



# NOTA DI LAVORO

51.2010

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**A History of Violence:  
Testing the 'Culture of  
Honor' in the US South**

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## GLOBAL CHALLENGES Series

Editor: Gianmarco I.P. Ottaviano

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### Testing the ‘Culture of Honor’ in the US South

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#### Summary

Using historical data on early settlers to the United States, this paper tests and confirms the “Culture of Honor” hypothesis by socio-psychologists Dov Cohen and Richard Nisbett (1994, 1996). This hypothesis argues that the high prevalence of homicides in the US South stems from the fact that it was a frontier region settled by people whose economy was based on herding: the Scotch-Irish. Herding societies develop cultures of honors for reasons having to do with their precariousness: violence is a necessary condition to preserve a reputation for toughness and deter animal theft. Using historical census data on waves of settlers from Europe and relating contemporaneous violence to early Scotch-Irish settlers, this paper provides a test of the link between Scotch-Irish settlers and the culture of honor. The results confirm that high numbers of Scotch-Irish immigrants to the US South by 1790 are associated with higher homicide rates today, including homicides by white offenders. Similar results do not hold for different origins of migrants or other violent crime or offenses. The effect is stronger in counties with high headcounts of pigs and sheep in the 19th century, confirming the herding origin of the culture of honor. An important contribution of this paper is to suggest an instrument for violence, based on past economic occupations and ecological suitability for herding vs. farming.

**Keywords:** Culture of honor, US South

**JEL Classification:** K4, Z, Z13

*This paper was presented at the international conference on “Economics of Culture, Institutions and Crime”, Milan, 20-22 January 2010. The conference was supported by FP6 Priority 7 “Citizens and governance in a knowledge-based society” Project: Sustainable Development in a Diverse World“(SUS.DIV) (Contract No. CIT3-CT-2005-513438) University of Padua Research Project “Economic analysis of crime and social interactions” (grant CPDA071899) and Fondazione Eni Enrico Mattei (FEEM). It was co-organised by SUS.DIV, FEEM, University of Padua and CEPR.*

*I am thankful to Nathan Nunn for an enlightening discussion and to Giulio Zanella, Alberto Bisin, Raquel Fernandez, Matteo Cervellatti and all participants at the CEPR conference on “Culture, Institutions and Crime”. I wish to thank Jon Kastelic for excellent research assistance.*

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The opinions expressed in this paper do not necessarily reflect the position of  
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## **A History of Violence**

### **Testing the ‘Culture of Honor’ in the US South**

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*February 14, 2010*

*Preliminary Version*

#### **Abstract**

Using historical data on early settlers to the United States, this paper tests and confirms the “Culture of Honor” hypothesis by socio-psychologists Dov Cohen and Richard Nisbett (1994, 1996). This hypothesis argues that the high prevalence of homicides in the US South stems from the fact that it was a frontier region settled by people whose economy was based on herding: the Scotch-Irish. Herding societies develop cultures of honors for reasons having to do with their precariousness: violence is a necessary condition to preserve a reputation for toughness and deter animal theft. Using historical census data on waves of settlers from Europe and relating contemporaneous violence to early Scotch-Irish settlers, this paper provides a test of the link between Scotch-Irish settlers and the culture of honor. The results confirm that high numbers of Scotch-Irish immigrants to the US South by 1790 are associated with higher homicide rates today, including homicides by white offenders. Similar results do not hold for different origins of migrants or other violent crime or offenses. The effect is stronger in counties with high headcounts of pigs and sheep in the 19<sup>th</sup> century, confirming the herding origin of the culture of honor. An important contribution of this paper is to suggest an instrument for violence, based on past economic occupations and ecological suitability for herding vs. farming.

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

## **1. Introduction**

The average murder rate per 100,000 between 2000 and 2007 in the Deep South of the United States was 8.55, more than twice that in the rest of the country (4.13).<sup>2</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 Southern specificity can hardly be explained away by traditional socio-economic or institutional determinants of crime (Cohen and Nisbett, 1994, 1996). Many authors have suggested instead that it 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) highlights conditions in the pre-Civil war South, characterized namely by an “institutionalization of dueling” and an “exaggerated sense of honor”.<sup>3</sup>

Despite the wide acceptance in the socio-psychological literature of this “culture of honor-violence” hypothesis<sup>4</sup>, the *origin* of such a culture is still very much debated. The object of this paper is to provide a direct empirical test of a highly controversial hypothesis by authors Dov Cohen and Richard Nisbett (1994, 1996). The root of the Southern culture of honor, the authors hypothesize, lies within economic differences that have 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 herding. Chief among them were the “people from the fringes of Britain- the so called Scotch-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) and anthropological literature (Edgerton 1967).<sup>5</sup> Herding societies develop

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<sup>2</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>3</sup> In Messner et al. (2005), p 634.

<sup>4</sup> See Rivera et al. (2002).

<sup>5</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 and their reputation for violence and warfare. The rigors of mountain life and its unstable ecological conditions induce mountain herding people into raiding the plains. He

cultures of honors for reasons having 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.

Cohen and Nisbett (1994, 1996) document substantial cognitive, emotional, attitudinal and even physiological differences between Southerners and Northerners in their response to an affront. Nevertheless, a key gap in their analysis is to stop short of linking such differences back to the Scotch-Irish settlers. This is the object of this paper. Using historical census data on early settlement patterns, this paper tests whether, and confirms that, at the county level, a higher proportion of Scotch-Irish migrants in the US South is associated with higher homicide rates.

The immigration of the Scotch-Irish to the United States started at the end of the XVIIth century and was completed by the end of the XVIIIth century. They were joined by many Highland Scots, after the defeat of Bonnie Prince Charlie in 1745. During that time, most of Irish migrants consisted of Scotch-Irish, but this changed radically after the Irish Potato Famine in the 1840's. Most of Irish migrants then consisted of Irish catholic, mainly farmers and urban dwellers, whose cultural background was very different from the Scotch-Irish. Since the US Census does not distinguish which part of Ireland settlers originate from, it is important, in order to capture the influence of the Scotch Irish, to rely on data on settlements before the Potato Famine. The analysis in this paper hence relies on data on settlements and countries of origin of settlers from the first US census in 1790. This census records counts of settlers of different countries of origin in 151 counties and 13 States. 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. Consistently with the Cohen and Nisbett hypothesis, the proportion of Scotch-Irish settlers by 1790 is still associated with higher rates of (contemporaneous) homicides in the South, including for white offenders only. The effect is sizeable: controlling for a wide number of contemporaneous socio-economic and demographic characteristics, Scotch-Irish settlers in the Deep South are associated with an increase in about half a standard deviation in both the overall

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also describes the lack of order and hierarchy in such societies, and the limitations of law enforcement on mountainous terrain that fail to deter thieving and thus creates 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 Scotch-Irish settlers in the United States was "lex talionis", the rule of retaliation.

homicide rate and the homicide rate by white offenders, corresponding to, respectively, 99 and 13 homicides. This relationship between Scotch-Irish settlers and contemporaneous homicides holds is robust to controlling for a wide array of other potential contemporaneous determinants of crime, such as poverty levels or racial composition, as well as other historical determinants, such as slavery. Several falsification tests are performed. Firstly, this positive relationship between early settlements and contemporaneous homicides in the South does not hold for settlers of other countries of origin where farming was more developed, such as Holland, Germany or France. Secondly, I check that the relationship between homicide and early Scotch-Irish settlers does not hold for other types of violent crime or lawless acts, which would testify of a tendency –and legacy- of Scotch-Irish settlers towards lawlessness in general, and not necessarily a culture of honor in particular.

The herding origin of such a “Scotch Irish culture of honor” hypothesis is investigated with historical data on livestock counts at the county level. The positive relationship between Scotch-Irish settlers and violence in the South is, indeed, more pronounced in counties with high headcounts of pigs and sheep in the early XIXth century.

Data from the 1904 census of prisoners is used in order to document the link between Scotch Irish settlers and crime in the past. Interestingly, not only does such a link exist but – to the extent that data quality for that time period allows inference- it is actually stronger than today. This analysis is nevertheless impaired by data availability.

One of the main contribution of this paper is to provide, for the first time, a direct confirmation of the Cohen and Nisbett “Scotch Irish” hypothesis by relying on historical census data on Scotch Irish settlements. The proposition that a distinct ideology towards violence characterizes the South has been heavily documented. Hackney’s (1969) and Gastil’s (1971) work contain quantitative analysis highlighting 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. They document emotional, cognitive and even biochemical (spikes in cortisol and testosterone levels ) differences in the responses of Southerners and Northerners to an affront. However, in contrast with this well asserted “culture of honor –

violence” hypothesis, the results of empirical research on the Scotch Irish and herding origins of such a culture of honor have been highly inconsistent, reflecting an array of statistical and methodological problems. 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. The robustness of the results to proper account of outliers and to control for more precise socio-economic conditions, in particular economic inequality, is also questioned. This paper differs from previous studies by directly relying on historical data on Scotch Irish settlers as well as on herding and by controlling for a wide number of socio-economic factors, such as inequality and poverty, but also indices of ethnic fragmentalization and demographic composition.

Another important contribution of this paper is to suggest a source of instrumentation for violence: past economic occupations and ecological suitability for herding vs. agriculture. Last, the analysis highlights the economic incentives behind violent crime.

The rest of the paper is organized as follows. Section 2 provides some historical background information on the Scotch-Irish and their settlement in the United States. Section 3 presents the data and descriptive statistics. Section 4 discusses the empirical methodology and presents the results. Section 5 extends the analysis to investigate the herding origins of the culture of honor and the prevalence of a culture of honor in the past, in 1904, when herding was still an important source of livelihood. Section 6 concludes.

## **2. Historical Background**

The theory developed by Cohen and Nisbett deals with settlers from the fringes of Britain that were not suited for large-scale agriculture. Cohen and Nisbett refer to the Scots and the Welsh, but the main focus of their discussion is the “Scotch-Irish”. The term “Scotch-Irish” was coined in the United States in the XIXth century to differentiate Ulster Scots from Irish Catholics. Ulster Scots migrated from Scotland to Ulster during the seventeenth and eighteenth centuries beginning around 1615. They were mainly Protestant Lowland Scots and consisted of the

“Border Reivers”: raiders and cattle-thieves who were causing instability along the Scottish-English frontier, and who became a problem for James VI of Scotland when he became King of England in 1603. The objective of this “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 XIXth century, the vast majority of migrants from Ireland consisted of Ulster Scots.<sup>6</sup> Their migration started was completed over the course of the XVIIIth 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. Presbyterians could no longer serve in the army, the civil service, teaching professions or the police. Secondly, the English "Navigation act" of 1660, amended in 1663, prohibited all exports from Ireland to the colonies; and prohibited temporarily the export of Irish cattle to England<sup>7</sup>. These acts almost destroyed the Irish cattle and ruined the Scotch-Irish, whose economy was based on herding. Further restrictive economic laws were passed. In 1699, the English parliament passed an act prohibiting the Irish from exporting either wool or woolen goods to any ports in the world except Liverpool, Milford, Chester, and some ports on the Bristol Channel. Moreover no woolens were to be shipped to these from any Irish ports except Drogheda, Dublin, Waterford, Youghal, Cork, and Kinsale, none of which is in Ulster. Last, around the same time, the English parliament enacted the practice of rach-renting by landlords. 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 XVIIth century. Ulster people 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, the Scotch-Irish settlers had made their way from Pennsylvania into Virginia. Three subsequent waves of migration occurred in 1739-1740, 1754-1755 and 1771-1775. By the end of 1775, at least a quarter of a million people had left Ulster to form one sixth or more of the total population of the American colonies.

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<sup>6</sup> Protestants were one-third the population of Ireland, but three-quarters of all emigrants leaving from 1700 to 1776 were Protestant and 70% of these Protestants were Presbyterians (Adamson 1982).

<sup>7</sup> A prohibition made permanent in 1666.



Another important group of settlers were Highland Scots, driven from their homeland by the defeat of Bonnie Prince Charlie (Charles Edward Stuart) in 1745. German (and Dutch) emigration were also important at the same time, and since the XVIIth century.

As a late and impoverished arriving group, the Ulster Scots and the Highland Scots, as well as the Germans, found land in the coastal areas of the English colonies that was either already owned or too expensive and left for the hill country. This new land reinforced herding as the basis of the economy of the Scotch-Irish and Scottish settlers: it was often unsuitable for intensive agriculture, and when it was, they tended to farm in low efficiency horticultural fashion.<sup>8</sup>

The term “Scotch-Irish” was coined in the United States in the XIXth century to differentiate Ulster Scots from the subsequent wave of migration from Ireland that followed the Potato Famine in the 1840’s. Although migration from Ireland consisted primarily of Ulster Scots prior to the XIXth, the mass XIXth century migration from Ireland consisted of Catholic Irish, whose cultural and economic bases were very different from the Scotch-Irish. The newer wave of Catholic Irish often worked as laborers (and to a lesser extent, tradesmen), typically settling at first in the coastal urban centers to facilitate work, though many would migrate to the interior to labor on large-scale XIXth century infrastructure projects such as the canals and, later, railroads. Their interaction with the –rural based- Ulster Scots were very scarce.

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

#### **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 in this data set is the monthly count of occurrence of a specific offense in every reporting agency. The UCR data provide information on 43 offenses<sup>9</sup> and the counts of arrests by age, sex, and race for a particular offense in each of the more than 17,000 reporting agencies. With the data on counts of

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

<sup>9</sup> The most common offenses are driving under the influence and other traffic violations.

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 do not coincide exactly with the count of offenses. When this is the case, the minimum value between arrests and offense is used to compute the counts of offenses by race, age group or gender. Of course, the information on offenses by categories of offenders (race, age or gender) is less precise, and the total count of offenses by categories of offenders is lower than the total count of offenses.

The main 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 Scotch-Irish descent, but this is not possible, since arrest data does not contain any information on ancestry. However, it is possible to extract from the data the number of murders by white offenders. Even though there is, of course, not a perfect correspondence between being white and being of Scotch-Irish descent, this is likely to be a more refined way to test the hypothesis and is an approach that has been followed in the literature on the culture of honor.<sup>10</sup> All regression results are presented for the total counts of murders as well as for the murders for which white offenders were arrested. Data on “Aggravated assaults”, total and for white males, for robustness; as well as data on other types of violent crime, such as rape, is also retained in order to test whether the relationship between contemporaneous crime and Scotch-Irish settlers in the South holds for other offenses.

Crime data for 2000-2007 is combined and averaged at the county-level. 2499 counties are matched for the entire time period.

There is a huge variability in murders counts by county in the sample. On average, over the period, there was 5.07 murders per county per year. From the point of view of total murders over the period, the most violent county is Los Angeles (total of 6336 murders over the period, 192.5 per year on average) and Convington, Virginia (with 1966 murders, 246 per year on average). In 679 counties (23.25% of the counties), there was no murder over the period.

The UCR data is merged with the 2000 census and crime rates (per 100,000) are obtained. Furthermore, since contemporaneous crime is the main outcome, it is important to account in the analysis for a number of potential contemporaneous determinants of crime, such as socio-

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<sup>10</sup> Such as Cohen and Nisbett 1994, 1996; Rivera et al. 2002, Henry 2009, among others.

economic characteristics (aggregate earnings, proportion of people living at or below the poverty line, proportion of people living in urban areas, Gini coefficients) and demographic composition (proportion of blacks, fractionalization rates) of counties, which are extracted from the 2000 US census.

The average crime rate per 100,000 people, defined over the period 2000-2007 based on 2000 population, is 5.8. The states with the highest crime rate are North Carolina and South Carolina<sup>11</sup> (see Appendix Table A1), and the lowest: Maine and New Hampshire. 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 much lower than the average overall homicide rate, at 1.96 per 100,000 people, as computed by the methodology described above.<sup>12</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. It contains information on the countries of origin of migrants, and is available at the county level. Censuses were carried out every ten years after this first census. However, not all waves contain information on countries of origin and the first census to contain such information after the 1790 census is the 1870 census.<sup>13</sup>

The culture of honor hypothesis relates to the Scotch-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, impoverished by the Potato Famine.

The analysis therefore mostly relies on the 1790 census in order to test the culture of honor hypothesis. The 1790 census records information on countries of origin, age, family sizes and slaveholding. It records information for 286 counties. Information for country of origin is

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<sup>11</sup> Excluding Alaska and Hawaii.

<sup>12</sup> The average homicide rate by black offenders is 1.15, and by other ethnicities:0.192. The difference is due to murders for which no arrests were made by reporting police agencies during the reporting period.

<sup>13</sup> then the 1910 census, 1930, 1960, 1980 and every ten years after that.

however available only for 153 counties, in 11 States according to the 1790 states boundaries, 13 according to contemporaneous boundaries (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>14</sup> Table A2 lists the number of immigrants from each country of origin listed in the 1790 census, by State, as well as the total population in 1790 recorded by the census. Figure A2 provides a map of settlements by countries of origin, from the 1790 census.

Cohen and Nisbett formulate the culture of honor hypothesis in relation to Ulster Scots, Scots, and Welsh settlers. 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 thus that Welsh settlers are not distinguished from English settlers. Settlers from “England and Wales” clearly cannot be considered in the same category as Scots and Irish, especially given that the majority surely consists of English settlers. However, because of the presence of Welsh in this category, it cannot either be considered as a control category to test the culture of honor hypothesis. This category is thus excluded and the control category therefore consists of settlers of Dutch, German or French origin.

The 1790 census is matched to the crime data and a match is obtained for 150 counties.

The 1790 census also records information on slaveholding. The census records the number of families that hold slaves, and breaks down slaveholding families according to the number of slaves held (9 categories, from 1 slave to 300 slaves and over). This information provides a useful tool in order to check that the relationship between Scotch Irish settlers and contemporaneous crime is confounded by slavery. One important thing to note however is that the Scotch-Irish settlers were among the most impoverished. The correlation in the data between the number of slaves in each county and the number of Scotch-Irish settlers is not significant and, if anything, negative.<sup>15</sup> Unfortunately, the information on slaveholding is not available for all counties. Using such information substantially reduces the sample size to 75 counties.

Census waves before 1840 only contain core demographic information. 1840 is the first census year where important information on economic, farming and herding activity is recorded. In

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<sup>14</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.

<sup>15</sup> Non statistically significant correlation of -0.055.

some of the specification below, this data is used to extract information on herding activities across 148 counties, for which a match with the 1790 census is obtained.

Last but not least, 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 relationship between crime and Scotch Irish settlers at a time when herding was still a primary source of livelihood and hence at which one can expect the culture of honor to be most prevalent. 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, but only at the state level.

I retain the distinction of Cohen and Nisbett between the Border South (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).

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

Figures 1 and 2 display the relationship between homicide and early settlers. Figure 1 plots the relationship between the average annual murder rate per 100,000 people, at the county level between 2000 and 2007, by all types of offenders, and the number of settlers of Irish and Scottish origin in 1790, and of Irish origin only. Figure 2 plots a similar relationship but considers only homicides for which white people have been arrested. In both figures different scatter plots and associated fits are reported for each of the three regions: the Deep South (long dash), the border South (short dash) and non southern states (full line). It appears from these figures that the relationship between homicides and Scotch-Irish settlers is of a different nature in the Deep South compared with the rest of the US. In the Deep South, the contemporaneous level of homicides is clearly higher in the counties with more numerous Scotch-Irish settlers in the 1790. The same holds true when settlers from Irish origin only, the majority of which, by 1790 were Ulster Scots, are considered.

The distinctively positive relationship between homicide rates and early settlers in the Deep South does not hold when other countries of origin of settlers are considered. Figure 3 plots the relationship between the average annual murder rate per 100,000 people, at the county level 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, nor Ireland, nor 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 criminal activity, including as another type of violent crime: rape (Figure A1 in Appendix) or a simple offense like drunkenness (Figure A2). Each figure plots the relationship between the annual average rate of occurrence of the offense, 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 or Wales (panel c). The relationship pattern between contemporaneous rape or drunkenness and Scotch-Irish (or Irish) settlers is apparently neither significantly different in the South nor, for the case of rape, different from the relationship with other types of settlers.<sup>16</sup>

## **4. Empirical Specification and Results**

### **4.1. Empirical specification**

While the above graphs are an informative starting point, I turn to a more formal regression set up that enables me 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, overall and by white offenders only, are regressed on the number of early Scotch-Irish (and Irish only) settlers in 1790, a wide array of socio economic and demographic controls, regional dummies for Deep South, Border South and non Southern states and an interaction term between Scotch-Irish settlers and the regional dummies.

The baseline equation estimated is:

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<sup>16</sup> For drunkenness, the relationship that holds for homicides even seem to be reverse: there is no noticeable difference between arrests for drunkenness and Scotch-Irish and Irish settlers in the Southern and non Southern states, while, on the contrary, there is a positive relationship between this offense and non Scotch-Irish settlers in the deep South.

$$m_c = \beta_0 + \beta_1 SI_c + \beta_2 BS_c + \beta_3 DS_c + \beta_4 SI_c * BS_c + \beta_5 SI_c * DS_c + \beta_6 X_c + e_c \quad (1)$$

where  $m_c$  is the average annual homicide rate per 100,000 people<sup>17</sup> between 2000 and 2007, at the county level. I consider in turn the total number of homicides and homicides for which a white person was arrested 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. For each outcome, I run additional specifications where settlers from Ireland only are considered.  $BS$  and  $DS$  are regional dummies for Border South and Deep South respectively. The excluded regional category is non Southern states.  $X_c$  are contemporaneous socio-economic and demographic characteristics of county  $c$  extracted 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>18</sup>. In robustness test, slavery is added as an additional control.

The essence of the test of the culture of honor hypothesis lies in the interaction term between Scotch-Irish settlers and the Deep South. The nil hypothesis, which would confirm the culture of honor hypothesis, is that  $\beta_5$  is positive and significantly different from zero.

Two falsification tests are considered. The first consists in testing whether the relationship between early settlers and homicides holds for settlers from other countries of origin. Hence, specification (1) is ran, not on Scotch-Irish settlers, but on other settlers of countries or origin that are neither Scotland, Ireland or Wales, as an aggregate category, and then on individual categories of the main other groups of settlers in 1790: Dutch, French and German settlers. The comparison between Scotch Irish settlers and German settlers is particularly meaningful, since, as described in Section 2, both the Germans and the Scotch-Irish were the backcountry settlers and had in common running away from religious persecutions, being destitute and having little to no intentions of going back. The purpose of that falsification test is two-fold. Firstly, failing to reject the nil hypothesis that the relationship between crime levels and settlers does not hold for settlers from other countries of origin is an indication that something specific to the cultural background of Scotch-Irish settlers is indeed at play in explaining high levels of homicide. Secondly, and equally important, rejecting the nil validates the fact that there is not something

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<sup>17</sup> Based on 2000 county population recorded in the 2000 census.

<sup>18</sup> I thank Giulio Zanella for raising concern about the impact of fractionalization and sharing the data.

specific to the Southern United States, which would for example stems *exclusively* from geography, that explains high levels of homicide. Indeed, if the relationship between South and other types of settlers does not explain homicide rates, high levels of homicides in the South cannot be explained exclusively by the particularities of the South, but instead precisely by the interaction between the particularities of the South *and* the cultural background of Scotch-Irish settlers.

The second falsification test consists in examining whether the relationship between Scotch-Irish settlers in the Deep South and homicide rates holds for other types of crimes and offenses. The culture of honor is a self protection ethic. Its purpose is to defend a reputation. It should thus only explain homicides and aggravated assault, and should have nothing to do with other types of violent crime or other offenses. The purpose of this falsification test is thus to verify that the relationship between violence and Scotch-Irish settlements in the South really stems from the culture of honor and not to a highest propensity of the Scotch-Irish culture towards lawless acts in general.

I then explore the interactions between Scotch-Irish settlers, herding and South. According to the Culture of Honor hypothesis, it is the pastoralists Scotch-Irish settlers in the South who should be associated with higher levels of homicide.

## **4.2.Results**

### *4.2.1. Baseline Estimates: Scotch-Irish settlers and violence*

Table 1 presents the baseline estimates of the coefficients in the main specification described above, which examines the relationship between the total average annual homicide rate per 100,000 people, between 2000 and 2007 and settlers from Ireland and Scotland (panel (a)). Panel (b) presents the results of a similar specification with the average annual homicide rate by white offenders only as a dependent variable (i.e. homicide for which white individuals were arrested). Table 2 presents the results of identical specifications, but when settlers from Ireland only are considered. The first column in each Table includes regional dummies (for Deep South, Border South and non Southern states, the excluded category) and the number of Scotch-Irish, or Irish, settlers in 1790. Column 2 includes, in addition, the interaction term between the regional dummies and the number of Scotch-Irish settlers. Column 3 includes as additional controls for contemporaneous homicide rate a wide number of socio-economic and demographic



characteristics of counties in 2000, such as aggregate earnings, proportion of the population below the poverty line, the county Gini index, the county ethnic fragmentalization index, the proportion of the population black and the proportion of population in urban and rural areas (excluded category). Column 4 presents the full specification, with the full set of socio-economic and demographic composition characteristics and the interaction term between regional dummies and Scots and Irish, or Irish only, settlers.

The interaction between Deep South and Scotch-Irish settlers is positive and significant in all specifications, even when the full set of contemporaneous socio-economic and demographic composition controls is included.<sup>19</sup> However, the number of Scots and Irish, or Irish alone, settlers itself is not significantly associated with higher homicide rates. This comforts the Cohen and Nisbett hypothesis in that it indicates that the origins of the culture of honor is found not only in the cultural background of settlers but in the combination of such a cultural background with the ecological and early institutional conditions of the South. Of course, it could well be the case that certain groups of migrants from Scotland and Ireland self selected to the South, and that these groups only had the cultural background that lead to the prevalence of the culture of honor. There is no way to rule out that possibility.

The effect of the interaction term between Scots and Irish, or Irish only, and Deep South on homicide rate is far from negligible. The value of the coefficient of the interaction between Scotch-Irish settlers and Deep South is 0.0067, for the overall murder rate, and 0.0009 for murders for which white offenders were arrested. Considering the number of Scotch Irish settlers in the Deep South by 1790, this is equivalent to an increase of about half a standard deviation in both the overall murder rate and the murder rate by white offenders. It corresponds to about 99 homicides overall and a bit less than 13 homicides by white offenders – that is, for which a white individual is arrested. The value of the coefficient of the interaction between Irish only settlers and Deep South is 0.026 and 0.0025 for homicides by white offenders only. Considering the number of Irish settlers in the Deep South by 1790, this is equivalent to an increase of more than half a standard deviation in the overall murder rate and a bit more than a fifth of a standard deviation of the murder rate by white offenders.

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<sup>19</sup> The results are unaffected when Scots-Irish – or Irish only- settlers are expressed as a proportion of the total settlers population in 1790.

The goodness of fit of the full specification of the baseline equation is satisfactory. Information on the number of early Scotch-Irish settlers together with current socio economic and demographic characteristics explain more than 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. 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>20</sup> More urbanized counties experience less homicides, but, urban also 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).

Another explanation to the high prevalence of violence in the South that has been extensively discussed is slavery. Of course, this explanation is not contradictory with the culture of honor hypothesis but is likely to be a complementary explanation to the high levels of violence in the South. Nevertheless, it is necessary for the robustness of the above results to check that the relationship between Scotch-Irish settlers and homicides is not confounded by slavery. In other words, it would be worrying if counties with high headcounts of Scotch-Irish were also the counties with high levels of slavery. This is unlikely to be the case, since, as explained in Section 2 and 3, the Scotch-Irish –both Highland and Ulster Scots- were impoverished herders and were thus unlikely to hold slaves. Indeed, the correlation between headcount of Scotch-Irish and number of slaves at the county level is not significant and, if anything, negative. Still, it is useful to check in regression analysis whether the above relationship still holds when the number of slaves in each county in 1790 is included. The main impediment to doing so is that the sample size shrinks to 75 when both information on slaves and ancestry is considered (no later census has information on slavery). Still, the interaction term between Irish settlers and Deep South has a positive and significant effect on contemporaneous homicide rates when slavery is controlled for (see Table A5 in Appendix, which reproduces the specifications from Table 1 and 2 with the additional control),.

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<sup>20</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.

4.2.2. *First falsification test: Does the relationship between Crime, South and early settlers hold for other countries of origin?*

The above results do not provide sufficient evidence to support the hypothesis that the specific cultural and economic background of a certain type of early settlers, the Scotch-Irish, who found in the US South ecological and institutional conditions favorable to the perpetuation of a culture of honor, translates today into higher homicide rates. Indeed, one needs to show that the relationship between homicide and early settlers in the South holds for the Scotch-Irish specifically, and not for any country of origin of settlers to the US South. If that were the case, the above relationship may have nothing to do with the specific cultural background of the Scotch-Irish, but rather to the specificities of the US South and/or the type of settlers it attracted, regardless of their cultural background.

In what follows, identical specifications as in the above section are performed where homicide rates are regressed, not on Scottish and Irish settlers, but on settlers from other countries of origin, such as France, Germany and Holland. The null hypothesis is that the interaction term between Deep South and country of origin is not significant for any other country of origin than Scotland, Ireland (and Wales). Failure to reject the null would cast doubt on the culture of honor hypothesis as spelled out by Cohen and Nisbett.

In table 3, all immigrants of non Scotch, Irish, or Welsh origin are considered as an aggregate category. The interaction term between this category of settlers and Deep South is never significant in explaining total homicide rate or homicide rate by white offenders. Table 4 explores the effect of German settlers only. In many historical accounts, German settlers, in particular Palatine Germans, are compared with Scotch-Irish settlers of the 18<sup>th</sup> century as the backcountry settlers. Both were fleeing religious persecutions and were destitute, which was pushing them to settle in the marginal lands of the US frontier. Despite these similarities in their pattern of settlements, the interaction term between German settlers and Deep South is never significant in explaining homicide rates.

Table 5 and Table 6 explore the effect of, respectively, French and Dutch settlers. The interaction term between French, or Dutch, Settlers and Deep South is significant in explaining total homicide rates today at the 1% to 5% level. However, the significance is lost when homicide rates by whites only are considered. It is possible that early French and Dutch settlers are

associated with more violence today, but for reasons that do not specifically have to do with the culture of honor, since they have no influence on homicides by white offenders.<sup>21</sup>

In sum, the relationship between early settlers and contemporaneous highest homicide rates by whites in the South does not hold for non-Scotch-Irish settlers (French, Dutch or German). This provides support for the culture of honor hypothesis in two ways. First, it indicates that it is something specific to the cultural background of Scotch-Irish settlers that is at play in explaining high levels of homicide. Second, and equally important, rejecting the nil validates the fact that there is not something specific to the Southern United States, which would for example stem *exclusively* from geography, that explains high levels of homicide. Indeed, the high level of homicides, and more particularly of homicides 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 certain type of settlers: the Scotch-Irish.<sup>22</sup>

#### 4.2.3. *Second Falsification Test: Other types of crimes and offenses*

The culture of honor is a self protection ethic, the purpose of which is to defend a reputation. The purpose of this falsification test is to verify that the relationship between violence and Scotch-Irish settlements in the South really stems from the culture of honor and not from a highest propensity of the Scotch-Irish culture towards violence in general. The nil hypothesis is that the interaction term between Scotch Irish settlers and Deep South does not significantly explain crime or offenses that are not associated with a self-protection ethic, including other violent crime, such as rape. Failure to reject the nil would corroborate the culture of honor hypothesis, in the sense that the relationship between Scotch-Irish settlers and crime in the Deep South holds only for homicides and aggravated assaults, as shown in Table A6 and A7, and not for any type of violence or lawless acts.

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<sup>21</sup> In fact, for the French, the channel seems to be slavery: there is a positive and statistically significant correlation between the number of slaves and of French settlers, and the interaction between French settlers and Deep South is no longer significant when slavery is controlled for.

<sup>22</sup> The interaction between Deep South and “England and Wales” as a country of origin is significant at the 10% level in the regression explaining homicides by white offenders. However, the value of the coefficient on the interaction term is 0.0001, lower than what it is for Scotch-Irish (0.0009) or Irish (0.025).

Table 7 presents the results of a regression in which the outcome variable is the annual average rape rate per 100,000 people, computed in the same way as the murder rate above. Columns 1 to 4 present results for total rape rate, while columns 4 to 8 present results for rapes for which white offenders were arrested. Table 7a presents results for Scotch-Irish settlers, Table 7b presents results for Irish settlers only.

Results are mixed. The null is rejected for Scotch-Irish settlers, but not for Irish only. In this case, there is not a higher rape rate by white offenders in Deep Southern counties with a higher proportion of early Irish settlers. The relationship between early Irish settlers and the Deep South only holds for one specific type of violent crime only: homicide and aggravated assaults (see Table A6) but not for all types of violent crime.

I fail to reject the null hypothesis for the relationship between another offense, drunkenness, and Scotch-Irish settlers. (Table A7).

## **5. Extension and Discussion**

### **5.1. The Herding Base of the Scotch-Irish Culture of Honor**

According to Cohen and Nisbett, it is the pastoralist culture of the Scotch-Irish settlers in the South that has led to the emergence of a culture of honor and to higher levels of homicide. An obstacle to testing for that relationship is that the 1790 census does not contain any information on livestock. The 1840 census, however, does but it does not contain information on ancestry. Because of the 50 years difference in the 2 waves, and the many changes that probably took place between the two, the results have to be considered with caution. Still, Table 8 explores the interaction between Scotch-Irish settlers and livestock in the South. This specification adds to specification (1) a three-way interaction between the number of Scots and Irish settlers (or Irish only) (from the 1790 census), the number of sheep and pigs per capita (from the 1840 census) and a Deep South dummy, controlling for any two-way interactions between the variables. The null hypothesis is that the coefficient on the three-way interaction is non significantly different from zero. Rejecting the null would confirm the herding origin of the “Scotch-Irish” culture of honor. The falsification tests presented in Section 4 are also performed: firstly, the impact of a similar three way interaction with non-Scots or Irish settlers is considered (Table 9), and secondly, the effect of the interaction on other types of violent crime is explored (Table 10).

The interaction between Deep South, Scotch-Irish settlers and counts of pigs or sheep per capita is positively and significantly associated with murder rates today, by all offenders as well as by white offenders only. Table 8 reports the results of a specification which includes the sum of the number of pigs and sheep per capita, but the individual results with sheep or pigs are similar (not reported here). The results hence confirm the herding link of the culture of honor hypothesis: a higher intensity of Scots Irish settlements at the county level is associated with higher murder rates today, all the more so that counties were heavily engaged in herding. The results confirm that it is in the interaction between the cultural background of Scots Irish settlers and their economic activity that the culture of honor found its root and contribute to explain high homicide in the South.

The same is not true when other countries of origin of settlers are considered. The interaction between animal counts and early settlers from other countries of origin is not significantly associated with higher homicide rates today.

Similarly, the link between Scots Irish and herding only contributes to explain high homicide rate, and not lawlessness or violence in general. The interaction between intensity of Scots Irish settlements and herding does not significantly affect the rate of another violent crime, rape, by white offenders, or minor offenses such as drunkenness.

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

An immediate puzzle that arises with the above results is that of cultural transmission. Indeed, the link between homicide and Scotch Irish settlers persists despite the disappearance of herding as the main source of economic livelihood. The socio psychological literature and cultural transmission models a la Bisin and Verdier (2001) bring as an explanation for such cultural persistence the hysteresis of cultural norms that are transmitted from generation to generation. The main idea of this literature is that the backward looking behavior of parents who try and transmit their own values to their children generate some hysteresis that can explain the slow adaptation to new economic environments.<sup>23</sup> In accordance with this thesis, Cohen and Nisbett (1996) document many differences today in children socialization by Southerners vs.

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<sup>23</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.

Northerners. For example, Southerners are more likely to defend corporal punishments, they are more much more likely than northerners to “advocate spanking to discipline their children” (Cohen and Nisbett 1996, page 67) and the South is also more lenient in domestic violence affairs. 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.

According to the hypothesis that 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. Unfortunately, the data on homicide used in the above results is only available for time periods long after the disappearance of herding as a main source of livelihood. Earlier data exists, but are not of comparable quality and level of detail. 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”. This data includes the number of prisoners in county jails in 1904 by race and gender. Unfortunately, it does neither include information on all the counties for which data on Scots Irish settlers is available nor any information on the specific offenses committed by prisoners in county jails. Information on the number of people detained for homicide is available only at the state level. The 1904 information on county jails’ prisoners is matched to the 1790 census and a match is obtained for 104 counties only. Figure 4 plots, on the same graph, the relationship between the prison population in county jails in 1904 and Scotch-Irish settlers as well as the relationship between contemporaneous homicide rates and Scotch-Irish settlers. Because of data availability, the different regions are considered together. Panel (a) considers all types of offenders and panel (b) considers white offenders only. Figure 5 plots the same relationship when few outlying counties are removed. These graphs confirm that there is a positive relationship between crime in 1904, measured by the number of prisoners, and Scots Irish settlers. Furthermore, the link between crime and Scots Irish settlers appears to be stronger in 1904 than it is today. Of course, a major caveat is that crime in 1904 and crime today are not measured in the same way. Still, a simple regression of the white prison population in 1904 at the county level on Scotch Irish settlers gives a slope of 0.045, which compares with a slope of 0.011 for the relationship between contemporaneous arrests for homicides by white offenders and Scotch Irish settlers.

Figure 6 uses the information on the type of offense at the state level in order to compare homicide rates today and in 1904. The 1900 census is used in order to compute 1904 homicide rates. The relationship between, on the one hand, homicide rates in 1904 and today, and, on the other hand, Scots Irish settlers is plotted, at the state level. The fitted line gives the strength of the relationship between homicide rates at different dates and Scots Irish settlers in the South as a whole or the Deep South only. A similar picture emerges: the relationship between homicides and Scots Irish settlers exists for 1904 data, and it stronger than for contemporaneous data. Both for contemporaneous and 1904 data, the link between homicides and Scotch Irish settlers is inexistent in Northern States and is strongest in the Deep South.

## **6. Conclusion**

This paper provides a direct test of the origins of the Southern culture of honor as hypothesized by socio-psychologists Dov Cohen and Richard Nisbett. This hypothesis stresses the economic origins of a culture of honor in the US South, which has been associated with high homicide rates. Whereas the North of the United States was settled by farmers, the South of the United States was settled by people whose livelihood was based primarily on herding, chief among them the Scotch Irish. Herding societies develop culture of honors because of their susceptibility to theft and hence the importance of developing a reputation for violence in order to deter theft.

The results provide evidence that is strongly consistent with this hypothesis. The intensity of Scotch Irish settlements in the Southern United States is significantly associated with higher homicide rates, by all offenders as well as by white offenders only. 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 same does not hold true with other countries of origin, or when other types of crime, including violent crime, are considered. The result also confirm the herding origin 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 that counties were heavily engaged in herding.

This paper contributes to the socio-psychological literature on crime as well as to the literature on cultural transmission. The results show that it is in the interaction between the cultural background of Scotch-Irish settlers and their economic activity that the culture of honor found its



root and contribute to explain high homicide in the South. Interestingly, this analysis reveals the economic incentives behind violent crime, even though such incentives may no longer be relevant today. Indeed, the propensity to commit violent crime is transmitted culturally and culture changes at a much slower rate than the actual economic incentives behind such violent crime. Even though herding is no longer the primary basis of livelihood in the regions considered, there is still a strong association between the historical conditions for the emergence of a culture of honor and contemporaneous crime rate. Historical data on crime reveals that this link was also present and – to the extent that the data quality allows inference – actually stronger in the past, when herding was still an important source of livelihood.

This paper 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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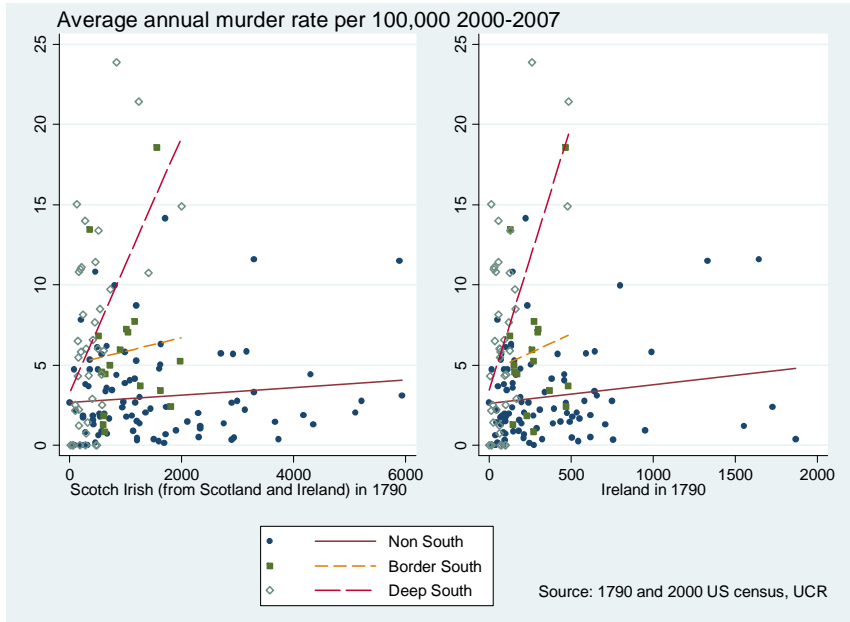
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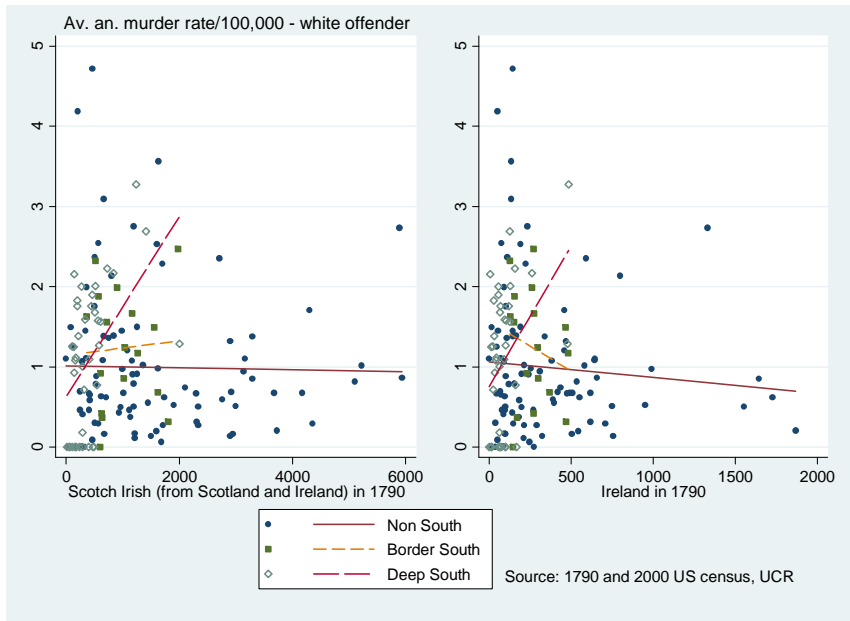
US Census Bureau: Prisoners and juvenile delinquents in the United States 1910 (1918)

## 8. Figures and Tables

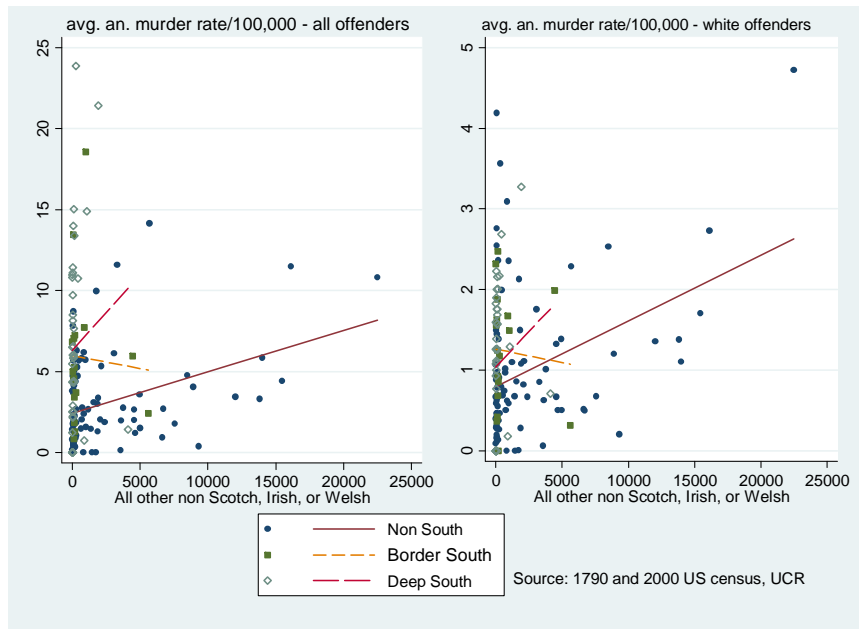
**Figure 1: Murder rates, by Region. Scotch-Irish Settlers and Irish only settlers in 1790**



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



**Figure 3: Murder rates (a) and by white offenders only (b) by Region. Non Scotch-Irish, Irish or Welsh settlers in 1790**



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

Panel (a). All offenders

	1	2	3	4
	avg. annual murder rate per 100,000 00-07			
ScotchIrish (Scotland & Ireland)	0.0005*	0.0002		0.0002
	[0.0003]	[0.0003]		[0.0002]
Border South	3.0921***	2.334	0.6218	-2.3643
	[1.1051]	[2.6097]	[1.3357]	[2.4234]
Deep South	4.0892***	0.6149	-0.0784	-3.9224***
	[1.0404]	[1.1567]	[1.0789]	[1.2517]
Border South*ScotchIrish		0.0006		0.0026
		[0.0026]		[0.0024]
<b>Deep South*ScotchIrish</b>		<b>0.0077***</b>		<b>0.0067***</b>
		[0.0023]		[0.0018]
Log of aggregate earnings			0.4019	-0.2331
			[0.3810]	[0.3828]
Prop of pop in urban areas, 2000			-2.8126	-2.6066*
			[1.7014]	[1.4905]
Prop of pop below or at poverty line 2000			11.0902	0.9485
			[13.4038]	[12.0664]
Prop of pop black, 2000			73.6420***	62.8255***
			[22.1372]	[17.6186]
fractionalization			-2.3336	2.1855
			[3.7208]	[3.1026]
Gini			7.1727	4.1649
			[12.4978]	[12.1650]
Observations	150	150	150	150
R-squared	0.157	0.279	0.425	0.511

Panel (b): White offenders only

	1	2	3	4
	avg. annual murder rate per 100,000 00-07, white offender			
ScotchIrish (Scotland & Ireland)	0.000	0.000		0.000
	[0.0001]	[0.0001]		[0.0001]
Border South	0.2571	0.1352	0.2591	-0.0578
	[0.2063]	[0.5010]	[0.2427]	[0.5165]
Deep South	0.1257	-0.3851	0.069	-0.4696
	[0.1985]	[0.2663]	[0.2549]	[0.3404]
Border South*ScotchIrish		0.0001		0.0002
		[0.0005]		[0.0004]
<b>Deep South*ScotchIrish</b>		<b>0.0011**</b>		<b>0.0009**</b>
		[0.0005]		[0.0005]
Log of aggregate earnings			0.1407*	0.0717
			[0.0736]	[0.0869]
Prop of pop in urban areas, 2000			-0.6985**	-0.6848**
			[0.3228]	[0.3199]
Prop of pop below or at poverty line 2000			9.8536***	8.5198***
			[2.8962]	[2.9880]
Prop of pop black, 2000			0.1554	-0.9786
			[3.8224]	[3.2893]
fractionalization			-0.5175	0.0087
			[0.7463]	[0.7012]
Gini			-5.0526**	-5.5089**
			[2.2807]	[2.2336]
Observations	150	150	150	150
R-squared	0.009	0.072	0.172	0.207

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

Panel (a): All offenders

	1	2	3	4
	avg. annual murder rate per 100,000 00-07			
Ireland in 1790	0.0022*	0.0012		0.0005
	[0.0013]	[0.0012]		[0.0008]
Border South	3.0174***	1.9864	0.6218	-2.1623
	[1.0985]	[3.1659]	[1.3357]	[2.9361]
Deep South	4.1026***	0.8373	-0.0784	-3.2614***
	[1.0448]	[1.0914]	[1.0789]	[1.1736]
Border South*ireland		0.0035		0.0096
		[0.0129]		[0.0119]
<b>Deep South*ireland</b>		<b>0.0318***</b>		<b>0.0263***</b>
		[0.0075]		[0.0060]
Log of aggregate earnings			0.4019	-0.1793
			[0.3810]	[0.3591]
Prop of pop in urban areas, 2000			-2.8126	-2.3457
			[1.7014]	[1.4279]
Prop of pop below or at poverty line, 2000			11.0902	4.3808
			[13.4038]	[11.0705]
Prop of pop black, 2000			73.6420***	58.7173***
			[22.1372]	[17.9027]
fractionalization			-2.3336	1.573
			[3.7208]	[3.1045]
Gini			7.1727	2.9052
			[12.4978]	[11.5504]
Observations	150	150	150	150
R-squared	0.165	0.312	0.425	0.518



Panel (b): White offenders only

	1	2	3	4
	avg. annual murder rate per 100,000 00-07, white offender			
Ireland in 1790	-0.0001	-0.0002		-0.0001
	[0.0002]	[0.0002]		[0.0002]
Border South	0.2347	0.5065	0.2591	0.2587
	[0.2012]	[0.4764]	[0.2427]	[0.5268]
Deep South	0.0702	-0.3045	0.069	-0.2605
	[0.1936]	[0.2274]	[0.2549]	[0.3254]
Border South*ireland		-0.001		-0.0002
		[0.0014]		[0.0017]
<b>Deep South*ireland</b>		<b>0.0037**</b>		<b>0.0025*</b>
		[0.0015]		[0.0013]
Log of aggregate earnings			0.1407*	0.1022
			[0.0736]	[0.0800]
Prop of pop in urban areas, 2000			-0.6985**	-0.6701**
			[0.3228]	[0.3160]
Prop of pop below or at poverty line, 2000			9.8536***	8.9206***
			[2.8962]	[2.9671]
Prop of pop black, 2000			0.1554	-0.7219
			[3.8224]	[3.4718]
fractionalization			-0.5175	-0.1663
			[0.7463]	[0.7292]
Gini			-5.0526**	-5.4375**
			[2.2807]	[2.2956]
Observations	150	150	150	150
R-squared	0.009	0.06	0.172	0.19

Notes to Table 1 and 2: All regressions with a constant. Robust standard errors. \*\*\*: significant at 1%, \*\*: significant at 5%, \* significant at 10% level. Source: 1790 and 2000 census, UCR.

**Table 3: Falsification I: Homicides and Settlers in 1790 - other countries of origin**

	1	2	3	4	5	6
	avg. annual murder rate per 100,000 00-07			avg. annual murder rate per 100,000 00-07, white offender		
All other non Scotch, Irish, or Welsh	0.0003***	0.0003***	0.0002***	0.0001***	0.0001***	0.0001***
	[0.0001]	[0.0001]	[0.0001]	[0.0000]	[0.0000]	[0.0000]
Border South	3.2435***	3.5805***	0.7729	0.3702*	0.4650**	0.5344*
	[1.1061]	[1.1686]	[1.4222]	[0.2047]	[0.2245]	[0.2911]
Deep South	4.0901***	3.9211***	-0.124	0.266	0.2454	0.2841
	[0.9915]	[0.9542]	[1.1529]	[0.1762]	[0.1802]	[0.2899]
Border South*all_nonScotchIrish		-0.0004	0.0002		-0.0001	-0.0001
		[0.0004]	[0.0004]		[0.0001]	[0.0001]
<b>Deep South*all_nonScotchIrish</b>		<b>0.0007</b>	<b>0.0008</b>		<b>0.0001</b>	<b>-0.0001</b>
		[0.0021]	[0.0012]		[0.0003]	[0.0002]
Socio-econ and demo controls (earnings, urban, pov, black, fractio, gini)	no	no	yes	no	no	yes
Observations	150	150	150	150	150	150
R-squared	0.18	0.186	0.459	0.099	0.105	0.261

**Table 4: Falsification: Homicides and Settlers from Germany in 1790**

	1	2	3	4	5	6
	avg. annual murder rate per 100,000 00-07			avg. annual murder rate per 100,000 00-07, white offender		
German	0.0003***	0.0003***	0.0003***	0.0001***	0.0001***	0.0001***
	[0.0001]	[0.0001]	[0.0001]	[0.0000]	[0.0000]	[0.0000]
Border South	3.0289***	3.4005***	0.6681	0.3132	0.4055*	0.4383
	[1.1063]	[1.1827]	[1.4453]	[0.2017]	[0.2110]	[0.2752]
Deep South	3.8640***	3.9080***	-0.0923	0.212	0.2161	0.1863
	[0.9856]	[0.9554]	[1.1533]	[0.1695]	[0.1696]	[0.2695]
Border South*germany_1790		-0.0005	0.0001		-0.0001	-0.0001
		[0.0004]	[0.0004]		[0.0001]	[0.0001]
<b>Deep South*germany_1790</b>		<b>-0.0001</b>	<b>0.0002</b>		<b>0.000</b>	<b>-0.0001</b>
		[0.0017]	[0.0009]		[0.0002]	[0.0002]
Socio-econ and demo controls (earnings, urban, pov, black, fractio, gini)	no	no	yes	no	no	yes
Observations	150	150	150	150	150	150
R-squared	0.174	0.178	0.456	0.115	0.121	0.267

**Table 5: Falsification: Homicides and Settlers from France in 1790**

	1	2	3	4	5	6
	avg. annual murder rate per 100,000 00-07			avg. annual murder rate per 100,000 00-07, white offender		
French	0.0047*	0.0027	0.001	0.0003	0.0001	0.0004
	[0.0027]	[0.0024]	[0.0014]	[0.0004]	[0.0004]	[0.0003]
Border South	2.9777***	3.4873**	1.9917	0.2532	0.3342	0.5276
	[1.1030]	[1.6149]	[1.7476]	[0.2003]	[0.3199]	[0.3335]
Deep South	3.7955***	2.9083***	-1.1066	0.1138	0.0121	0.0018
	[0.9563]	[0.9302]	[1.0487]	[0.1726]	[0.1823]	[0.2752]
Border South*france_1790		-0.0073	-0.0211		-0.0011	-0.0037*
		[0.0105]	[0.0133]		[0.0027]	[0.0022]
<b>Deep South*france_1790</b>		<b>0.0140**</b>	<b>0.0122***</b>		<b>0.0016</b>	<b>0.001</b>
		[0.0059]	[0.0040]		[0.0013]	[0.0012]
Socio-econ and demo controls (earnings, urban, pov, black, fractio, gini)	no	no	yes	no	no	yes
			[0.3780]			[0.0774]
Observations	150	150	150	150	150	150
R-squared	0.18	0.226	0.479	0.013	0.028	0.195

**Table 6: Falsification: Homicides and Settlers from Holland in 1790**

	1	2	3	4	5	6
	avg. annual murder rate per 100,000 00-07			avg. annual murder rate per 100,000 00-07, white offender		
Dutch	0.0001	0.0001	0.000	0.000	0.000	0.000
	[0.0001]	[0.0001]	[0.0001]	[0.0000]	[0.0000]	[0.0000]
Border South	2.9252***	2.4385**	0.1126	0.2495	0.4089*	0.4631
	[1.1068]	[1.1376]	[1.3429]	[0.2043]	[0.2464]	[0.3131]
Deep South	3.6351***	2.3902**	-0.6908	0.1024	0.0303	0.0866
	[0.9919]	[0.9315]	[1.0486]	[0.1776]	[0.1894]	[0.2786]
Border South*holland_1790		0.0323	0.0402		-0.0107	-0.0106
		[0.0932]	[0.0996]		[0.0097]	[0.0132]
<b>Deep South*holland_1790</b>		<b>0.1832***</b>	<b>0.1192***</b>		<b>0.0106*</b>	<b>0.0052</b>
		[0.0472]	[0.0447]		[0.0060]	[0.0064]
Socio-econ and demo controls (earnings, urban, pov, black, fractio, gini)	no	no	yes	no	no	yes
Observations	150	150	150	150	150	150
R-squared	0.142	0.249	0.469	0.008	0.021	0.18

Notes to Table 3 to 6: All regressions with a constant. Robust standard errors. \*\*\*: significant at 1%, \*\*: significant at 5%, \*: significant at 10% level. Source: 1790 and 2000 census, UCR.

**Table 7: Falsification II: Rape and Scotch-Irish settlers**

Panel (a): Scotland and Ireland

	1	2	3	4	5	6
	Rape rate per 100,000			Rape rate per 100,000 - white offenders		
Scotch Irish in 1790	-0.0001	-0.0002	0.0004	-0.0001	-0.0001	0.0001
	[0.0005]	[0.0004]	[0.0004]	[0.0002]	[0.0002]	[0.0002]
Border South	5.3080**	17.2906***	8.6569	-0.0376	2.5694*	1.7896
	[2.5601]	[5.3301]	[5.2702]	[0.7358]	[1.4015]	[1.3409]
Deep South	1.335	-3.6516	-14.0482***	-1.7445***	-2.4713***	-3.4415***
	[2.0118]	[2.5079]	[2.8573]	[0.5862]	[0.7261]	[1.0086]
Border South*ScotchIrish		-0.0121***	-0.0075**		-0.0026**	-0.0017**
		[0.0036]	[0.0032]		[0.0010]	[0.0009]
<b>Deep South*ScotchIrish</b>		<b>0.0118***</b>	<b>0.0145***</b>		<b>0.0018**</b>	<b>0.0023**</b>
		[0.0028]	[0.0028]		[0.0008]	[0.0010]
Socio-econ and demo controls (earnings, urban, pov, black, fractio, gini)	no	no	yes	no	no	yes
Observations	150	150	150	150	150	150
R-squared	0.039	0.169	0.358	0.061	0.095	0.279

Panel (b): Ireland only

	1	2	3	4	5	6
	Rape rate per 100,000			Rape rate per 100,000 - white offenders		
Border South	5.2648**	16.2598***	7.3256	-0.1055	2.0034	0.505
	[2.5478]	[6.0167]	[5.8735]	[0.7211]	[1.3746]	[1.4608]
Deep South	1.1608	-1.8494	-10.9033***	-2.0007***	-2.4141***	-3.0743***
	[1.9433]	[2.4982]	[3.0736]	[0.5679]	[0.7123]	[1.0404]
Ireland in 1790	-0.001	-0.0013	-0.0005	-0.0014**	-0.0014**	-0.0005
	[0.0019]	[0.0018]	[0.0019]	[0.0007]	[0.0007]	[0.0007]
Border South*Ireland		-0.0412**	-0.0222		-0.0079**	-0.002
		[0.0160]	[0.0148]		[0.0040]	[0.0042]
<b>Deep South*Ireland</b>		<b>0.0311**</b>	<b>0.0343*</b>		<b>0.0044</b>	<b>0.0046</b>
		[0.0128]	[0.0179]		[0.0038]	[0.0053]
Socio-econ and demo controls (earnings, urban, pov, black, fractio, gini)	no	no	yes	no	no	yes
Observations	150	150	150	150	150	150
R-squared	0.041	0.115	0.287	0.081	0.098	0.257

Notes to Table 7: all regressions with a constant. Robust standard errors. \*\*\*: significant at 1%, \*\*: significant at 5%, \*: significant at 10% level. Source: 1790 and 2000 census, UCR.

**Table 8: The Herding Hypothesis: Murder, Scotch Irish settlers and animals (pigs and sheep)**

Panel (a): Scotland and Ireland

	1	2	3	4	5	6
	av. an. homicide rate per 100,000 00-07			av. an. homicide rate per 100,000 00-07; white offender		
ScotchIrish 1790 (per 100,000)	60.18	42.35	44.01	7.25	6.01	4.07
	[40.21]	[43.09]	[30.74]	[9.99]	[10.76]	[9.69]
Deep South	3.62***	4.1	1.72	0.12	1.08*	0.73
	[1.07]	[3.66]	[3.99]	[0.19]	[0.61]	[0.77]
Sheep and pigs per capita, 1840	-0.11	-0.01	0.04	0.04	0.07	0.02
	[0.16]	[0.16]	[0.17]	[0.05]	[0.06]	[0.06]
sheep and pigs*ScotchIrish	-13.88	-14.86	-9.1	-2.34	-2.99	-2.12
	[11.05]	[13.15]	[7.35]	[2.31]	[2.68]	[2.27]
ScotchIrish*DeepSouth		82.58	-86.13		-48.64	-39.21
		[226.19]	[311.93]		[39.06]	[48.28]
sheep and pigs*Deep South		-2.43*	-3.15**		-0.76***	-0.67***
		[1.39]	[1.43]		[0.22]	[0.24]
<b>sheep &amp; pigs*ScotchIrish*Deep South</b>		<b>558.13***</b>	<b>557.21***</b>		<b>112.48***</b>	<b>88.10***</b>
		[208.10]	[188.45]		[20.53]	[22.56]
Log of aggregate earnings	no	no	yes	no	no	yes
Observations	148	148	148	148	148	148
R-squared	0.137	0.296	0.556	0.007	0.126	0.235

Panel (b) Ireland only

	1	2	3	4	5	6
	avg. an. murder rate per 100,000 00-07			avg. an. murder rate per 100,000 00-07, white offender		
Deep South	3.62***	5.66*	2.46	0.06	1.35**	1.02
	[1.08]	[3.23]	[3.54]	[0.19]	[0.60]	[0.71]
Sheep and pigs per 1840 capita, 1840	-0.02	0.13	0.04	0.03	0.07	0.03
	[0.16]	[0.16]	[0.15]	[0.05]	[0.06]	[0.06]
ireland 1790 (per 100,000)	331.74**	308.48*	164.03	11.34	16.64	15.24
	[163.56]	[168.13]	[113.45]	[35.81]	[36.90]	[29.00]
sheep and pigs*ScotchIrish	-114.29	-152.84*	-80.06	-15.43	-24.04	-19.34
	[75.19]	[79.86]	[53.38]	[15.72]	[16.39]	[12.94]
sheep and pigs*Deep South		-2.58*	-2.84**		-0.79***	-0.69***
		[1.31]	[1.37]		[0.23]	[0.24]
Irish*Deep South		774.67	387.44		-229.88	-206.24
		[775.31]	[1,001.81]		[145.25]	[183.07]
<b>sheep &amp; pigs*Irish*Deep South</b>		<b>1,374.39**</b>	<b>1,180.80*</b>		<b>322.10***</b>	<b>243.99***</b>
		[606.99]	[609.29]		[88.18]	[84.71]
Log of aggregate earnings			-0.26			0.06
Observations	148	148	148	148	148	148
R-squared	0.149	0.318	0.547	0.009	0.11	0.225

**Table 9: Falsification: Is there a herding link with the non Scots Irish?**

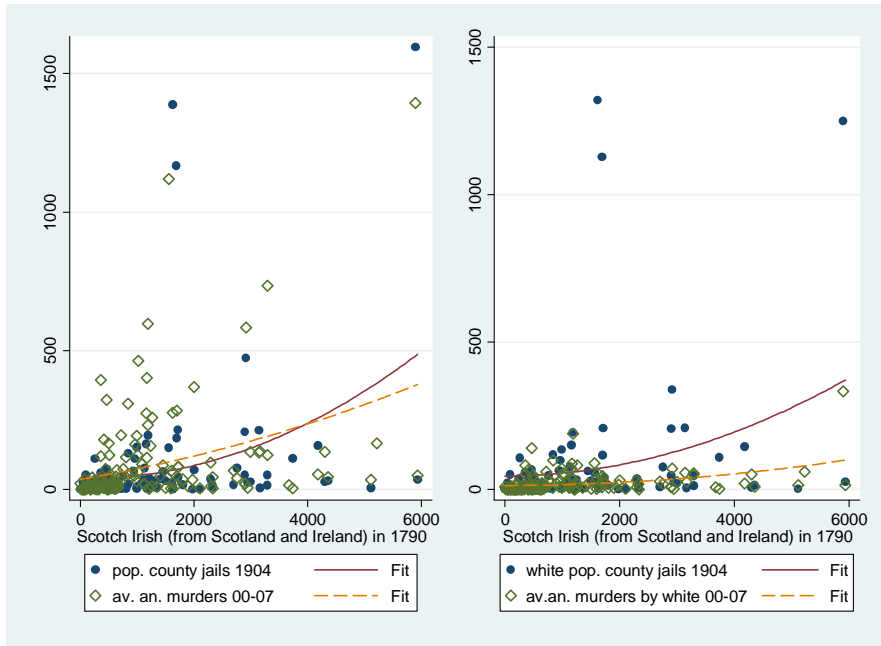
	1	2	3	4
	avg. annual murder rate per 100,000 00-07		avg. annual murder rate per 100,000 00-07, white offender	
Deep South	4.243 [3.256]	2.954 [3.825]	1.272** [0.595]	0.945 [0.685]
All other non Scotch, Irish, or Welsh	0.000*** [0.000]	0.000** [0.000]	0.000*** [0.000]	0.000** [0.000]
Sheep and pigs per 1840 capita, 1840	-0.027 [0.128]	-0.023 [0.130]	0.089* [0.046]	0.028 [0.048]
Sheep & pig per capita*all non Scots or Irish	-0.000* [0.000]	0.000 [0.000]	-0.000** [0.000]	0.000 [0.000]
sheep& pig per capita*deep south	-0.533 [1.460]	-1.88 [1.618]	-0.507** [0.253]	-0.480* [0.270]
all non Scots or Irish*deep south	0.013** [0.006]	0.005 [0.005]	0.001 [0.001]	0.000 [0.001]
<b>Sheep &amp; pig per capita*all non Scots or Irish*deep south</b>	<b>-0.005**</b> [0.003]	<b>-0.002</b> [0.002]	<b>0.000</b> [0.001]	<b>0.000</b> [0.000]
Socio-econ and demo controls (earnings, prop. urban, below pov. line, fractionalization, Gini)	no	yes	no	yes
Observations	148	148	148	148
R-squared	0.244	0.515	0.164	0.284

**Table 10: Falsification: Does the herding link explain other types of crime?**

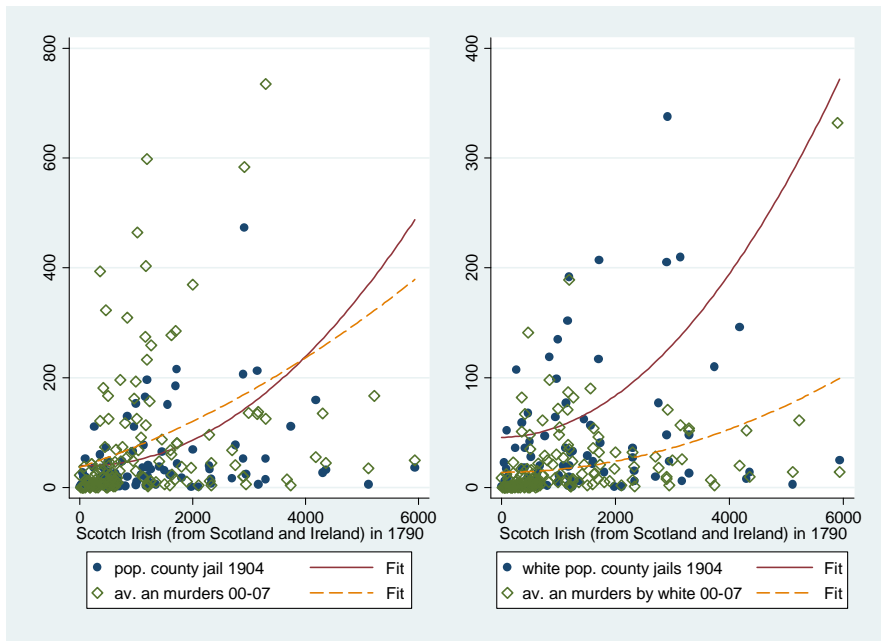
	1	2	3	4	5	6	7	8
	rape - all offenders	rape - white offender	rape - all offenders	rape - white offender	drunk - all offenders	drunk - white offender	drunk - all offenders	drunk - white offender
ScotchIrish per 100,000	42.14	32.66			1014.96	652.32		
	[58.239]	[25.727]			[899.59]	[514.73]		
sheep+pig per capita*Scots Irish	-12.42	-10.16			197.45	69.48		
	[14.16]	[6.172]			[195.61]	[101.61]		
Scots Irish*deep south	1,324.94***	129.77			-13,022.84*	-3561.65		
	[401.74]	[124.450]			[7,569.83]	[3,479.84]		
<b>sheep+pig per capita*Scots Irish*deep south</b>	<b>-242.05</b>	<b>-30.74</b>			<b>5067.04</b>	<b>990.37</b>		
	[299.22]	[89.637]			[7,345.67]	[3,399.34]		
ireland per 100,000			160.74	105.336			-1615.94	-151.66
			[219.67]	[87.66]			[2,671.46]	[1,757.11]
sheep+pig per capita*Ireland			-184.58	-98.78**			1085.32	55.92
			[119.45]	[49.83]			[1,602.03]	[1,032.89]
Ireland*deep south			5,235.89***	692.16			-45169.25	-10218.69
			[1,632.32]	[433.53]			[32,243.81]	[13,737.69]
<b>sheep+pig per capita*Ireland*deep south</b>			<b>-1954.59**</b>	<b>-322.05</b>			<b>9619.46</b>	<b>-3772.83</b>
			[882.13]	[216.82]			[23,008.90]	[9,017.94]
Socio-econ and demo controls (earnings, prop. urban, below pov. line, fractionalization, Gini)	yes	yes	yes	yes	yes	yes	yes	yes
Observations	148	148	148	148	148	148	148	148
R-squared	0.37	0.29	0.36	0.3	0.40	0.34	0.39	0.34

Notes to Table 8 to 10: all regression with a constant. Excluded category is Border South and non Southern States. Settlers in 1790 expressed per 100,000. Robust standard errors. \*\*\*: significant at 1%, \*\*: significant at 5%, \*: significant at 10% level. Source: 1790 and 2000 census, UCR.

**Figure 4: Prison population in 1904, contemporaneous homicides and Scotch Irish settlers.**  
**Panel (a): total population; panel (b): white offenders only**



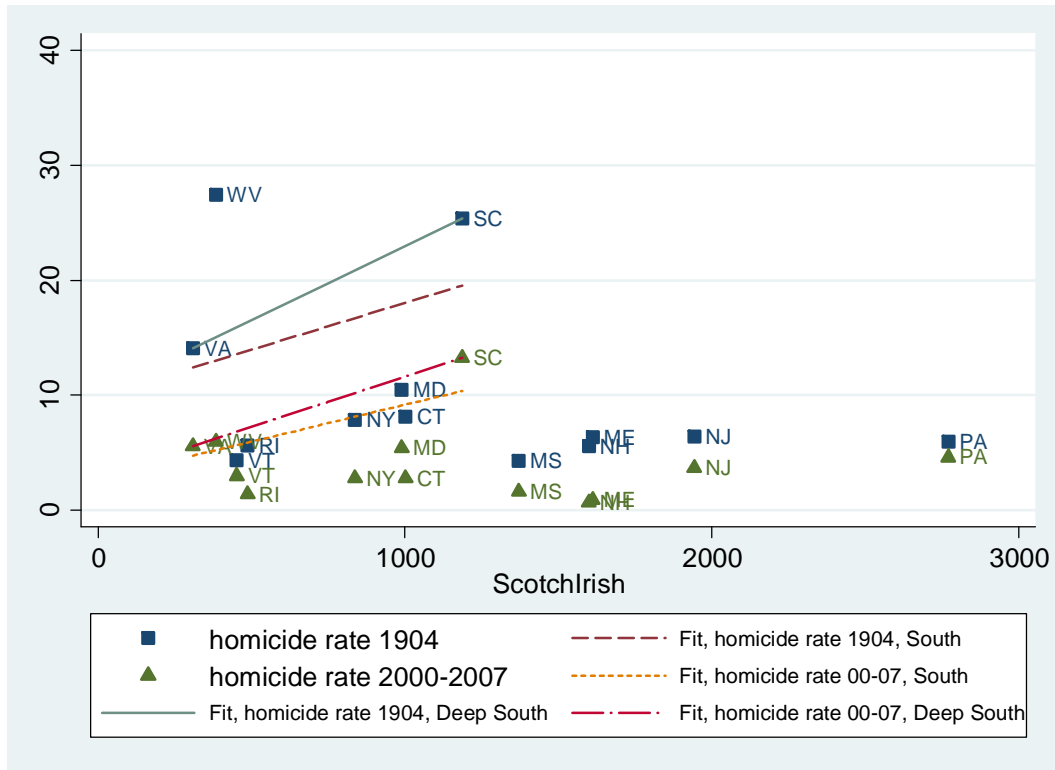
**Figure 5: Prison population in 1904, contemporaneous homicides and Scotch Irish settlers – removal of outliers- Panel (a): total population; panel (b): white offenders only**



Source: 1790 Census, 1904 Census of Prisoners, UCR



**Figure 6: Homicide Rates in 1904 and Today and Scotch Irish Settlers – state level**



Source: 1790 Census, 1904 Census of Prisoners, UCR

## 9. Appendix

**Table A1: Descriptive statistics – Murder rates in US States**

	Average murder rate per 100,000 2000-2007		Average murder rate per 100,000, white offenders 2000-2007	
	mean	s.d.	mean	s.d.
Alabama	8.74	5.49	2.38	2.24
Alaska	63.51	310.37	18.64	91.34
Arizona	9.18	5.63	4.59	3.06
Arkansas	6.84	5.85	2.05	2.06
California	9.10	5.46	4.54	2.73
Colorado	3.15	3.46	1.55	1.79
Connecticut	2.79	2.89	0.87	0.90
Delaware	5.05	0.45	1.28	0.40
Georgia	9.83	8.72	2.49	3.04
Hawaii	3.86	1.10	0.90	0.46
Idaho	3.08	4.34	1.58	2.21
Illinois	5.02	5.34	1.39	0.18
Indiana	2.63	3.13	0.97	1.06
Iowa	1.15	1.58	0.53	0.76
Kansas	2.29	3.96	1.09	2.13
Kentucky	3.11	6.84	0.14	0.40
Louisiana	10.64	7.13	1.99	1.65
Maine	0.84	0.79	0.44	0.43
Maryland	5.41	4.09	1.27	0.71
Massachusetts	1.64	1.37	0.53	0.38
Michigan	1.73	1.96	0.61	0.60
Minnesota	3.29	3.34	1.40	1.64
Mississippi	8.31	8.62	1.07	1.30
Missouri	5.67	5.46	2.78	3.05
Montana	2.07	3.37	0.94	1.81
Nebraska	1.80	3.37	0.84	1.78
Nevada	7.10	5.24	3.73	2.92
New Hampshire	0.88	0.54	0.40	0.23
New Jersey	4.75	3.43	1.14	0.70
New Mexico	6.27	7.05	2.56	3.09
New York	3.69	2.24	1.45	0.93
North Carolina	14.40	8.97	3.47	3.01
North Dakota	1.64	2.63	0.63	1.21
Ohio	2.32	2.23	0.89	0.96
Oklahoma	5.94	4.27	2.34	1.73

Oregon	3.70	3.33	1.83	1.73
Pennsylvania	3.56	2.54	1.40	1.01
Rhode Island	1.40	1.48	0.56	0.55
South Carolina	13.24	5.36	1.98	1.08
South Dakota	0.93	2.31	0.30	1.06
Tennessee	5.97	3.70	2.41	1.88
Texas	6.45	9.00	3.05	7.95
Utah	6.06	9.23	3.20	5.67
Vermont	2.28	1.74	1.06	0.82
Virginia	5.44	4.30	1.56	1.53
Washington	5.38	3.72	2.68	1.94
West Virginia	4.24	5.73	2.39	5.16
Wisconsin	4.37	4.09	1.83	2.08
Wyoming	3.35	2.48	1.59	1.39

**Source: UCR**

**Table A2: immigrants and total population in each State recorded in 1790 census**

	Ireland	Scotland	Scotch-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

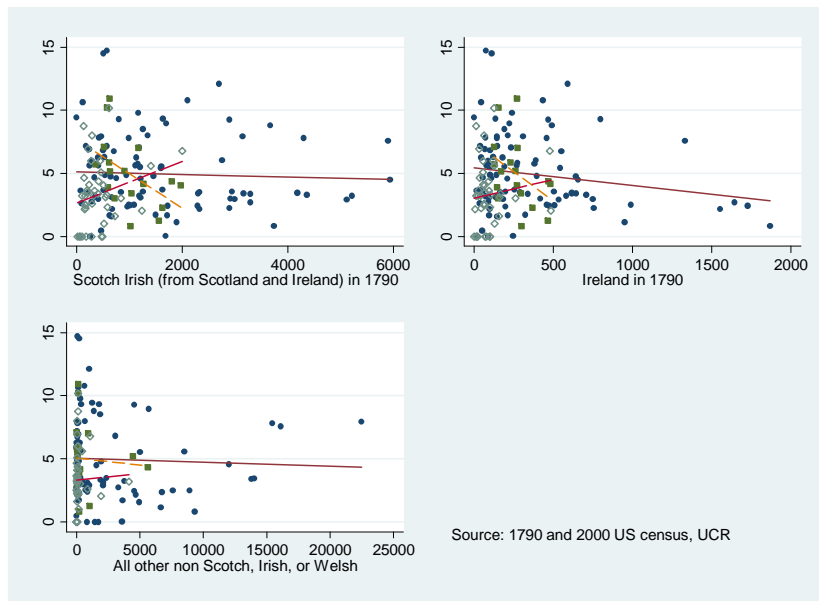
Notes to Table A2: (i) sum of two preceding columns. Source: 1790 US census. Discrepancy between the total column and the sum of remaining columns is accounted for by “other nationalities” and “Hebrew” recorded in the census.

**Table A3: Contemporaneous homicides statistics in states included in 1790 census**

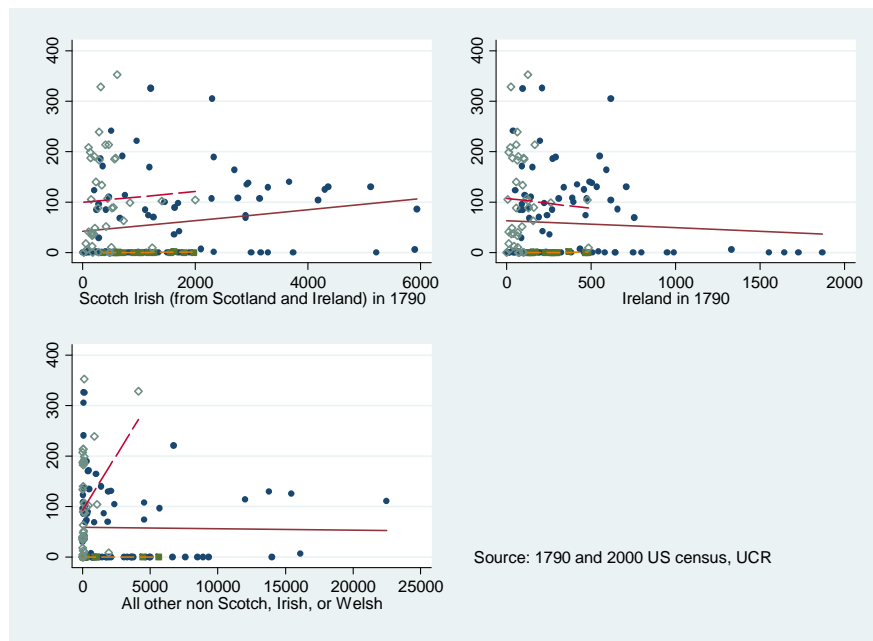
For districts with population in 1790							
State	Number of counties	Population in 2000	Murder total 00-07	Murder total 00-07 White	Murder total 00-07 Black	Equivalent annual murder rate per 100,000	
Connecticut	8	3405565	1259	380	359	4.621113	1.394776
Maine	3	485970	27	13	2	0.694487	0.334383
Maryland	17	4609017	2825	474	1719	7.661612	1.285524
Massachusetts	13	5440932	810	239	207	1.860894	0.549079
New Hampshire	5	926001	63	29	4	0.850431	0.391468
New Jersey	13	5068187	1589	312	613	3.919054	0.769506
New York	15	10466249	1142	329	312	1.363908	0.39293
Pennsylvania	21	8496607	3858	994	2068	5.675795	1.462348
Rhode Island	5	1048319	226	87	36	2.69479	1.037375
South Carolina	5	607103	703	90	306	14.47448	1.853063
Vermont	7	412799	102	44	7	3.08867	1.332368
Virginia	35	2840995	507	122	159	2.230733	0.536784
West Virginia	3	170721	78	35	9	5.711072	2.562661

Source: 1790 and 2000 US census and UCR

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



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



**Table A4: Descriptive Statistics of Variables used in Regression Analysis**

Panel (a): Whole sample

Variable		Obs	Mean	Std. Dev.	Min	Max
av. an. murder rate per 100,000	average annual murder rate per 100,000 2000-20007 (UCR)	150	4.29	4.36	0	23.86
av. an. murder rate per 100,000 - white offenders	average annual murder rate per 100,000 2000-20007 for which white offender was arrested (UCR)	150	1.05	0.89	0	4.72
ScotchIrish	Scottish or Irish settlers in 1790 (1790 census)	150	1165.86	1221.74	0	5934
Ireland	Irih settlers in 1790 (1790 Census)	150	273.10	328.82	0	1866
All non Scotch 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 per 100,000	Number of slaves 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.
ScotchIrish	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 Scotch 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 A5: Slavery.**

	1	2	3	4	5	6
	avg. annual murder rate per 100,000 00-07					
Border South	3.421***	3.577	0.718	3.188**	3.366	1.243
	[1.279]	[2.945]	[2.818]	[1.255]	[3.360]	[3.244]
Deep South	14.363***	9.718*	5.892	14.208***	7.757**	4.676
	[3.744]	[5.745]	[4.816]	[3.479]	[3.044]	[3.021]
Scotch-Irish in 1790	0.000	0.000	0.000			
	[0.000]	[0.000]	[0.000]			
Border South*ScotchIrish		0	0.001			
		[0.003]	[0.002]			
Deep South*ScotchIrish		0.005	0.004			
		[0.005]	[0.005]			
Ireland in 1790				0.004**	0.004*	0.003*
				[0.002]	[0.002]	[0.002]
Border South*ireland					0.001	0.002
					[0.013]	[0.013]
Deep South*ireland					0.027***	0.023***
					[0.008]	[0.008]
Slaves in 1790 per 100,000	-142.61	-288.875	-237.294	-156.328	-280.495**	-245.306**
	[126.022]	[198.941]	[184.625]	[118.741]	[112.797]	[113.005]
Socio eco and demographic controls	no	no	yes	no	no	yes
Observations	75	75	75	75	75	75
R-squared	0.453	0.466	0.548	0.48	0.525	0.581

Notes to Table A5: all regression with a constant. Excluded category is non Southern States. Robust standard errors. \*\*\*: significant at 1%, \*\*: significant at 5%, \*: significant at 10% level. Source: 1790 and 2000 census, UCR.

**Table A6: Aggravated assaults and Scotch-Irish Settlers–All and white offenders only**  
**Panel (a): Scotland and Ireland**

	avg. annual agg. assaults per 100,000 00-07				avg. annual agg. assaults per 100,000 00-07 - White offender			
	1	2	3	4	5	6	7	8
Scotch-Irish in 1790	0.0019	0.0008		0.0069	0.002	0.0012		0.004
	[0.0047]	[0.0043]		[0.0048]	[0.0026]	[0.0025]		[0.0027]
Border South	111.8283a	246.4517a	82.6470a	181.0476a	46.8727a	65.7181c	55.0994a	68.0161c
	[32.7686]	[70.7335]	[29.0344]	[62.6528]	[16.3252]	[38.9059]	[15.8690]	[36.3435]
Deep South	-0.208	-52.0687b	-72.9746a	-133.9081a	-28.3550a	-45.4594a	-26.7219a	-45.1083a
	[18.4680]	[20.4568]	[23.2231]	[26.5133]	[6.7045]	[7.1414]	[9.8314]	[11.3806]
Border South*ScotchIrish		-0.1353b		-0.0988c		-0.0193		-0.0125
		[0.0665]		[0.0587]		[0.0371]		[0.0335]
<b>Deep South*ScotchIrish</b>		<b>0.1229a</b>		<b>0.1489a</b>		<b>0.0392a</b>		<b>0.0456a</b>
		[0.0369]		[0.0345]		[0.0083]		[0.0089]
Log of aggregate earnings			-26.6861a	-34.8594a			-7.9767c	-11.5430a
			[9.7966]	[8.2337]			[4.6695]	[4.2571]
Prop. pop. in urban areas, 2000			40.4116	57.882			29.5245	36.2833c
			[48.6137]	[41.3100]			[21.7052]	[20.0046]
Prop. pop. below or at poverty line, 2000			141.5152	-102.355			206.6104b	133.926
			[218.7551]	[188.2797]			[92.5355]	[84.8499]
Prop. pop. black, 2000			539.7566	543.0391			-	-
			[353.1956]	[348.7777]			266.3270b	263.7064b
							[127.2969]	[126.2407]
Observations	150	150	150	150	150	150	150	150
R-squared	0.161	0.298	0.296	0.436	0.251	0.288	0.309	0.361

**Panel (a): Ireland only**

	avg. annual agg. assaults per 100,000 00-07				avg. annual agg. assaults per 100,000 00-07 - White offender			
	1	2	3	4	5	6	7	8
Border South	111.7912a	293.9585a	82.6470a	224.9611a	45.4911a	101.7243a	55.0994a	103.6610a
	[32.8774]	[69.8903]	[29.0344]	[62.3034]	[16.1677]	[38.7260]	[15.8690]	[38.6193]
Deep South	0.5981	-36.6740c	-72.9746a	-105.8238a	-31.6109a	-41.7962a	-26.7219a	-34.9594a
	[17.6656]	[18.6819]	[23.2231]	[26.4328]	[6.3156]	[7.0588]	[9.8314]	[11.5795]
Ireland in 1790	0.0112	0.0104		0.0233	-0.004	-0.0038		0.0068
	[0.0173]	[0.0163]		[0.0182]	[0.0074]	[0.0072]		[0.0080]
Border South*ireland		-0.6809a		-0.5179a		-0.2101c		-0.177
		[0.1944]		[0.1683]		[0.1115]		[0.1074]
<b>Deep South*ireland</b>		<b>0.3923a</b>		<b>0.4508a</b>		<b>0.1082b</b>		<b>0.1224a</b>
		[0.1213]		[0.1220]		[0.0472]		[0.0442]
Log of aggregate earnings			-26.6861a	-30.8005a			-7.9767c	-8.8771b
			[9.7966]	[8.6697]			[4.6695]	[4.3354]

Prop. pop. in urban areas, 2000	40.4116	54.8703					29.5245	33.424
	[48.6137]	[43.1155]					[21.7052]	[20.3378]
Prop. pop. below or at poverty line, 2000	141.5152	-19.6839					206.6104b	160.8410c
	[218.7551]	[201.1721]					[92.5355]	[89.3951]
Prop. pop. black, 2000	539.7566	443.2835					-	-
	[353.1956]	[363.3390]					266.3270b	294.4110b
							[127.2969]	[134.6601]
Obs.	150	150	150	150	150	150	150	150
R-squared	0.162	0.308	0.296	0.42	0.249	0.302	0.309	0.356

Notes: all regressions with constant.. Robust standard errors. Source: 1790 and 2000 US census and UCR.

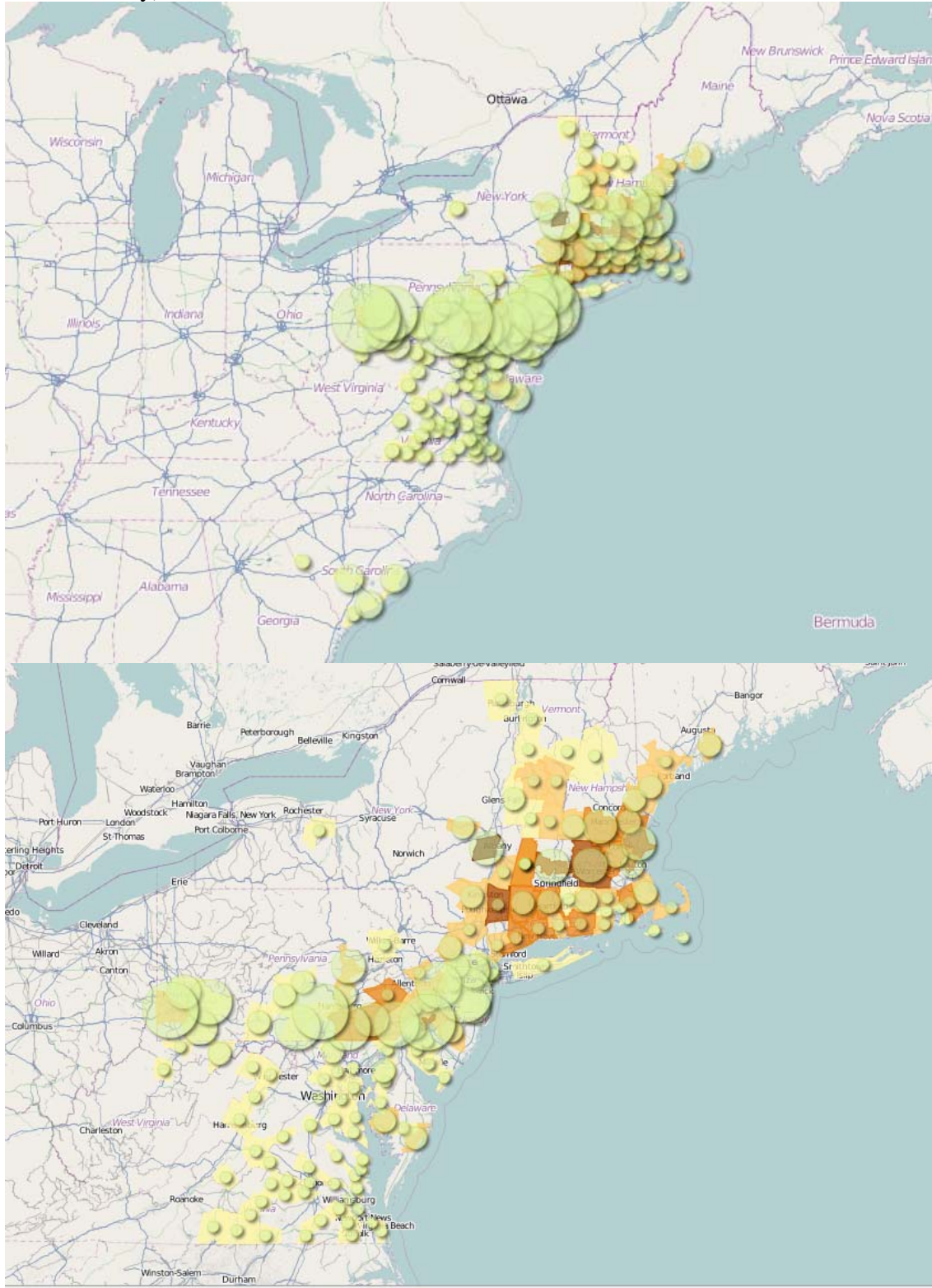
**Table A7: Drunkenness and Scotch-Irish and Irish Settlers in 1790 – All and white offenders only**

	1	2	3	4	5	6	7	8
	av. an. arrests for drunkenness rate per 100,000 - 00-07				av. an. arrests for drunkenness rate per 100,000 - 00-07-white offender			
Scotch-Irish in 1790	0.016b	0.020a			0.011b	0.014a		
	[0.007]	[0.007]			[0.005]	[0.005]		
Ireland in 1790			-0.021	0.001			-0.014	0.004
			[0.022]	[0.026]			[0.016]	[0.018]
Border South	-58.886a	-79.741b	-89.986a	-117.283a	-41.774a	-11.115	-62.914a	-33.763
	[16.292]	[37.080]	[15.457]	[37.319]	[11.496]	[23.230]	[11.033]	[23.117]
Deep South	158.101a	134.321a	130.495a	117.710b	57.439b	87.167a	44.623b	82.944b
	[41.017]	[47.745]	[39.648]	[48.337]	[22.291]	[32.112]	[22.573]	[33.167]
Border South*ScotchIrish1790	-0.016b	0.015			-0.011b	-0.01		
	[0.007]	[0.025]			[0.005]	[0.017]		
Deep South*ScotchIrish1790	-0.028	-0.013			0	0.014		
	[0.049]	[0.046]			[0.025]	[0.023]		
Border South*ireland1790			0.021	0.157c			0.014	0.026
			[0.022]	[0.082]			[0.016]	[0.052]
Deep South*ireland1790			-0.071	-0.068			-0.027	0
			[0.208]	[0.219]			[0.105]	[0.092]
Socio economic and demographic controls	no	yes	no	yes	no	yes	no	yes
Observations	150	150	150	150	150	150	150	150
R-squared	0.251	0.323	0.239	0.301	0.147	0.226	0.13	0.195

Source: 1790 and 2000 US census and UCR



**Map A1: European Settlements in 1790** (Scots-Irish: green circles, other countries of origin: color intensity)



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(lxxxvi) *This paper was presented at the Conference on "Urban and Regional Economics" organised by the Centre for Economic Policy Research (CEPR) and FEEM, held in Milan on 12-13 October 2009.*

(lxxxvii) *This paper was presented at the Conference on "Economics of Culture, Institutions and Crime" organised by SUS.DIV, FEEM, University of Padua and CEPR, held in Milan on January 20-22 2010.*