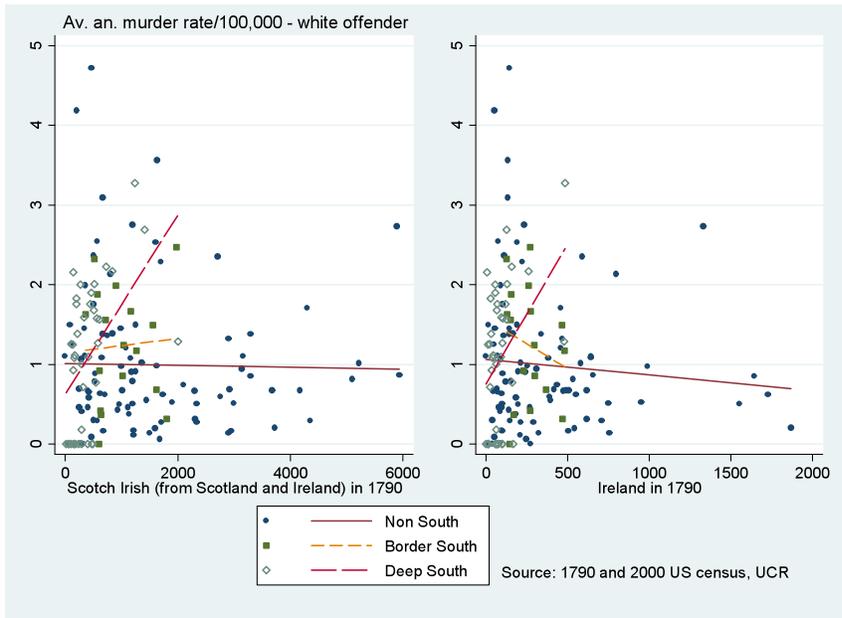
**Figure 2: Murder rates, by Region. Scots-Irish Settlers and Irish only settlers in 1790**



Source: 1790 and 2000 US census, UCR

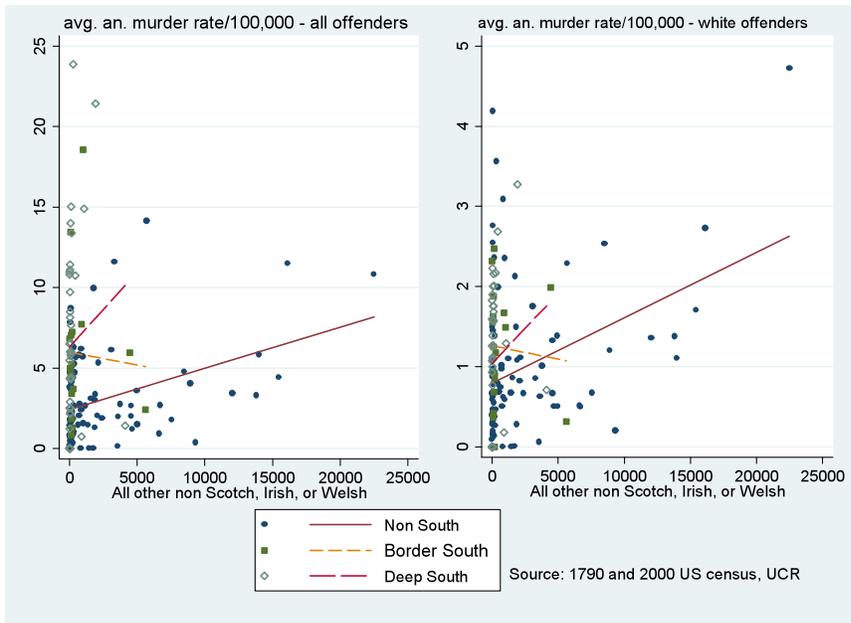
Source: UCR, US Census

**Figure 3: Murder rates by white offenders only, by Region. Scots-Irish Settlers and Irish only settlers in 1790**



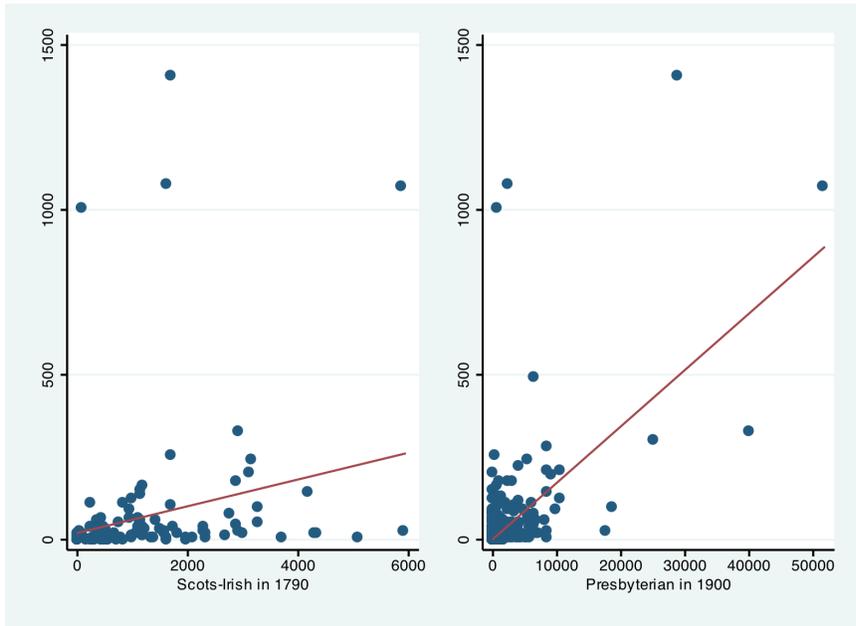
Source: UCR, US Census

**Figure 4: Murder rates (a) and by white offenders only (b) by Region. Non Scots-Irish, Irish or Welsh settlers in 1790**

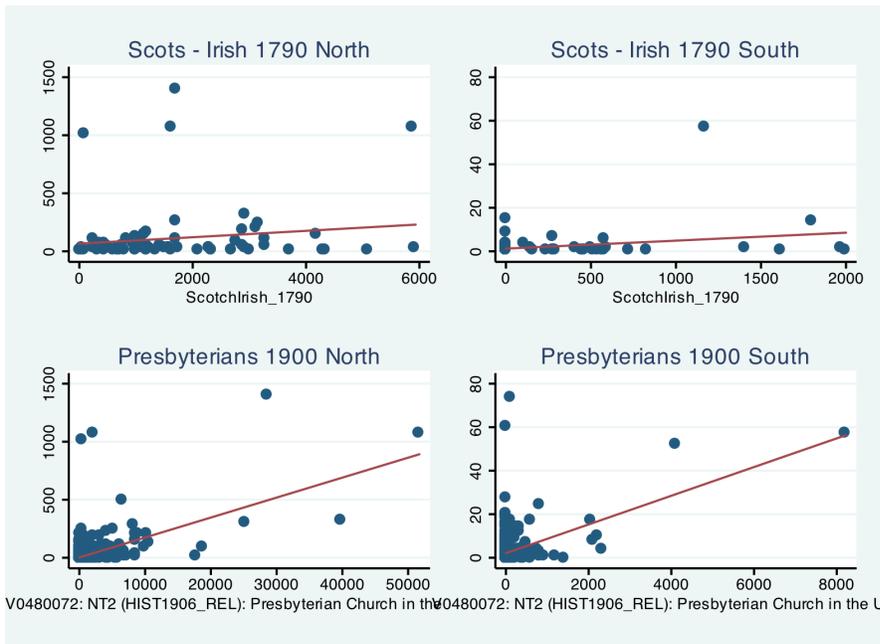


Source: UCR, US Census

**Figure 5: White Males in County Jails in 1904 and Scots-Irish in 1790 and 1900**



**Figure 5: White Males in County Jails in 1904 and Scots-Irish in 1790 and 1900, Regional Differences**



V0480072: NT2 (HIST1906\_REL): Presbyterian Church in the U.S. V0480072: NT2 (HIST1906\_REL): Presbyterian Church in the U.S.

Source of Figures 5 and 6: US Census, 1904 Census of Prisoners

**Table 1: Homicides and Scots-Irish Settlers in 1790 – All and white offenders only**

Panel (a)	avg. annual murder rate per 100,000 00-07					
	1	2	3	4	5	6
Scots-Irish	-0.02		0.035*	0.030**	0.02	0.022
	[0.019]		[0.017]	[0.013]	[0.019]	[0.013]
Border South		2.947***	3.421***	2.826***	1.541*	0.176
		[0.501]	[0.510]	[0.532]	[0.758]	[1.752]
Deep South		3.643*	4.566**	0.999*	0.757	-2.925**
		[1.766]	[1.775]	[0.493]	[1.442]	[1.335]
Border South*ScotsIrish				0.034		0.109
				[0.025]		[0.135]
Deep South*ScotsIrish				0.746***		0.652***
				[0.102]		[0.097]
Log aggregate earnings					0.109	-0.16
					[0.482]	[0.432]
Prop. pop. urban, 2000					-2.12	-2.505
					[2.739]	[2.397]
Prop. pop. below poverty, 2000					11.675	4.204
					[14.633]	[13.820]
Prop. pop. black, 2000					14.772**	12.756***
					[5.375]	[3.954]
fractionalization					-0.905	2.33
					[4.413]	[3.458]
Gini					6.116	3.301
					[12.783]	[13.037]
County pop 1790	yes	no	yes	yes	yes	yes
Observations	149	150	149	149	149	149
R-squared	0.002	0.15	0.189	0.291	0.427	0.495

Panel (b)	white offender rate per 100,000					
	1	2	3	4	5	6
Scots-Irish	0.002		0.014*	0.013*	0.003	0.004
	[0.005]		[0.008]	[0.007]	[0.007]	[0.006]
Border South		0.899***	1.035***	1.227**	0.407	0.426
		[0.275]	[0.274]	[0.503]	[0.278]	[0.640]
Deep South		0.661	0.93	-0.156	0.054	-0.859**
		[0.551]	[0.531]	[0.175]	[0.386]	[0.378]
Border South*ScotsIrish				-0.03		-0.012
				[0.035]		[0.045]
Deep South*ScotsIrish				0.230***		0.164***
				[0.025]		[0.040]
Log aggregate earnings					0.237	0.181
					[0.134]	[0.134]
Prop. pop. urban, 2000					-0.803	-0.911*
					[0.453]	[0.454]
Prop. pop. below poverty, 2000					12.205**	9.889
					[4.964]	[5.697]
Prop. pop. black, 2000					4.963**	4.591***
					[1.752]	[1.407]
fractionalization					-2.004	-1.223
					[1.477]	[1.219]
Gini					-6.097*	-6.954*
					[3.369]	[3.270]
County pop 1790	yes	no	yes	yes	yes	yes
Observations	149	150	149	149	149	149
R-squared	0.001	0.069	0.096	0.191	0.371	0.411

Notes to Table 1: All regressions with a constant. Robust standard errors clustered at the state level. \*\*\*: significant at 1%, \*\*: significant at 5%, \* significant at 10% level.

Scots-Irish settlers or Irish settlers scaled by 100.

Source: 1790 and 2000 census, UCR.

**Table 2: Homicides and Irish only Settlers in 1790 – All and white offenders only**

Panel (a)		avg. annual murder rate per 100,000 00-07					
	1	2	3	4	5	6	
Irish	0.024		0.190**	0.133***	0.109	0.065	
	[0.065]		[0.082]	[0.029]	[0.082]	[0.054]	
Border South		2.947***	3.431***	2.740***	1.604*	0.383	
		[0.501]	[0.520]	[0.656]	[0.748]	[1.648]	
Deep South		3.643*	4.688**	1.253**	0.955	-2.317*	
		[1.766]	[1.782]	[0.457]	[1.504]	[1.084]	
Border South*Irish				0.164		0.37	
				[0.169]		[0.472]	
Deep South*Irish				3.056***		2.532***	
				[0.576]		[0.151]	
Socio-eco and demo controls, 2000	no	no	no	no	yes	yes	
County pop 1790	yes	no	yes	yes	yes	yes	
Observations	149	150	149	149	149	149	
R-squared	0	0.15	0.199	0.324	0.43	0.505	

Panel (b)		white offender rate per 100,000					
	1	2	3	4	5	6	
Irish	0.004		0.036	0.025	0.012	0.002	
	[0.031]		[0.037]	[0.028]	[0.021]	[0.018]	
Border South		0.899***	1.010***	1.561***	0.411	0.728	
		[0.275]	[0.284]	[0.482]	[0.273]	[0.630]	
Deep South		0.661	0.899	-0.079	0.071	-0.708*	
		[0.551]	[0.535]	[0.162]	[0.402]	[0.326]	
Border South*Irish				-0.258*		-0.164	
				[0.145]		[0.177]	
Deep South*Irish				0.893***		0.602***	
				[0.207]		[0.100]	
Socio-eco and demo controls, 2000	no	no	no	no	yes	yes	
County pop 1790	yes	no	yes	yes	yes	yes	
Observations	149	150	149	149	149	149	
R-squared	0.001	0.069	0.092	0.205	0.371	0.413	

**Table 3: Type of Homicide: Homicide rate between non family related acquaintances**

Homicide rate - non family related acquaintances 98-2000						
	1	2	3	4	5	6
Border South	0.059	1.213***	-0.433	0.084	1.669***	0.12
	[0.389]	[0.226]	[0.463]	[0.390]	[0.350]	[0.571]
Deep South	0.898	0.835**	-0.436	0.989	0.782**	-0.445
	[0.657]	[0.323]	[0.305]	[0.689]	[0.312]	[0.366]
Scots-Irish	0.016	0.023**	0.016*			
	[0.009]	[0.008]	[0.007]			
Border South*ScotsIrish		-0.039**	0.042			
		[0.014]	[0.035]			
Deep South*ScotsIrish		0.325***	0.224***			
		[0.083]	[0.062]			
Irish				0.065	0.071	0.048
				[0.045]	[0.065]	[0.042]
Border South*Irish					-0.362***	-0.074
					[0.113]	[0.155]
Deep South*Irish					1.443***	1.068***
					[0.266]	[0.235]
Socio-eco and demo controls 2000	yes	no	yes	yes	no	yes
County pop 1790	yes	yes	yes	yes	yes	yes
Observations	138	138	138	138	138	138
R-squared	0.483	0.316	0.521	0.486	0.372	0.548

Notes to Table 2 and 3: All regressions with a constant. Robust standard errors clustered at the state level.  
\*\*\*: significant at 1%, \*\*: significant at 5%, \* significant at 10% level.

Scots-Irish settlers or Irish settlers scaled by 100.

Socio-economic and demographic controls: log of aggregate earnings, proportion of the population in urban areas, Proportion of the population below or at poverty level, proportion of the population black, fractionalization index, Gini index).

Source: 1790 and 2000 census, UCR.

**Table 4: The Herding Base of the Scots-Irish Culture of Honor**

Panel (a): Herding alone	1	2	3	4
	avg. annual murder rate		White offender rate	
Deep South	-0.31	4.46	-0.18	0.99
	[1.00]	[2.71]	[0.32]	[0.89]
Sheep and pigs per 1840 capita, 1840	-0.16	-0.06	-0.03	-0.01
	[0.15]	[0.13]	[0.05]	[0.05]
sheep&pig*Deep South		-2.39**		-0.59*
		[1.11]		[0.35]
County pop 1790	yes	yes	yes	yes
Socio-demo and eco controls 2000	yes	yes	yes	yes
Observations	148	148	148	148
R-squared	0.429	0.467	0.331	0.354

Panel (b): Herding and the Scots-Irish	1	2	5	6	3	4	7	8
	Scots-Irish Settlers				Irish Settlers only			
	avg. annual murder rate		White offender rate		avg. annual murder rate		White offender rate	
Deep South	-0.27	2.38	-0.16	0.73	-0.16	3.17	-0.17	1.3
	[1.02]	[4.27]	[0.32]	[1.27]	[1.05]	[3.77]	[0.33]	[1.21]
Sheep and pigs per capita	-0.14	0.04	0	0.05	-0.1	0.07	0	0.06
	[0.18]	[0.17]	[0.07]	[0.08]	[0.17]	[0.16]	[0.07]	[0.08]
sheep&pig*Deep South		-3.40**		-1.10**		-3.11**		-1.13**
		[1.53]		[0.43]		[1.45]		[0.45]
Scots-Irish	0.01	0.03	0.01	0.01	0.11	0.16	0.03	0.05
	[0.03]	[0.03]	[0.02]	[0.02]	[0.11]	[0.11]	[0.05]	[0.05]
sheep&pig*Settlers	0.000	-0.010	0.000	-0.010	-0.03	-0.08	-0.02	-0.04*
	[0.01]	[0.01]	[0.00]	[0.00]	[0.05]	[0.05]	[0.02]	[0.02]
Settlers*Deep South		-0.14		-0.1		0.1		-0.49
		[0.32]		[0.08]		[1.09]		[0.35]
sheep&pig*Settlers*Deep South		0.59***		0.22***		1.35**		0.68***
		[0.19]		[0.05]		[0.63]		[0.19]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Socio-demo and eco controls 2000	yes	yes	yes	yes	yes	yes	yes	yes
Observations	148	148	148	148	148	148	148	148
R-squared	0.429	0.548	0.334	0.453	0.431	0.54	0.334	0.438

Notes to Table 4: All regressions with a constant. Robust standard errors clustered at state level \*\*\*: significant at 1%, \*\*: significant at 5%, \* significant at 10% level.

Scots-Irish settlers or Irish settlers scaled by 100. Sheep and pigs per 1840 capita.

Socio-economic and demographic controls: 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, 1840 and 2000 census, UCR.

**Table 5: Robustness to Slavery**

	1	2	3	4	5	6	7	8
	Scots-Irish Settlers				Irish Settlers only			
	avg. annual murder rate 00-07		white offender rate		avg. annual murder rate 00-07		white offender rate	
Settlers	0.024	0.019*	0.003	0.002	0.112	0.059	0.012	-0.004
	[0.021]	[0.010]	[0.007]	[0.004]	[0.084]	[0.049]	[0.021]	[0.014]
Deep South*Settlers		0.857***		0.313***		2.806***		0.871***
		[0.130]		[0.074]		[0.591]		[0.274]
Slave population 1790	0.014*	-0.013	0.000	-0.010*	0.014*	-0.006	0.000	-0.006
	[0.007]	[0.010]	[0.003]	[0.005]	[0.007]	[0.010]	[0.003]	[0.004]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Socio-demo and eco controls 2000	yes	yes	yes	yes	yes	yes	yes	yes
Observations	149	149	149	149	149	149	149	149
R-squared	0.442	0.501	0.371	0.444	0.445	0.507	0.371	0.43

Notes to Table 5: All regressions with a constant. Robust standard errors clustered at state level \*\*\*: significant at 1%, \*\*: significant at 5%, \* significant at 10% level.

Scots-Irish settlers or Irish settlers are scaled by 100.

All main effects and regional dummies included.

Socio-economic and demographic controls: log of aggregate earnings, proportion of the population in urban areas, proportion of the population below or at poverty level, proportion of the population black, fractionalization index, Gini index)

Source: 1790, 1840 and 2000 census, UCR.

**Table 6: Falsification I.1.: Homicides and Other Settlers in 1790**

	1	2	3	4	5	6	7	8
	hom rate	white off.	hom rate	white off.	hom rate	white off.	hom rate	white off.
	Holland		France		Germany		England and Wales	
Settlers	-0.003	0.002	0.094	0.086	0.025***	0.012***	-8.087	-3.545
	[0.015]	[0.005]	[0.132]	[0.059]	[0.005]	[0.001]	[11.444]	[5.502]
Border South*Settlers	2.623**	-0.226	-2.157**	-0.528**	-0.01	-0.016**	32.796	-3.7
	[1.064]	[0.718]	[0.814]	[0.236]	[0.015]	[0.005]	[28.220]	[6.753]
Deep South* Settlers	9.973***	1.086	1.118**	0.064	0.022	0.022	99.919***	16.296
	[2.400]	[2.091]	[0.460]	[0.172]	[0.083]	[0.048]	[28.846]	[14.040]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Socio-demo and eco controls 1790	yes	yes	yes	yes	yes	yes	yes	yes
Observations	149	149	149	149	149	149	149	149
R-squared	0.454	0.374	0.47	0.388	0.452	0.439	0.514	0.411

**Table 7: Falsification I.2.: Is there a herding link with the non Scots-Irish?**

	1	2	3	4
	avg. annual murder rate 00-07		White offender	
Deep South	4.074	3.5	1.171	0.927
	[3.275]	[4.103]	[1.045]	[1.242]
Sheep and pigs per capita	-0.066	-0.028	0.06	0.032
	[0.134]	[0.140]	[0.052]	[0.058]
sheep&pig*Deep South	-0.534	-2.059	-0.319	-0.596
	[1.463]	[1.728]	[0.486]	[0.515]
All non Scots-Irish	0.036***	0.025**	0.020***	0.015***
	[0.011]	[0.011]	[0.006]	[0.005]
sheep&pig*Non ScotsIrish	-0.01	-0.003	-0.006*	-0.003
	[0.006]	[0.004]	[0.003]	[0.002]
Non ScotsIrish*Deep South	1.393**	0.5	0.352	0.129
	[0.637]	[0.591]	[0.340]	[0.263]
sheep&pig* Non ScotsIrish*Deep South	-0.562**	-0.174	-0.13	-0.038
	[0.252]	[0.246]	[0.132]	[0.105]
County pop 1790	yes	yes	yes	yes
Socio-demo and eco controls 2000	no	yes	no	yes
Observations	148	148	148	148
R-squared	0.247	0.5	0.214	0.436

Notes: see notes to Table 4

**Table 8: Falsification I.3.: Homicides between Acquaintances and Non Scot or Irish Settlers**

	Homicide rate – non family acquaintances		
	1	2	3
Border South	0.058	1.126***	0.048
	[0.367]	[0.116]	[0.431]
Deep South	0.882	2.364**	0.836
	[0.643]	[0.886]	[0.556]
allnonScotsIrish	0.005**	0.006**	0.005*
	[0.002]	[0.003]	[0.002]
Border South*allnonScotsIrish		-0.021***	0.000
		[0.004]	[0.007]
Deep South*allnonScotsIrish		0.004	0.008
		[0.062]	[0.020]
Socio-eco and demo controls 2000	yes	no	yes
County pop 1790	yes	yes	yes
Observations	138	138	138
R-squared	0.484	0.22	0.484

Notes to Table 6 to 8: see notes to Tables 2 and 3. Non Scot or Irish settlers scaled by 100.

**Table 9: Falsification II.2.: Are the Scots-Irish associated with non-culture of honor related violence and other violence unrelated to the culture of honor hypothesis?**

	1	2	3	4	5	6	7	8
	Scots-Irish				Irish only			
	rate rape	all offender	rape, white offender	rape, white offender	rate rape	all offender	rape, white offender	rape, white offender
Settlers	0.012	0.013	-0.002	-0.002	-0.062	-0.079	-0.068	-0.064
	[0.041]	[0.045]	[0.018]	[0.019]	[0.161]	[0.153]	[0.076]	[0.070]
Border South* Settlers		-0.284		0.029		0.073		0.685
		[0.333]		[0.150]		[1.284]		[0.523]
Deep South* Settlers		1.135**		0.025		0.922		-0.365
		[0.414]		[0.165]		[1.302]		[0.388]
Slave pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Socio-demo and eco controls 2000	yes	yes	yes	yes	yes	yes	yes	yes
Observations	149	149	149	149	149	149	149	149
R-squared	0.308	0.338	0.293	0.293	0.309	0.31	0.297	0.308

**Table 10: Falsification II.2.: Does the herding link explain other violent crime?**

	1	2	3	4	5	6	7	8
	Scots-Irish				Irish only			
	rape, all	rape, white	property, all	property, white	rape, all	rape, white	property, all	property, white
Settlers	0.026 [0.059]	0.024 [0.025]	-0.376 [0.594]	-0.05 [0.339]	0.157 [0.215]	0.096 [0.080]	-0.612 [2.419]	-0.252 [1.135]
sheep&pig*Settlers	-0.01 [0.014]	-0.009 [0.006]	0.218* [0.114]	0.07 [0.067]	-0.194 [0.123]	-0.101** [0.048]	0.633 [1.084]	-0.002 [0.588]
Settlers *Deep South	1.254*** [0.430]	0.088 [0.133]	9.626*** [3.520]	2.963* [1.507]	4.673*** [1.767]	0.387 [0.503]	31.785** [14.789]	8.988 [6.283]
sheep&pig* Settlers *Deep South	-0.178 [0.295]	-0.013 [0.093]	5.578** [2.482]	1.214 [0.929]	-1.591* [0.899]	-0.179 [0.251]	9.135 [8.877]	1.343 [3.096]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Socio-demo and eco controls 2000	yes	yes	yes	yes	yes	yes	yes	yes
Observations	148	148	148	148	148	148	148	148
R-squared	0.355	0.293	0.404	0.359	0.349	0.307	0.374	0.345

Notes to Table 9: and 10: see notes to Table 2 and 3. All non reported regional main effects and interactions controlled for.

**Table 11: Assessing the Bias due to Selection on Unobservables**

	Homicide rate by all offenders		White offender only	
	Deep South*Scots&Irish	Deep South*Ireland	Deep South*Scots&Irish	Deep South*Ireland
Controls, full set:	Controls, restricted set:			
Full set from equation (1)	none	5.70	4.02	1.87
Full set from equation (1) and initial slave population	none	-9.51	7.93	17.36
Full set from equation (1)	Total pop. in 1790	6.97	4.81	2.06
Full set from equation (1) and initial slave population	Total pop. in 1790	-7.73	11.24	39.80

Notes to Table 11: 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.

**Table 12: Instrumental Variables**

Second stage				
	1	2	3	4
	homicide rate	white offender	homicide rate	white offender
Scots&Irish	2.89***	0.84***		
	[1.04]	[0.22]		
Irish			7.14***	2.06**
			[1.98]	[0.47]
Socio-eco and demo controls	yes	yes	yes	yes
County pop, 1790	yes	yes	yes	yes
Observations	39	39	39	39
R-squared	0.411	0.496	0.472	0.388
First stage				
	Scots-Irish		Irish	
ln(distance Shallow Ford)	-406.28***		-164.61***	
	[114.00]		[35.05]	
Socio-eco and demo controls	yes		yes	
County pop, 1790	yes		yes	
Observations	39		39	
R-squared	0.896		0.797	
F-stat of excluded instruments	12.70		22.05	

Notes to Table 12: see notes to Table 2 and 3. Distance to Shallow Ford is computed using the great circle formula, between geocenters of counties and Shallow Ford. Deep South sample only.

**Table 13: Vertical Transmission**

	1	2	3	4	5	6	7	8
	Homicide rate				white offender			
Border South	0.69**	0.97	0.15	0	0.38*	0.46*	0.08	0.39
	[0.34]	[1.14]	[0.41]	[1.08]	[0.21]	[0.27]	[0.28]	[0.35]
Deep South	2.66***	1.28	2.28***	1.13	1.53***	0.42	1.36***	0.48
	[0.34]	[0.94]	[0.38]	[1.02]	[0.15]	[0.28]	[0.17]	[0.34]
West	2.14***		1.67***		1.10***		0.83***	
	[0.38]		[0.44]		[0.25]		[0.29]	
Midwest	0.35		0.02		0.1		-0.13	
	[0.27]		[0.34]		[0.17]		[0.23]	
Scots-Irish in 2000 (SI 2000)	-3.38**	-2.19	-9.19***	-2.71	-0.05	-1.75*	-3.22***	-1.67*
	[1.61]	[3.67]	[2.46]	[3.86]	[1.20]	[0.89]	[1.05]	[0.85]
Border South*SI 2000			12.96**	13.06			6.94***	1.15
			[5.49]	[14.72]			[2.32]	[1.63]
Deep South*SI 2000			4.84*	0.8			1.34	-0.95
			[2.79]	[7.04]			[0.99]	[1.31]
West*SI 2000			7.07***				3.99***	
			[2.37]				[1.04]	
Midwest*SI 2000			3.01				3.62*	
			[3.48]				[1.85]	
Socio eco and demo controls 2000	yes	yes	yes	yes	yes	yes	yes	yes
Restricted sample	no	yes	no	yes	no	yes	no	yes
Observations	2845	145	2845	145	2845	145	2845	145
R-squared	0.258	0.496	0.259	0.502	0.058	0.204	0.059	0.207

Notes to Table 13: All regressions with a constant. Robust standard errors clustered at the state level. \*\*\*: significant at 1%, \*\*: significant at 5%, \* significant at 10% level.

Socio-economic and demographic controls: log of aggregate earnings, proportion of the population in urban areas, Proportion of the population below or at poverty level, proportion of the population black, fractionalization index, Gini index).

“SI22000” refers to people reporting Scottish or Scots-Irish ancestry in the 2000 census, expressed per 100,000. .

“Restricted sample” refers to the sample of counties with population in 1790 for which ancestry information is available.

Source: 2000 US census, UCR.

**Table 14: Horizontal Transmission: Transmission to other settlers**

	1	2	3	4
Homicide rate, white offender				
	propSI: Proportion Scots-Irish		propSI: Proportion Irish only	
propSI	-0.427	1.53	-0.318	4.363
	[1.975]	[1.017]	[7.605]	[4.728]
propSI*other settlers	0.066*	-0.065***	0.133	-0.171*
	[0.032]	[0.020]	[0.194]	[0.082]
other settlers		0.015***		0.014***
		[0.003]		[0.002]
Deep South*other settlers		-0.242***		-0.057***
		[0.021]		[0.016]
Deep South*propSI		13.311		-27.122
		[8.358]		[50.223]
Deep South*propSI*other settlers		7.451***		13.608***
		[0.656]		[3.099]
County pop 1790	yes	yes	yes	yes
Socio-demo and eco controls, 2000	yes	yes	yes	yes
Observations	149	149	149	149
R-squared	0.387	0.539	0.378	0.528

**Table 15: Horizontal Transmission - Falsification: Transmission to Other Groups for Other Crimes**

	1	2	3	4
	rape, all	rape, white	property, all	property, white
other settlers	0.000	0.000	0.004*	0.002**
	[0.000]	[0.000]	[0.002]	[0.001]
Deep South*other settlers	0.002	0.001	-0.031	-0.001
	[0.004]	[0.001]	[0.054]	[0.016]
Prop Scots-Irish	1.01	-2.087	177.961*	54.795
	[7.764]	[3.421]	[95.821]	[46.356]
prop Scots-Irish *other settlers	-0.075	0.008	-3.411	-0.835
	[0.205]	[0.090]	[2.687]	[1.420]
Deep South*prop Scots-Irish	75.830*	2.409	1,620.43	288.38
	[39.733]	[17.331]	[1,235.074]	[309.317]
Deep South*prop Scots-Irish *other settlers	-2.177	-3.867**	137.535	10.239
	[7.685]	[1.288]	[137.976]	[36.407]
Observations	149	149	149	149
R-squared	0.255	0.277	0.386	0.4

**Table 16: Horizontal Transmission to African Americans**

	1	2	3	4	5	6	7	8
	propSI: Proportion Scots-Irish				propSI: Proportion Irish only			
	Homicide rate		black offender		Homicide rate		black offender	
black1790		-0.085		-0.061		-0.085		-0.053
		[0.067]		[0.037]		[0.064]		[0.031]
Deep South*black1790		0.140*		0.103**		0.103		0.071*
		[0.073]		[0.038]		[0.069]		[0.033]
propSI	4.045	5.079	3.371*	1.756	7.875	8.208	7.381	5.541
	[4.100]	[3.620]	[1.844]	[2.142]	[12.644]	[16.934]	[5.465]	[8.313]
propSI*black1790	0.450**	0.142	0.203*	0.399	1.880**	0.826	1.111**	1.137
	[0.184]	[0.343]	[0.105]	[0.457]	[0.761]	[1.376]	[0.401]	[1.251]
Deep South*propSI		206.328		100.686		338.682		210.128
		[132.243]		[59.004]		[459.689]		[178.759]
Deep South*propSI*black1790		-1.434		-1.586**		-1.144		-2.818
		[1.038]		[0.644]		[4.813]		[2.170]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Socio-demo and eco controls, 2000	yes	yes	yes	yes	yes	yes	yes	yes
Observations	149	149	149	149	149	149	149	149
R-squared	0.453	0.516	0.447	0.486	0.454	0.497	0.457	0.482

Notes to Table 14 to 16: All regressions with a constant. Robust standard errors clustered at the state level. \*\*\*: significant at 1%, \*\*: significant at 5%, \* significant at 10% level.

All main effects and two-way interactions controlled for.

Other settlers are settlers from Holland, France and Germany, scaled by 100.

Socio-economic and demographic controls: log of aggregate earnings, proportion of the population in urban areas, Proportion of the population below or at poverty level, proportion of the population black, fractionalization index, Gini index).

Source: 1790 census, UCR.

**Table 17: Robustness to Lawlessness**

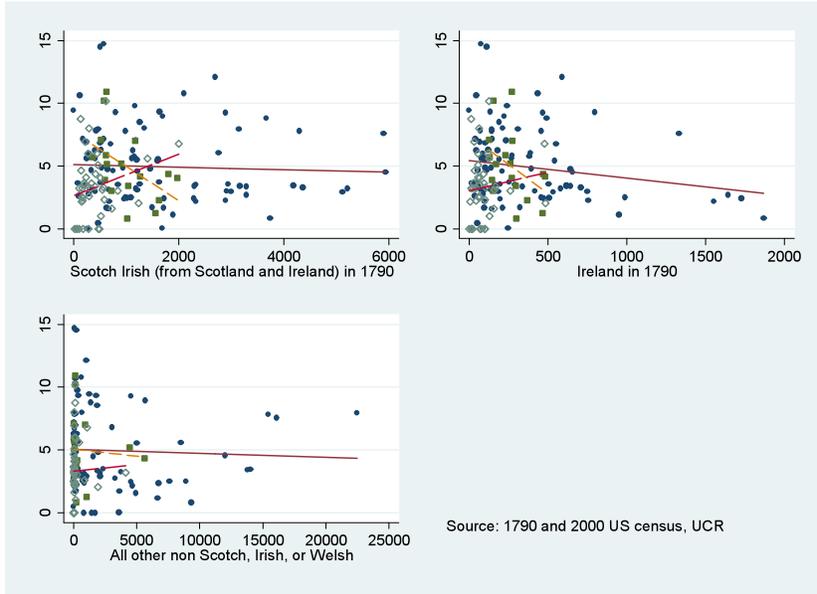
Panel (b) Scots-Irish	1	2	3	4	5	6	7	8
	avg. annual murder rate 00-07				white offender			
Scots-Irish	0.014	0.011	0.008	0.002	0.004	0.004	0.001	0.001
	[0.015]	[0.017]	[0.011]	[0.014]	[0.006]	[0.007]	[0.006]	[0.007]
Deep South *ScotsIrish	0.447***	0.695***	0.364**	0.415***	0.151***	0.163***	0.129***	0.132***
	[0.070]	[0.087]	[0.131]	[0.112]	[0.032]	[0.042]	[0.035]	[0.035]
weaponcarry rate, all	0.045***			0.033**				
	[0.009]			[0.011]				
drunkenness rate, all		0.006*		0.005*				
		[0.003]		[0.002]				
property crime, all			0.019*	0.008				
			[0.009]	[0.009]				
weaponcarry rate, white					0.021***			0.009
					[0.005]			[0.007]
drunkenness rate, white						0		0
						[0.002]		[0.001]
property crime, white							0.011**	0.009
							[0.005]	[0.006]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Socio-demo and eco controls, 2000	yes	yes	yes	yes	yes	yes	yes	yes
Observations	149	149	149	149	149	149	149	149
R-squared	0.603	0.521	0.566	0.625	0.454	0.411	0.47	0.475
Panel (b) Irish only	9	10	11	12	13	14	15	16
	avg. annual murder rate 00-07				white offender			
Irish	-0.035	0.06	0.017	-0.031	-0.011	0.002	-0.007	-0.011
	[0.058]	[0.049]	[0.049]	[0.044]	[0.022]	[0.018]	[0.016]	[0.017]
Border South * Irish	0.693	0.339	0.804	0.755	-0.127	-0.164	-0.166	-0.148
	[0.578]	[0.443]	[0.804]	[0.653]	[0.221]	[0.177]	[0.306]	[0.301]
Deep South * Irish	1.977***	2.738***	1.621***	1.924***	0.600***	0.601***	0.521***	0.550***
	[0.252]	[0.197]	[0.356]	[0.355]	[0.100]	[0.096]	[0.103]	[0.097]
weaponcarry rate, all	0.047***			0.035***				
	[0.009]			[0.010]				
drunkenness rate, all		0.007*		0.005*				
		[0.003]		[0.003]				
property crime, all			0.020**	0.008				
			[0.009]	[0.008]				
weaponcarry rate, white					0.022***			0.011
					[0.005]			[0.007]
drunkenness rate, white						0		0.001
						[0.002]		[0.001]
property crime, white							0.011**	0.008
							[0.005]	[0.006]
County pop 1790	yes	yes	yes	yes	yes	yes	yes	yes
Socio-demo and eco controls, 2000	yes	yes	yes	yes	yes	yes	yes	yes
Observations	149	149	149	149	149	149	149	149
R-squared	0.62	0.536	0.579	0.642	0.46	0.413	0.474	0.482

Notes to Table 13 to 15: see notes to Table 2 and 3.

## Appendix

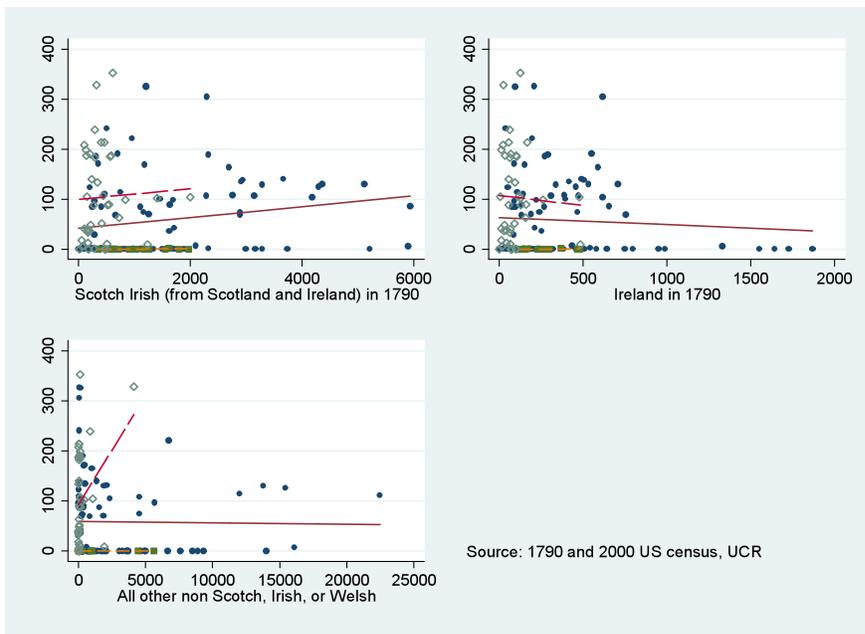
### APPENDIX A: Descriptive Statistics, Additional Tables and Figures

**Figure A1: Other offenses: rape – white offenders - Scots-Irish, Irish only and all non Scots-Irish or Welsh settlers**



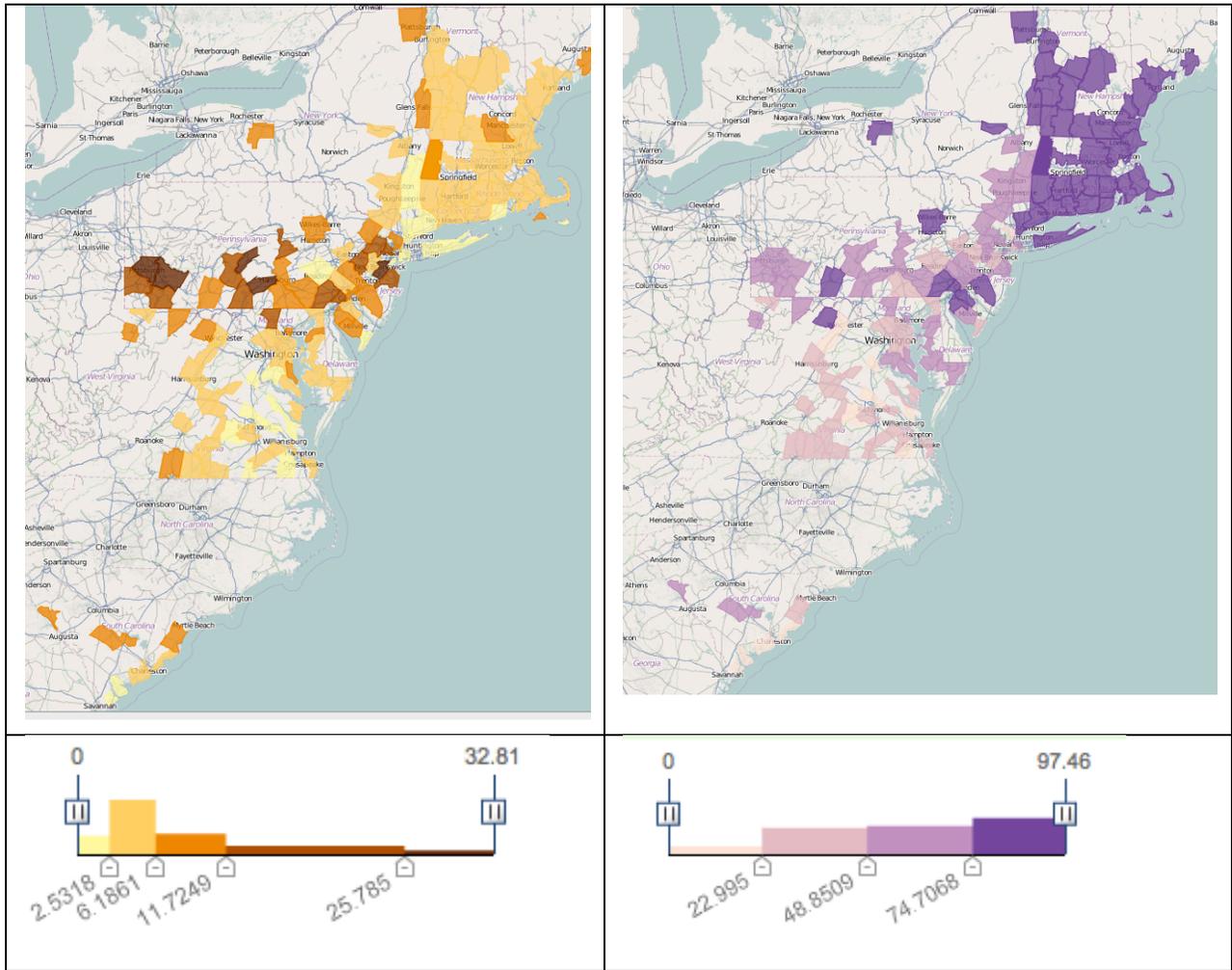
Source: US Census, UCR

**Figure A2: Drunkenness – white male offenders - Scots-Irish, Irish only and all non Scots-Irish or Welsh settlers:**



Source: US Census, UCR

**Figure A3: Proportion of Scots-Irish (left) and English & Welsh settlements (right) in 1790**



**Table A1: Immigrants and total population in each State recorded in 1790 census**

	Ireland	Scotland	Scots-Irish	England & Wales	Holland	France	Germany	Total
Connecticut	1589	6425	8014	223437	258	512	4	237655
Maine	1160	3674	4834	78076	274	72	379	84341
Maryland	4550	12441	16991	161011	254	1336	11246	290657
Massachusetts	3967	13855	17822	363137	433	743	110	390858
New Hampshire	1346	6648	7994	132726	153	142	0	141899
New Jersey	12099	13156	25255	98620	21581	3565	15678	184139
New York	2525	10034	12559	245901	50600	2424	1103	340241
Pennsylvania	8614	49567	58181	249656	2623	2341	110357	433611
Rhode Island	459	1976	2435	62079	19	88	33	69112
South Carolina	1468	4462	5930	38747	105	1498	2072	137079
Vermont	597	2562	3159	81149	428	153	35	85341
Virginia	2313	8242	10555	99929	166	724	5514	340898
West Virginia	278	872	1150	8930	81	49	763	14194

Notes to Table A1: (i) sum of two preceding columns. Source: 1790 US census. Discrepancy between the total column and the sum of remaining columns is accounted for by “other nationalities” and “Hebrew” recorded in the census.

**Table A2: Contemporaneous homicides statistics in states and counties included in 1790 census**

State	Number of counties in 1790 census	Pop. 2000	White pop. 2000	Homicide rate	white offender rate
Connecticut	8	3405565	2777794	2.79	1.08
Maine	3	485970	470152	0.88	0.45
Maryland	17	4609017	2825807	5.86	1.85
Massachusetts	13	5440932	4615042	1.62	0.55
New Hampshire	5	926001	884558	0.66	0.31
New Jersey	13	5068187	3770038	3.67	1.13
New York	15	10466249	6293763	2.80	1.08
Pennsylvania	21	8496607	6903445	4.60	1.78
Rhode Island	5	1048319	890766	1.40	0.66
South Carolina	5	607103	358554	15.71	4.55
Vermont	7	412799	399148	2.98	1.38
Virginia	35	2840995	2031118	5.26	1.37
West Virginia	3	170721	161749	5.94	2.88

Source: 1790 and 2000 US census and UCR

**Table A3: Descriptive Statistics of Variables used in Regression Analysis**

Panel (a): Whole sample

Variable		Obs	Mean	Std. Dev.	Min	Max
av. an. homicide rate per 100,000	average annual murder rate per 100,000 2000-2007 (UCR)	150	4.29	4.36	0	23.86
white offenders rate	white offender arrested for murder, per 100,000 2000-2007 yearly average (UCR)	150	1.40	1.40	0	8.83
Scots-Irish	Scottish or Irish settlers in 1790 (1790 census)	150	1165.86	1221.74	0	5934
Ireland	Irish settlers in 1790 (1790 Census)	150	273.10	328.82	0	1866
All non Scots-Irish	Settlers from country other than Scotland, Ireland or Wales in 1790 (1790 census)	150	1647.40	3516.63	0	22483
log aggregate earnings	2000 census	150	21.46	1.59	18.26	24.71
Prop. pop. in urban areas	2000 census	150	0.61	0.31	0	1.00
Prop. pop. Below poverty line	2000 census	150	0.09	0.04	0.02	0.25
Prop. pop. black	2000 census	150	0.03	0.04	0	0.16
fractionalization index	2000 census - Zanella et al. (2010)	150	0.30	0.18	0.03	0.78
Gini	Gini index (2000 census, Mark Burkey)	150	0.43	0.04	0.34	0.59
Slaves in 1790	Number of slaves in 1790 per 100,000 (1790 Census)	75	2006.79	4470.98	8	34474.75
sheeppig_pc	Pigs and sheep per capita (1840 Census)	148	2.24	1.69	0.01	11.67
pigs_pc	Pigs per capita (1840 Census)	148	0.95	0.64	0.01	11.67

Panel (b): By Region

Region	Non Southern States		Border South		Deep South	
	mean	s.d.	mean	s.d.	mean	s.d.
homicide rate	2.93	2.83	5.87	4.13	6.57	5.92
white offender rate	1.10	1.09	2.01	1.35	1.77	1.86
Scots&Irish	1520.46	1389.60	999.47	493.56	412.13	391.17
Ireland	350.90	384.74	267.65	119.65	94.53	104.33
All non Scots-Irish	2398.18	4220.15	801.47	1628.80	261.35	720.77
av. an. murder rate per 100,000	3.02	2.85	5.86	4.44	6.57	5.93
av. an. murder rate per 100,000 - white offenders	0.99	0.92	1.24	0.73	1.09	0.90
log of aggregate earnings	22.03	1.32	21.59	1.43	20.05	1.38
Prop. pop. in urban areas	0.70	0.26	0.64	0.27	0.39	0.34
Prop. pop. Below poverty line	0.09	0.04	0.09	0.04	0.11	0.05
Prop. pop. black	0.01	0.02	0.05	0.04	0.07	0.04
fractionalization index	0.24	0.18	0.35	0.13	0.41	0.13
Gini	0.43	0.03	0.41	0.05	0.43	0.05
Slaves in 1790 per 100,000	456.72	681.31	3877.96	2369.37	12075.56	12956.75
sheeppig_pc	2.36	2.07	1.83	0.48	2.11	0.74
pigs_pc	0.70	0.55	1.12	0.30	1.48	0.61
Observations	93		17		40	

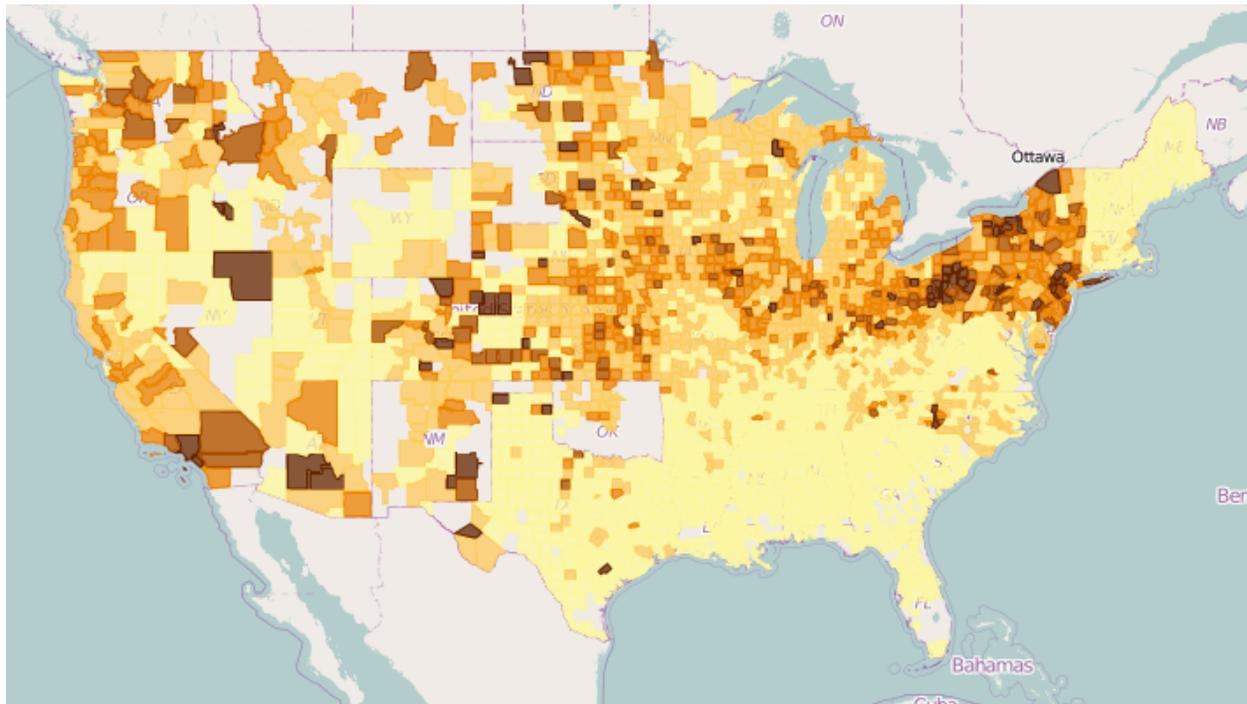
**Table A4: Aggravated assaults and Scots-Irish Settlers—All and white offenders only**

	1	2	3	4	5	6	7	8
	Aggravated assault rate				white offender			
	Scots-Irish		Irish		Scots-Irish		Irish	
Settlers	0.641	0.829	2.323	1.630	0.227	0.252	0.523	0.335
	[0.544]	[0.620]	[1.798]	[1.755]	[0.313]	[0.315]	[0.703]	[0.728]
Border South*Settlers		-5.797**		-30.943*		0.426		-8.080
		[2.580]		[14.612]		[1.882]		[10.206]
Deep South*Settlers		16.097***		47.323***		5.589***		12.755**
		[2.591]		[9.370]		[1.400]		[4.284]
Socio-demo and econ controls 200	yes	yes	yes	yes	yes	yes	yes	yes
Pop. 1790	yes	yes	yes	yes	yes	yes	yes	yes
Observations	149	149	149	149	149	149	149	149
R-squared	0.314	0.424	0.315	0.398	0.379	0.408	0.378	0.393

Notes to Table A4: all regressions with constant. All min regional effects controlled for. Standard socio-demographic and economic controls. Robust standard errors. Source: 1790 and 2000 US census and UCR.

## APPENDIX B: Analysis with 1900 Census

**Figure B1: Proportions of Presbyterians in the 1900 US**



**Table B1: Correlations, Scots-Irish in 1790 and 1860 and Presbyterians in 1900**

	Presb USA	Presb United States	Slaves, 1790	Scots-Irish, 1790	Irish, 1790
<b>Presb USA</b>	1				
<b>Presb United States</b>	-0.028	1			
<b>Slaves, 1790</b>	-0.102*	0.034	1		
<b>Scots-Irish, 1790</b>	0.466*	-0.22*	-0.117*	1	
<b>Irish, 1790</b>	0.388*	-0.195*	-0.092	0.722*	1
<b>Scots-Irish names, Ferrie 1860 sample (i)</b>	0.101*	-0.026	-0.1011	0.069	-0.003

Notes to Table 1: Ferrie 1860 sample refers to Joseph Ferrie’s 1860 sample of males linked from the manuscript schedules of the 1860 Census to the manuscript schedules of the 1870 Census. This sample includes last names of 1,827 male adults. From: Matheson, R.E. (1901), the author constructed an indicator of “Scots-Irish” name if the last name corresponds to last names which are predominant in Ulster and Scotland (dummy equal to one if the prevalence of the last name in Ulster represents more than two thirds of the prevalence of the same name over the whole of Ireland). The Presbyterian Church in the United States split from the Presbyterian Church in the USA based on slavery issue. However, as mentioned in the paper and evident from Table B1, most Scots-Irish did not own slaves.

**Table B2: 1900 Census: Presbyterians and Homicides**

	1	2	3	4	5	6	7	8
	avg. annual murder rate per 100,000 00-07				White offender rate			
Presbyterian USA	-0.019 [0.017]	0.014 [0.009]	0.016*** [0.006]	0.015** [0.006]	-0.003 [0.005]	0.006** [0.003]	0.007*** [0.003]	0.006** [0.003]
Border South		0.793 [1.356]	0.196 [1.224]	0.084 [1.261]		0.309 [0.656]	-0.011 [0.649]	-0.03 [0.668]
Deep South		5.637*** [1.068]	2.624*** [0.701]	2.530*** [0.809]		1.957*** [0.304]	1.436*** [0.325]	1.427*** [0.384]
West		2.232** [1.021]	2.256*** [0.735]	2.173*** [0.754]		1.806** [0.695]	1.442*** [0.482]	1.451*** [0.490]
Midwest		-0.259 [0.655]	0.577 [0.624]	0.593 [0.650]		-0.028 [0.320]	0.321 [0.321]	0.37 [0.332]
Border South*presb		0.072* [0.042]	0.016 [0.042]	0.045 [0.050]		0.050** [0.024]	0.061** [0.027]	0.086** [0.033]
Deep South*presb		0.322** [0.129]	0.330*** [0.102]	0.354*** [0.104]		0.084*** [0.031]	0.067* [0.034]	0.085** [0.033]
West*presb		0.015 [0.027]	-0.050* [0.027]	-0.050* [0.026]		0.046** [0.019]	0.015 [0.017]	0.012 [0.016]
Midwest*presb		0.001 [0.022]	-0.014 [0.016]	-0.011 [0.016]		0.001 [0.009]	-0.003 [0.010]	-0.003 [0.010]
Socio-demo and eco controls 2000	no	no	yes	yes	no	no	yes	yes
1900 controls	no	no	no	yes	no	no	no	yes
Total population 1900	yes	yes	yes	yes	yes	yes	yes	yes
Observations	2604	2604	2604	2546	2605	2605	2604	2546
R-squared	0.001	0.202	0.309	0.316	0.001	0.102	0.135	0.141

**Table B3: Sub sample of North, Border South and Deep South**

	1	2	3	4	5	6
	avg. annual murder rate			White offender rate		
Presbyterian USA	-0.019	0.021***	0.021***	-0.003	0.010***	0.011***
	[0.017]	[0.007]	[0.006]	[0.005]	[0.003]	[0.003]
Border South		0.521	0.711		0.046	0.276
		[1.235]	[1.296]		[0.645]	[0.666]
Deep South		3.318***	3.515***		1.758***	2.007***
		[0.782]	[0.913]		[0.350]	[0.400]
Border South*presb		0.008	0.039		0.064**	0.082**
		[0.041]	[0.049]		[0.027]	[0.032]
Deep South*presb		0.318***	0.312***		0.085*	0.080*
		[0.084]	[0.090]		[0.041]	[0.041]
Socio-demo and eco controls 2000	no	yes	yes	no	yes	yes
Total population 1900	yes	yes	yes	yes	yes	yes
Controls 1900	no	no	yes	no	no	yes
Observations	2604	1392	1369	2605	1392	1369
R-squared	0.001	0.268	0.278	0.001	0.076	0.084

**Table B4: 1900 Presbyterians and Herding**

	1	2	3	4
	avg. annual murder rate		White offender rate	
Presbyterian USA	0.020***	0.019***	0.009***	0.009***
	[0.006]	[0.005]	[0.003]	[0.003]
Deep South	3.214***	3.398***	1.665***	1.851***
	[0.690]	[0.705]	[0.327]	[0.329]
sheeppigs_pc	0.435	0.616	0.045	0.205
	[1.070]	[1.058]	[0.579]	[0.567]
sheeppigs_pc*presb	0.001	0.001	0.001	0.001
	[0.001]	[0.001]	[0.000]	[0.000]
sheeppigs_pc*deeps	-0.477	-0.654	-0.044	-0.2
	[1.083]	[1.074]	[0.582]	[0.569]
Presb*deepsouth	-0.009*	-0.009**	-0.004**	-0.004***
	[0.005]	[0.004]	[0.001]	[0.001]
sheeppigs_pc*presb*deepsouth	0.037*	0.037*	0.015**	0.015**
	[0.019]	[0.019]	[0.006]	[0.006]
Socio-demo and eco controls 2000	yes	yes	yes	yes
Total population 1900	yes	yes	yes	yes
Controls 1900	no	yes	no	yes
Observations	1390	1367	1390	1367
R-squared	0.28	0.29	0.081	0.087

Notes to Table B2 to B4: All regressions with a constant. Robust standard errors clustered at the state level. \*\*\*: significant at 1%, \*\*: significant at 5%, \* significant at 10% level. Presbyterians scaled by 100.

Socio-economic and demographic controls 2000: log of aggregate earnings, proportion of the population in urban areas, Proportion of the population below or at poverty level, proportion of the population black, fractionalization index, Gini index).

1900 controls: black population, manufacturing wages, urban/rural.

Source: 1900 census, UCR.

**Table B5: 1900 Census: Falsification I: Other religious denominations**

	1	2	3	4	5	6	7	8	9	10
	Lutheran		Baptist		Latter Day Saints		Methodist		Roman Catholic	
	hom rate	white off	hom rate	white off	hom rate	white off	hom rate	white off	hom rate	white c
Religion	0.023***	0.008***	0.023*	0.009	0.876	0.830**	0.025***	0.009***	-0.002**	-0.002*
	[0.005]	[0.002]	[0.012]	[0.006]	[1.338]	[0.347]	[0.006]	[0.003]	[0.001]	[0.001]
Border South*Religion	-0.001	0.034**	-0.011	-0.003	-0.51	-2.055**	0.015	0.018*	0.001	0.005*
	[0.026]	[0.015]	[0.011]	[0.008]	[2.060]	[0.908]	[0.017]	[0.009]	[0.003]	[0.002]
Deep South*Religion	-0.049	-0.022	-0.012	-0.012	0.000	0.000	0.007	-0.004	-0.007***	0.000
	[0.062]	[0.018]	[0.014]	[0.008]	[0.000]	[0.000]	[0.019]	[0.006]	[0.002]	[0.001]
West*Religion	-0.145	0.021	-0.04	0.036	-0.881	-0.835**	-0.033**	0.014	-0.003	0.001
	[0.104]	[0.099]	[0.035]	[0.023]	[1.339]	[0.347]	[0.015]	[0.010]	[0.002]	[0.001]
Midwest*Religion	-0.015***	-0.004	0.025	0.015	-0.696	-0.768**	-0.011	-0.003	0.000	0.000
	[0.005]	[0.003]	[0.019]	[0.009]	[1.348]	[0.352]	[0.009]	[0.005]	[0.000]	[0.000]
Total pop. 1900	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Socio demo and econ controls 2000	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Controls 1900	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	2546	2546	2546	2546	2546	2546	2546	2546	2546	2546
R-squared	0.315	0.139	0.316	0.14	0.314	0.138	0.319	0.143	0.317	0.14

Notes to Table B5: See Notes to Table B2 to B4. Religious denominations scaled by 100. All regional main effects.

**Table B6: 1900 Census: Falsification II: Other violent crime**

	1	2	3	4
	Rape rate		White offender	
Presb Church in the USA	-0.013	0.007	-0.008	0.003
	[0.013]	[0.016]	[0.007]	[0.008]
Border South*presb	0.152		0.112**	
	[0.113]		[0.043]	
Deep South*presb	-0.289		-0.135	
	[0.338]		[0.123]	
West*presb	-0.112*		-0.040	
	[0.060]		[0.034]	
Midwest*presb	-0.026		-0.007	
	[0.035]		[0.017]	
sheeppigs_pc*presb*deepsouth		0.014		0.001
		[0.011]		[0.004]
Total pop 1900	yes	yes	yes	yes
Socio-demo and eco controls 2000	yes	yes	yes	yes
Controls, 1900	yes	yes	yes	yes
Observations	2,546	2,543	2,546	2,543
R-squared	0.094	0.085	0.119	0.104

Notes to Table B5: See Notes to Tables B2 to B4.