

THE UNIVERSITY OF ADELAIDE
FACULTY OF THE PROFESSIONS
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ESSAYS ON SLAVERY, INTERGENERATIONAL MOBILITY AND
THE PERSISTENCE OF DISTRUST AND INEQUALITY

a thesis
by

JACKY S. CHARLES

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for the degree of
Doctor of Philosophy

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Declaration

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Dedication

To My SON

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Chapter 1

Introduction

Although it has been more than 100 years since slavery has been abolished in the Americas, its impact is still being felt up until present-day. Some former slave colonies are currently underdeveloped, and some are among the world's poorest nations, such as Haiti. Thus, understanding the long term impacts of historical events such as slavery on American societies is an important area of research. Over decades several scholars have provided competing theories for differences in per capita income across countries. Some argue that geographical factors such as climate, natural resources, soil quality, topography and the disease environment can explain cross-country income differences. Sachs and Warner (1995, 1997), for example, suggest that tropical and landlocked location affect productivity and in turn growth and development. Others claim that the reasons why some countries are rich and others poor is because of differences in policies that foster economic growth such as openness to trade.

In recent times the empirical literature has gradually shifted from examining proximate determinants of development to examining more deep-rooted historic factors. This line of literature has focused specifically on understanding the mechanisms through which historical factors affect development outcomes today. Acemoglu, Johnson and Robinson (2001) argue that the environment's main impact on economic development is transmitted through its effect on long-lasting institutions. In colonies where the mortality was high, colonizers set up extractive institutions whereas where mortality was low settler institutions were established. This view thus argues for a more indirect role of the environment on economic growth and development, and suggest that geographical factors affect development through historical channels. Other scholars, in contrast, argue that the history of ancestral populations in a given country is of more importance than that of the historical legacy of the country's geographic location in determining current levels of development (Putterman and Weil, 2010; Easterly and Levine, 2012). Thus, the ancestral composition of a country, and those populations long acquaintance with certain norms of behaviour or cultural traits help shape its development outcomes.

The Americas presents a unique case study in which the historical experiences of its ancestral populations and the link to development can be examined, with migrants originating from different parts of the world both voluntarily and involuntarily from Europe, Africa and Asia. In particular, the historical event of slavery, and later events post abolition particularly in the United States (U.S.) such as the infringement of civil rights (example, prohibition of interracial marriages), resulted in heterogeneous effects across ancestral generations, regions and countries. In this dissertation, I contribute to the literature in the following ways; (1) I examine slavery's impact on trust as a plausible transmission mechanism that can explain comparative economic development across American countries, and (2) I examine interracial marriages as a mechanism affecting intergenerational and social mobility, and explore its association to the persistence of inequality in the United States. To conduct my study, I collect historical data on slave populations as well as other essential data on the historical demographic and social characteristics of American populations. Since a large part of my study links historical factors to present-day outcomes, I also collect contemporary data on several social and demographic indicators.

My study of the effects of slavery and events post abolition takes place in four steps. In *Chapter Two*, I provide a brief history of slavery in the Americas, highlighting variations in ancestral origins, geographical differences in mortality rates, and gender ratios. I also provide a brief account of events post abolition focusing on the United States where freed men and women encountered a lack of civil rights, mainly in the South. Prior to examining the 'trust link' to economic development, in *Chapter Three* in a cross-country comparative study, I empirically examine the link between slavery and economic development. The main aim of this chapter is to examine variations in growth and development across countries where slavery was prevalent and those where slavery was less prevalent. The results in the chapter indicate that there is a strong negative correlation between historical slavery and contemporary economic development. Generally, the cross-country results show that a one standard deviation decrease in slavery intensity results more than a one standard deviation increase in income, and if countries such as Jamaica and Haiti where slavery was prevalent relied less on slave labour their income per capita would be in excess of 50% over what it is today. I further extend the analysis in chapter 3 by examining within country variation in the case of the U.S., by

investigating the impact of slavery on income across U.S. states and counties. The adverse impact of slavery on development also holds in the U.S. analysis. I find that if states such as Mississippi, Louisiana and South Carolina had virtually no slaves in their populations during 1790-1860, like Free states in the north such as Massachusetts and Connecticut, their level of income would be more than 10% over what it is today.

Chapter Four extends the analysis by examining the impact of the negative shock of slavery on norms of behaviour or more broadly culture. Specifically, I examine slavery's role in generating cultural traits of 'distrust' which persist up until present-day, and propose this as a transmission mechanism in which this historical event continues to negatively impact economic development today. First, in a cross-country empirical analysis, using historical data on slavery and modern-day trust, I find that there is strong persistence of inherited norms of distrust among the lineages whose ancestors were more intensely enslaved. In general, blacks across American countries have a lower propensity to trust others, than individuals from other ancestral groups. A one standard deviation increase in slavery intensity results in a 10%-16% decrease in the average level of trust. Also, I find that the average level of trust in countries with a higher proportion of blacks or persons of African descent is lower compared to countries where the share of blacks in the population is lower. Since this group has a lower propensity to trust others, this generally brings down the average trust in a given country. For example, in a sample of fifteen American countries, Trinidad and Tobago has the lowest level of trust today, and had the highest slavery intensity among the sample of countries, where on average 73% of the population were enslaved during 1750-1830; today blacks make up in excess of 30% of Trinidad and Tobago's population, and in excess of 15% of the population are of mixed African and Asian ancestry.

Chapter four also extends the analysis by looking for evidence of the slavery-trust link within the United States. There, I also find evidence of a strong negative correlation between the intensity of the enslaved population from an individual's ancestral group and the individual's degree of trust today. Black Americans today have lower levels of trust than individuals from other ancestral groups such as Europeans and Asians. For example, in Mississippi while on average 33% of individuals believe that they can trust others in general, only 1% of blacks think that they can trust others. Therefore, a black American is more likely to

respond that they do not trust others compared to a white or Asian American. I also find that the average level of trust in southern states is lower than that of the average trust levels in northern states. In Mississippi, on average, 18% of persons believe that they can trust others, compared to 62% of the population in North Dakota who believe that they can trust others in general. Like the cross-country studies, I found that locations in the United States with a higher proportion of blacks, tend to have lower average levels of trust. I also found the level of trust of the white population goes down in communities where there are larger proportions of blacks in the population, which generally seems to be a reaction to a low trust environment.

Chapter Five examines the consequences of post-abolition events in the United States. While slavery was abolished in the British and French Caribbean in 1834, slavery persisted in the United States until the end of the American Civil War, and the collapse of the Confederacy, with the 13th Amendment to the United States Constitution abolishing slavery in 1865. The 14th Amendment in 1868 then granted citizenship rights and ‘equal protection of the laws’ to ex-slaves. However, despite the 14th Amendment ex-slaves civil rights were limited particularly in southern states. Prior to 1865, anti-miscegenation laws which forbade whites from marrying blacks had existed in 35 states, nearly half of these states were located in the south. In the immediate post-bellum period five northern states repealed anti-miscegenation laws. The 14th Amendment however, did not result in a high rate of repeal of anti-miscegenation laws among states where they existed. By the 1950s, gradually more northern and western states began to repeal laws such as North and South Dakota, Montana, Idaho, Oregon, California and Colorado. Overtime anti-miscegenation laws also applied to other groups such as Asians, and laws remained enacted in several southern states such as Alabama, Florida, Georgia, Mississippi and Virginia until 1967.

Aside prohibition of intermarriage, blacks were also separated from whites in other parts of public life such as in transportation, public accommodations and in schools. The ‘Jim Crow’ laws of the 1890’s in southern states, in particular, had the effect of limiting such things as black occupations and residential patterns. The empirical literature has shown that racial segregation policies such as school segregation policies generally had the effect of perpetuating inequality (Johnson 2011). Chapter 5 contributes to the literature by examining the extent and mechanisms by which the repeal of anti-miscegenation laws, and associated

changes in interracial marriage rates influence intergenerational and social mobility, and inequality in the United States. I find that intermarried minorities have significantly higher earnings than minorities in endogamous marriages. I also find the generational persistence of incomes or social status to be stronger for sons whose fathers were in endogamous marriages, particularly if both parents are black. The final part of chapter 5 examines the relationship between social mobility and inequality where I find evidence that U.S. states that are characterized with higher income inequality, also tend to have lower mobility across generations, and there appears to be a strong negative relationship between intermarriage and inequality.

Chapter 2

A Brief History of Slavery in the Americas

2.1 Slavery, Abolition and Freedom

Slavery dates back to prehistoric times and was known to most cultures and regions of the world at some point in time in the past. However, although many pre 15th century societies had slaves, in many cases slaves were only a negligible part of the labour force. Most of these societies particularly in the Old World; example in Europe, relied on settled village agriculturalists and artisans to provide labour. With the discovery of the New World after the arrival of Christopher Columbus came a new form of slavery; particularly that of gang labour on plantations. Philip Curtin (1977) notes that the institution of slavery in the new world was far different from that practiced in Europe, the Muslim world or in Sub-Saharan Africa. The institution of slavery that evolved in the Americas through time was adapted to cater to a changing economic environment which led to European expansion and played a major role in the development of capitalism.

2.1.1 *Pre-1800*

Before examining the conditions of slavery, its eventual demise, and the special case of the American South, it is essential to first understand why Europeans turned to Africans as a source of labour supply. With increasing demand by consumers (initially in Europe) for commodities such as sugar and tobacco, and precious metals such as gold and silver, came increasing demand for labour to produce those goods. Sugar cultivation required large investments of capital, a stable supply of labour, and large-scale plots of land of at least (33 to 41 acres) to be profitable. Initially the Spanish and Portuguese attempted to enslave Native Americans, however the use of native labour on a large scale was unreliable. There was a significant decline in the native population due to high mortality from diseases such as malaria, measles and small pox upon European contact, and due to warfare which often came along with the conquest. For example, in the 1560s a major smallpox epidemic is estimated to have killed about 30,000 natives on

plantations and in villages in Brazil (Klein and Vinson, 2007). In addition, because of political, religious and cultural reasons, the governments of Spain and Portugal decided against permanently enslaving natives, although forced Native American labour continued illegally in some cases (Eltis and Engerman, 2011).

An alternative supply of labour sought after by colonizers was that of convicts and prisoners, but their supply was too low in number to cater to labour needs of expanding plantations. Another potential source of labour supply was that of voluntary migrants from Europe and elsewhere, but European migrants were generally not attracted to the high-mortality tropics during this period, and therefore never travelled in large numbers to those regions. With the declining Native American population, the low supply of indentured servants, convicts and prisoners, and the lack of free European migrants, slavery or some form of coerced labour became the only viable option. Europeans therefore turned to African slaves who were the cheapest available slaves during the 16th century due to the opening of the West African coast by the Portuguese. Also, given the stable export of West African gold and ivories and the development of the Asiatic trading empire by the Portuguese, the commercial dealings between West Africa and Europe became common and inexpensive (Klein and Vinson, 2007). African slave labour then became the most stable and reliable source of labour as sugar cultivation expanded during the second half of the sixteenth century. Eventually all European colonial powers turned to imported slaves, predominantly Africans, as they advanced plantation agriculture. For several centuries slaves were the main reason for interaction between Europeans and Africans.

The Spanish and Portuguese were the first Europeans to have the wealth and capital necessary to import slaves because of their rapid conquest of several colonies such as Mexico, Peru, Guatemala and Brazil. In the earliest years of the Atlantic Slave Trade, slaves were shipped primarily to Mexico and Peru, and the first sugar plantations in the Americas began on Española (that is, modern day Santa Fe in New Mexico) in 1503. The importance of slaves in Mexico in the 16th and 17th centuries is evidenced by the growth of the slave population during this period. In 1570 there were an estimated 20,000 slaves in Mexico, and in the first decades of the 17th century the number of slaves grew to 45,000 (Klein and Vinson, 2007). The great expansion of the Mexican sugar industry took place in the second half of the sixteenth century and by 1600, there were more than forty licensed mills in

operation. In Mexico, slave owners imported an estimated 86,000 Africans during 1520-1620 as the native population fell from 10-12 million to less than 1 million. Then during the 1700s as the native population began to recover to about 3 million by 1800, slave imports fell to fewer than 20,000 (Andrews, 2004).

During this period, Peru was also of vital importance to the Portuguese and Spanish, as Potosí silver production developed. To meet increasing demand for silver, African slaves were imported in increasing numbers to work in the silver-mining industry with a mine census in 1570 recording 3,700 African slaves. The increasing availability of free Native American labour in Peru, because of migration of natives to new settlements in the colony resulted in the reduced need for African slaves in the mines, and by the 1590s African slaves working in the mines reduced to about one-fifth of the mining industry's labour force. Mining provided some of the toughest environments and the highest death rates of all occupations. Natives provided most of the labour in the mines in Mexico as repartimiento workers. Slaves also worked in mining in Colombia during the 17th century, and the need for mining labour generated the highest demand for slaves in the early settlements of Chile. African slaves were not only utilized in the mines in Peru, they were also used on plantations, however, in contrast to slave plantations in the West Indies and Brazil, slave plantations in Peru comprised more mixed-crop producers. There were an estimated 20,000 slaves in major wine and sugar and producing regions in Peru such as Pisco. In the city of Lima, the growth rate of the African population was faster than that of whites and natives, and by the last decade of the 16th century and well into the 17th century half of Lima's population was black. By the 1650s, slave importation into Mexico and Peru reduced significantly, with the two countries receiving an estimated 250,000 to 300,000 slaves up until that time (Klein and Vision, 2007).

In regions that did not partake largely in the export trade to Europe, and that was characterized with sufficient native populations to meet local labour demands (example; Chile, Central America and Paraguay) there was little demand for African slaves (Andrews, 2004). The most vital centres of slavery were therefore those colonies that were both export oriented and had insufficient native labour to meet local demand; for example, Brazil, Venezuela, Cuba, and Puerto Rico. Colonies such as Mexico, Peru, Colombia, Ecuador and Argentina although export oriented had sufficient native labour (by late 1700s, Euro-Indian mestizos), and

tended to have slave populations concentrated in subregions associated with particular forms of labour such as sugar cultivation and gold mining.

Brazil became an important area of interest for the Portuguese, as their interest diverted from Mexico and Peru. At first the Portuguese tried enslaving the natives, and from 1540 to 1570, native slavers were the primary producers of sugar in Brazil. However, Spanish policy made it difficult to enslave natives, and by 1495 only natives captured in war could be enslaved, and Spaniards were allowed to purchase captives held as slaves by other native groups. Thus, slave owners primarily obtained native slaves through purchase from native tribes and through direct raids. In 1570 there was an estimated 20,000 to 30,000 native slaves in Brazil (Klein and Vinson, 2007; Eltis and Engerman, 2011). There was also the *repartimiento* system under which slave owners who showed a need for labour would be provided with native workers on a rotational basis from nearby communities. The *repartimiento* system also existed in Peru, where the Spaniards were expected to provide native workers decent working conditions, and pay them a fixed wage. By the seventeenth century, labour in colonial Spanish America generally comprised the wage labour of free native workers, mestizos, mulattoes; both slave and free, and black slaves (Bergad, 2006; Eltis and Engerman, 2011).

The increase in the number of plantations in Spanish America meant there was a need for more slaves, and hence the importation of African slaves grew at a rapid rate to meet labour demand. About 16,000 to 17,000 Africans were imported per year into Brazil between 1750 and 1780, 18,000 per year in the 1780s, 23,000 per year in the 1790s, and 24,000 per year in the first decade of the 19th century. Up to 1760, Cuba received yearly imports of less than 1000 slaves per year, and during 1764 -1790 that amount more than doubled, to 2,000 slaves per year, and between 1790 and 1810 to more than 7000 per year. Venezuela and Puerto Rico, also experienced increasing slave imports during the late 18th and early 19th centuries, although slave imports to those two countries were lower than that of Brazil and Cuba. For example, during 1774-1807, 1000 slaves disembarked in Venezuela per year, and a total of about 15,000 slaves disembarked in Puerto Rico.¹

Countless slaves underwent lives of harsh labour in the mines and on plantations after having been deprived of human rights. There were two systems of

¹ For more information see; Andrews, 2004; Klein, 1978, 1999; Perez, 2014; Curtin, 1969.

slavery in Spanish America; one for domestics and artisans of all kinds, and another for gang slaves on the plantations and in the mines, with gang labour becoming the prevalent system. Slaves also worked in other areas, for example in transport where they worked as muleteers and sailors. Slaves also played important roles in the cities in Spanish colonies, where they worked in metalworking, construction, clothing, and worked in semi-skilled jobs such as fishermen and as porters. Several slaves also worked in providing food for the marketplaces and furniture for colonial cities. Skilled slaves were of higher value, were better treated and were more likely to get manumission, thus it was an advantage for a slave to know or learn some skill.

By 1650, slavery was well engrained in the New World, and became largely gang slavery with essential parts of Spanish America becoming slave societies. From Spanish and Portuguese America, slavery later spread to the colonies of other European powers in the Americas, including the British colonies in North America and the Caribbean. Starting in the late 1600s, the British colonies of Barbados and Jamaica, and the French colony of Saint Domingue (modern day Haiti) replaced Brazil as the leading sugar producers in the Americas. Between 1625 and 1807, 2.7 million Africans disembarked in the British and French Caribbean. Jamaica was the largest recipient of slaves in the British Caribbean with a total of more than 1 million Africans being disembarked on that island during the period of the Trans-Atlantic slave trade. About half a million Africans arrived on Barbados with this island probably receiving more Africans per square mile than any other country in the Americas. The British Windward islands and Trinidad received over 350,000 slaves during the period of the slave trade, and both islands of Jamaica and Trinidad were major re-exporters of slaves, although re-exportation was on a smaller scale in Trinidad. In 1807, the Caribbean had a slave population of 1,150,000 slaves, of which one-third of the slave population was located in the British colonies.²

Like Spanish America the main reason for the shift from indentured servants to slaves in the British and French Caribbean was one of a problem of labour shortage to cultivate highly lucrative globally traded cash crops. The British and French had the example of the Spanish and Portuguese who preceded them, in

² For more discussion and statistics on slave populations in the British Caribbean see, Eltis and Engerman, 2011; Higman, 1995; Ward 1988; and Knight, 1997.

establishing plantation agriculture using slave labour. St Domingue was the largest purchaser of slaves in the French Caribbean importing a total of about 700,000 slaves up to the great slave rebellion of 1791, when the colony's slave population was over 450,000. Beginning 1776 until the end of the century Caribbean sugar exports were occasionally interrupted by warfare between France and England, creating opportunities for the Portuguese and Spanish colonies to recover and expand production³.

In attempting to establish colonies in North America, Europeans came across an abundance of land and other natural resources. However, one of the problems they faced was that of prolonged shortage of labour to exploit these resources. There was a short supply of workers willing to emigrate to new settlements in North America. In addition, Europeans found it difficult to persuade or force Native Americans in North American colonies to work for them. Thus, the colonists turned to novel solutions to relieve their labour problems. England was viewed as being overpopulated in the early seventeenth century, and thus British colonists in North American colonies considered British labour as a plausible solution to labour shortage. British immigrants who were too poor to pay their passage to the New World were recruited to the colonies under indenture. These indentured labourers worked for several years without pay to pay off the cost of their transportation to the colonies. Also, involuntarily shipped to the colonies were convicts, prisoners of war, vagrants and orphans. These remedies to the labour shortage proved futile. Upon surviving the period of their indenture, former servants obtained land of their own or would work for others for exorbitant wages. In addition, the lives of many immigrants and settlers were cut short due to the hostile disease environment in the more southerly colonies.

Unable to resolve labour problems with the use of free migrants and natives, British colonizers then turned to Africa as a solution to their labour problems. The supply of slaves to North American colonies proved difficult as Europeans concentrated their efforts on supplying slaves to the more profitable West Indian markets. Also as the sugar revolution spread to other colonies in the West Indies, the attention of the Atlantic slave traders moved further away from

³ Data sources on slave populations in Latin American colonies can be found in; Andrews, 2004; Bergad, 2006; Eltis and Engerman, 2011; Klein and Vinson, 2007; Knight, 1997.

North American colonies. North American colonies became the last option when slave markets in the West Indies were saturated. Colonies in North America also became the locations to dump slaves from the Caribbean who were too old or young, or those that were too sick whom West Indian buyers were unwilling to purchase. Many of the slaves transported from the Caribbean to U.S colonies were new Africans trans-shipped from overstocked West Indian ports. Thus, creolised West African slaves rarely, if ever, made up a major proportion of the enslaved peoples in U.S. colonies.

Native Americans were never enslaved in North American (meaning here U.S.) colonies to the extent that they were enslaved by Spanish and Portuguese colonizers in Mexico and other South American colonies. In addition, the native population was considerably reduced because of European diseases, and surviving natives were unwilling to work for European settlers and settlers were generally unsuccessful in forcing natives to work. Instead natives were principally hired in such jobs as soldiers, slave-raiders and hunters. Natives, however, captured in wars such as King Phillip's War of the 1670s were sold as slaves to the West Indies. From 1670 to 1715 about fifty thousand natives from North and South Carolina and Florida were sold as slaves to Northern U.S. colonies and to the West Indies. Northern U.S. colonies however prohibited the importation of Native American slaves from the South as native slaves were viewed as unprofitable investments. By 1715 trade in natives in the south captured through warfare came to an end, and colonists treated native captives primarily as export goods, from which they used the profits to purchase African slaves in the West Indies who were more easily exploitable.

A major shift began in North American colonies at the end of the 17th century when Caribbean colonies began to experience declining sugar prices. Declining sugar prices meant that the demand for slaves in the Caribbean took a downward turn, and thus there was an increase in the supply of slaves available for the U.S. market. There was also growing demand in Europe for commodities such as rice and tobacco. The number of slaves imported into Virginia tripled in the first few years of the 18th century, and North and South Carolina significantly increased their importation of slaves becoming the leading market for slaves until the abolition of the Atlantic Slave Trade in 1808. Slavery increasingly became a southern institution, as successful abolitionist movements in northern colonies led

to the abolition of slavery in northern colonies such as Vermont in 1777, and Pennsylvania and Massachusetts in 1780. Gradual abolition laws were also passed in Connecticut and Rhode Island in 1784. The north and south of the U.S. became divided into slave south and free north. In northern colonies, slaves never made up a significant share of the population, amounting to no more than a few thousand slaves in total, and many of these slaves worked in domestic services.

Slavery as in South America, and in the British and French Caribbean, was also one of extreme exploitation in North America. Slaves were denied the legal protections available to European servants, and were forced to work longer and harder and were subjected to more severe punishments if they resisted. Costs of feeding and clothing slaves could be reduced to the smallest amount needed to keep them alive and fit to work on plantations. In the U.S., the nature of slave labour differed from one region to another; slaves in northern colonies performed a variety of tasks working beside their owners or other whites or they worked individually or sometimes with one or two other slaves and required little supervision. Tasks were separated along the same gender lines adopted by whites, with men given heavier tasks on the farm, and women allotted to domestic chores such as dairy farming and gardening. It was different in southern colonies, however, where slaves on large plantations were subjected to gang labour under the direct and close supervision of white overseers, and children were put to work alongside their parents by the age of nine or ten.

2.1.2 Abolition and the Demise of Slavery

The Haitian revolution was one indicator of growing disenchantment about the institution of slavery which commenced earlier in the 18th century. Slaves increasingly expressed their discontent with their current situation, which resulted in a sharp rise in rebellions and slave flight to runaway communities. The first successful slave revolt was led by slaves in Saint-Domingue which by 1804 abolished slavery, and created the independent republic of Haiti. The beginning of the 18th century also saw the development of a popular abolitionist movement challenging the legitimacy of slavery. This movement was lead primarily by influential philosophers and religious leaders who questioned the legitimacy and morality of the institution. Philosophers also began to challenge the economic

justification of slavery. For example in 1776, in *The Wealth of Nations*, Adam Smith acknowledged that the institution was archaic and could not compete with free labour. A growing consensus among European elites also emerged where they viewed slavery as not being compatible with modern enlightened society. In 1787 the Society for the Abolition of the Slave Trade was formed in England, and by 1788 there was a limit on the number of slaves that could be imported to British colonies. By 1807, the society had achieved its mandate as British Parliament passed laws abolishing the slave trade (see table 2.1 for a timeline on the abolition of the Atlantic Slave Trade and slavery).

The next goal of the abolitionist was to gather forces to see the complete eradication of the institution of slavery within America. The tasks of seeking emancipation for slaves was more costly and problematic than the issue of the abolition of the slave trade. The progression of abolitionism within different slave societies advanced at different rates. For example, in Britain and France the abolitionist movements gained strength particularly in the 1820s and 1830s, and after several petitions to parliaments, along with major slave uprisings in the West Indies, British Guyana, and a slave rebellion in Jamaica during 1831-1832, the British government finally abolished slavery in 1834. Slave owners fought the abolitionists, and in most instances the abolition of slavery was achieved through either political or military intervention. In the French and British West Indies, the United States, Brazil and other Spanish colonies, the price of slaves remained high until the last years before abolition. Slave owners made huge demands upon freeing slaves which included cash compensation and a six-year apprenticeship beginning in 1834 for all slaves. The apprenticeship period ended in 1838 because of strikes and unrest by the ex-slaves. Like the British experience, French and Danish slave owners forced their governments to provide financial settlements upon the abolition of slavery in 1848. Attempts by the French and Danish to introduce a period of apprenticeship was met with firm resistance by ex-slaves, and thus both French and Danish colonialists abandoned any attempt to introduce the apprenticeship system.

Slave emancipations in British, French and Danish colonies led to a decline of the plantation system with labour shifting to work on small units, which were sometimes owned or rented by ex-slaves, and in some cases owned by whites who used ex-slaves as hired workers. In most cases, per capita output of the slave society fell with emancipation. Colonial societies introduced legislation aimed at

controlling ex-slave labour. These policies typically aimed at limiting the geographic and labour mobility of ex-slaves. Such policies were more effective in colonies where limited land was available, like Barbados. However, in colonies such as Trinidad and British Guiana such policies were less effective, and in these colonies indentured servitude was introduced. In Haiti, early attempts to reintroduce the plantation regime producing sugar was unsuccessful as the freed population did not want to work on the plantations. In addition, there was significant Haitian migration to Cuba and the Dominican Republic where Haitians became part of the labour force working on plantations producing sugar (Rotberg, 1971; Nicholls, 1979; Dubois, 2004). Aside Haiti, freed slaves in several other colonies were unwilling to work on plantations, and thus plantation owners had to seek alternative labour sources. A substantial number of indentured workers mainly from India, and to a lesser extent Japan and China voluntarily migrated to British colonies to provide labour on plantations. For example, Guyana received 238,909 indentured labourers from India, and Trinidad and Tobago received 143,939 indentured labourers (Tinker, 1974). The 'Indian Indentured System' in British colonies in the Caribbean commenced around 1834 and lasted until 1917.

In most of Spanish America independence wars generally resulted in the gradual emancipation of slaves. Free Womb laws were enacted either at the commencement of wars as in the case of Chile in 1811 and Argentina in 1813, or at the end of these wars as in the case of Colombia, Ecuador, Peru, and Venezuela in 1821, and Uruguay in 1825. The Free Womb laws were the outcome of independence wars fought by slaves and slave owners, and was generally the result of a compromise between the interests of the two groups. These laws liberated the children of all slaves, however these newly manumitted *libertos* had to serve long-term apprenticeship periods under old slave masters, and had to wait until the ages of 18-21 to claim their freedom. The age at which *libertos* could claim freedom was extended in some newly independent republics; Colombia, Uruguay and Venezuela extended the apprenticeship period until age 25, and the exceptional case of Peru where *libertos* had to serve an apprenticeship period until age 50.

This process of emancipation meant that slavery continued in Spanish America well into the mid-19th century in these independent states. In most cases the slave population by the 1850s was one-third or less than at the time of independence. For example, in Colombia there were 54,000 slaves at the end of the

colonial period, and by 1851 that number had declined to 16,000. There were 64,000 slaves in Venezuela in 1810 and by 1854, the number of slaves in the population decreased to 33,000, while in Ecuador there were 8000 slaves at the time of independence which reduced to 2,000 at the time of abolition in 1852. In Peru, where the emancipation process was even slower with slave children working for slave masters for a longer period, when slavery was abolished in Peru in 1854 there were 25,000 slaves in the population compared to 89,000 slaves in Peru's population in 1821. Bolivia which declared all slaves born in 1825 at the time of its independence free, had 1,000 slaves in its population at the time of abolition in 1851. Chile and Mexico present two different cases compared to the previously discussed Spanish American Republics, as they immediately granted abolition to slaves. In 1823 when Chile, unconditionally freed 4,000 slaves in its population, it became the first Spanish American Republic to carry out such an act, and Mexico freed all their slaves by the 1830s. After a period of thirty years' slavery was eliminated in these small-scale slave societies, the majority through apprenticeship and partial compensation to slave owners.⁴

Abolition of slavery and the emancipation of slaves was an even longer and slower process in large-scale slave societies such as Brazil, Cuba, Puerto Rico and the United States who were the main slave societies in the second half of the 19th century. In the United States with the expansion of cotton exports, there was a geographic expansion of slaves in the south, in 1830 there were close to 2 million slaves in the population in the south, and by 1860 the number of slaves in the southern population grew to nearly 4 million. In the U.S., there were intense anti-slavery movements with the aim of eradicating the institution which remained a continuing and expanding institution well past 1830. The demise of slavery in the United States finally occurred through the civil war, and the collapse of the confederacy with slavery being abolished in 1865. It was this destructiveness of the civil war in the 1860s that finally saw the elimination of slavery in remaining slave societies with the abolition of slavery occurring in Puerto Rico in 1873, Cuba in 1886, and Brazil in 1888. Table 2.1 presents a timeline of the abolition of the slave trade and the abolition of slavery in the Americas.

⁴ Data sources include; Andrews, 2004; Klein and Vinson, 2007; Rout, 1976.

Table 2.1: Timeline-Abolition of the Atlantic Slave Trade and Slavery

Year	Event
1777	Vermont Constitution makes slavery illegal.
1784	Gradual emancipation laws are adopted in Rhode Island.
1787	Rhode Island citizens are forbidden to take part in the slave trade.
1788	The Citizens of Connecticut, New York, Massachusetts, and Pennsylvania are no longer allowed to engage in the slave trade.
1792	Denmark ends participation in the Atlantic Slave Trade - effective by 1803.
1794	The French National Convention outlaw's slavery in the colonies.
1802	Napoleon repeals the law of 1794 and reinstates slavery in France's colonies.
1804	Slavery abolished in Haiti.
1806	British Parliament pass law prohibiting British Slave Trade to foreign markets.
1807	British Parliament pass law prohibiting British subjects to engage in the slave trade, or to import slaves to British possessions after May 1st, 1807.
1807	United States Congress prohibits Americans from engaging in the slave trade by January 01st, 1808.
1813	Argentina starts gradual emancipation of slaves.
1814	The Kingdom of the Netherlands ends its participation in the slave trade.
1815	Napoleon abolishes the French Slave Trade, and his Bourbon successors adopt an ineffective prohibition of the traffic.
1821	Peru and Colombia takes steps to end the slave trade and slavery.
1823-24	Slavery is abolished in Chile and Central America.
1829	Slavery is abolished in Mexico.
1834-38	Slavery is abolished throughout the British Empire.
1848	Slavery is ended in all French and Danish colonies.
1851	Slave Trade to Brazil is declared illegal.
1863	Abolition of slavery in Dutch colonies.
1865	Abolition of slavery in the United States.
1867	The last recorded transport of slaves to Cuba.
1871	Brazil starts gradual emancipation of all slaves.
1873	Abolition of slavery in Puerto Rico.
1886	Abolition of slavery in Cuba.
1888	Abolition of slavery in Brazil.

Source: Postma, 2003, "The Atlantic Slave Trade."

2.2 Demographic Impact of Slavery and Slave Family Life

By 1800 more Africans were arriving in Spanish America and Brazil than ever before. They were predominantly adult males, and relatively young. As during the 1600s, they came primarily from Congo, Angola, and the Atlantic Coast of West Africa. In Brazil, for example, between 1820 and 1880 70 percent of the African born slaves were male, and four out of every five Africans imported into the country were male (Lockhart and Schwartz, 1983). Because slaves originated from various regions in Africa this created great diversity among the slaves arriving in the Americas. Cuban slave imports, for example, were mixed as follows: 45 percent West African, 31 percent East African and 24 percent Congo-Angolan (See table 2.2). The mixture of African ethnic groups meant that upon arrival in the Americas slaves' previous connections to tribe and family were destroyed.

The sex ratio was imbalanced in Latin America partly because of the planter's initial lack of interest in reproducing the slave population and his preference for importing more males than females. This was in sharp contrast to the sex ratio of slaves in the United States where the sex ratio was more balanced. The number of females to every 100 males in the United States was for example; 95.1 in 1820, 98.3 in 1830, 99.5 in 1850, and 99.3 in 1860. The excess of male over female slaves was very small in the U.S. in comparison to the imbalance in Latin America. This general imbalance in the sex ratio among Latin American slaves severely restricted the development of monogamous family patterns (Lockhart and Schwartz, 1983), this was different in the U.S. where there were more opportunities for monogamous slave families.

The sugar revolution with its heavy reliance on the importation of slaves from Africa resulted in a subsequent demographic revolution in the Caribbean. Because of the heavy influx of Africans the slave population in the Caribbean grew rapidly. Mortality rates were considerably higher and birth rates much lower in the Caribbean than in the United States. High mortality and low fertility thus resulted in the Caribbean population experiencing low rates of natural increase during the 17th and 18th centuries, and there was therefore a need for the continual importation of slaves. Apart from a small number of Amerindian slaves, most slaves were brought to the Caribbean from the great length of the African coast stretching from

Senegal to Mozambique (Engerman and Higman, 1997, Postma, 2003). Slaves arriving in the Caribbean were from different ethnic groups, and this resulted in an African population in the Caribbean that was ethnically heterogeneous. Further, the mixing of slaves from different ethnic groups was increased by the re-exportation that occurred within the Caribbean. Table 2.2 provides a breakdown of the origins of African slaves who disembarked in American destinations. About 44% of enslaved Africans, nearly 5 million, originated from West Central Africa, including Angola and the region between the Congo River and Cameroon. A large proportion of enslaved Africans also originated from the Bight of Benin, about 18%, and the Bight of Biafra, about 14%. A smaller proportion of slaves originated from southeast Africa such as Mozambique and Tanzania, about 4%.

Table 2.2: African Origins

Regions	Slaves	Percent
Senegambia	497,500	4.5%
Sierra Leone	411,700	3.7%
Windward Coast	180,000	1.6%
Gold Coast	1,035,200	9.4%
Bight of Benin	2,030,600	18.4%
Bight of Biafra	1,515,900	13.7%
West Central Africa	4,880,500	44.2%
Southeast Africa	484,500	4.4%
Regions combined	11,035,900	100%

Source: Postma, 2003, "The Atlantic Slave Trade," page 40, table 3.2

In the transatlantic slave trade to the British Caribbean sex ratios varied between 150 and 180 males per 100 females (Higman, 1995). In the case of Jamaica, the slave sex ratio for creoles (African slaves born in the Americas) as well as African born slaves was about 130 in the early eighteenth century. The abolition of the slave trade resulted in a gradual move toward a more balanced sex ratio in the British Caribbean except for colonies such as Jamaica where there was a significant deviation from this trend mainly due to the large quantity of slaves

transported to Jamaica during the slave trade, a large proportion of whom were males.

Table 2.3: Sex Ratios of African Slaves by Birthplace: Saint Lucia, Trinidad and Berbice

Birthplace	Males per 100 Females			
	St Lucia, 1815	Trinidad, 1813	Berbice†, 1819	Total British Slave Trade, 1791-98
Senegambia	134	187	311	210
Sierra Leone	180	173	203	211
Windward Coast	112	165	110	208
Gold Coast	97	148	165	184
Bight of Benin	57	131	227	187
Bight of Biafra	59	120	125	139
Central Africa	137	173	170	217
Mozambique		300		
Total	93	146	164	183

Source: Higman, 1995, "Slave Populations of the British Caribbean," Page 130, table 5.11 † Former British colony of Berbice is modern day Guyana.

Mortality rates were considerably lower and birth rates much higher in North American colonies than in the tropical colonies of the Caribbean. This resulted in a high natural rate of increase in the black population in the U.S. despite relatively late and modest importation of slaves. In 1680 there were fewer than seven thousand slaves in U.S. colonies, and in the 1730s there were 120,000, less than 5 percent of the population. However, by 1770 the number of enslaved Africans had increased to 22 percent. Although fewer than 400,000 slaves were transported to the U.S., by 1825 there were about 1,750,000 slaves. This was more than one-third the slaves in the Americas at that time, and more than 80 percent of them had been born in America (Fogel, 1989). The main reason for this rapid rate of increase in the slave population of the U.S. was because of high fertility rates which was similar to the fertility rates for whites at that time (Engerman, 2007). The high slave fertility rate meant there was less need for imported slaves from Africa to retain slave population levels.

Blacks comprised 2 to 3 percent of the population in New England and about 10 percent of the population in Rhode Island in the mid-18th century. Blacks were scattered in port cities and rural areas participating in staple export trades. They were also widely scattered on farms throughout the countryside. Residential

scattering made it difficult for slaves to establish family life, which were further challenged by slaveholders discouraging slaves from marrying. As a result, this rarely allowed husbands, wives, and children to reside in the same location with little visitation rights being extended. Slave owners in northern U.S. colonies discouraged procreation, and thought little about its benefits of creating natural rates of increase of the slave population, instead they focused mainly on increasing crop yield. This was in sharp contrast to the U.S. south which became slave societies rather than societies with a few thousand slaves.

Slave owners in the south were more accommodating of slave families than those in the north, as they recognized the advantages of encouraging slaves to marry so that they would be less prone to run away and engage in other forms of violent resistance. The increasing density of the slave population enabled more men and women to find mates on nearby plantations, and cross-plantation kin networks began to emerge. The enslaved population of the region maintained itself through natural rates of increase which gave rise to an increasing number of creoles (that is, Africans born in the Americas) in the region. The higher share of creoles in the slave population resulted in a more equal sex ratio, and the possibility of a more stable family structure compared to colonies in the West Indies and Spanish America.

The size of units on which slaves lived increased in the eighteenth century. However, the widespread scattering of slaves on numerous small plantations, as well as large planters' inclination to divide their holdings into separate work units composed of no more than fifteen to twenty slaves, continued to make it difficult for some slaves to find partners and maintain stable families. Thus, although cross-plantation marriages were common in the south, these were still at times broken when one of the slave owners relocated or died, and resulted in several enslaved children growing up in households where the mother was the only parent regularly present. Another interruption in black family life occurred during the period of gradual emancipation and apprenticeship where black families were usually composed of individuals of whom some were free and some enslaved. It therefore remained extremely difficult for husbands, wives, and children to reside in the same household.

By the end of slavery throughout the Americas in the late nineteenth century, colonies such as Jamaica and Haiti were characterized by high black-white

ratios where about 90 percent of the populations of those two countries were black and about 10 percent were white. In contrast, countries in Spanish America such as Brazil, Cuba, Puerto Rico, and the Dominican Republic had lower black-white ratios compared to British and French colonies in the Caribbean. Part of the reason for this was the late development of sugar production in colonies such as Cuba, Puerto Rico and the Dominican Republic (Engerman, 2007), and because of successful European immigration policies which attracted millions of European immigrants in countries such as Argentina, Brazil, Cuba and Uruguay (Andrews, 2004). Prior to the abolition of slavery high miscegenation rates had already existed in Spanish American countries, with miscegenation rates further increasing in the late 19th and early 20th centuries with the resultant effect being a highly-mixed population throughout Spanish America. For example, in 1890 32.4% of the population were mulattoes in Brazil, and by 1991 the mulatto population increased to 42.4%. In Cuba, mulattoes made up 17.2% of the population in 1899, and by 1981, the mulatto population in Cuba increased to 21.9%.⁵

2.3 Beyond Freedom

Having completed a brief survey on pre-1800 conditions in the Americas, and the eventual demise of slavery in every American society, I shall now discuss the special case of the United States where post-emancipation conditions for freed slaves was different to that of conditions of freed slaves elsewhere. In the U.S. although the Civil War brought an end to the repressive institution of slavery and there were few attempts to return to the slavery era, various pieces of legislation enacted after the war and the reconstruction era in 1877 were introduced, that restricted the civil rights of freed slaves and later descendants well into the 20th century.

For instance, in the 1890s many southern states passed legislation with provisions for literacy tests and ‘Grandfather Clauses’ which were designed to disenfranchise blacks and reduce their voting power. These laws had a significant

⁵ For more information on racial composition of Latin American countries during the eighteenth to early twentieth centuries see Andrews, 2004. Mulattoes are defined as persons with mixed European (white) and African (black) ancestries.

effect in reducing the black voting population in the south. For example, Louisiana enacted a Grandfather Clause in 1898 which allowed those who could vote before 1867, and those whose father or grandfather could vote before 1867 to skip literacy tests. Since blacks could not vote before 1867 this therefore meant that the law automatically excluded blacks from voting. A lack of black voting power affected such things as black education. For example, in 1890 southern educational expenditure on a black student was one-third that of a white student, and by 1910 it was between one-fifth to one-tenth (Engerman, 2007).

The 1890s also saw the passage of 'Jim Crow' laws which further intensified racial segregation in the south. The laws prohibited blacks from associating with whites in a host of institutions and public spaces such as public schools, transport, housing, and restaurants. In 1896, in *Plessy v. Ferguson*, the United States Supreme Court legally sanctioned racial segregation in public spaces under the notion of 'separate but equal' (Kauper, 1954). These laws had the effect of reducing the quality of education afforded to blacks and reducing blacks' employment opportunities. Racial tensions in the south worsened during this period, and there was increased violence as well as an increased number of blacks being lynched. Another form of racial segregation applied to more intimate spheres such as marriage. Anti-miscegenation laws prohibiting marriage based on race were enforced in all southern states and few northern states after the civil war. These laws prohibited marriage between whites and blacks, and were later applied to other racial groups which included Asians.

Growing frustrations among blacks about their conditions led to the civil rights movement, and the eventual repeal of racial segregation laws. One landmark decision in the move to civil rights in the United States was realized in 1954 when the Supreme Court ruled that 'separate but not equal' public schools for blacks and whites was unconstitutional in *Brown vs Board of Education*. Subsequently, in *Loving vs Virginia* the Supreme Court struck down anti-miscegenation laws remaining in 16 southern states in 1967.

Chapter 3

Slavery and Comparative Long-run Development in the Americas: How important are Initial Conditions?

3.1 Introduction

Today large differences in income can be observed across countries in the Americas. For example, in 2000 the richest country in the Americas; the United States (US), had twenty-six times the GDP per capita of the poorest country; Haiti. These large differences in income per capita have gained growing interest among scholars, some of whom provide convincing accounts that these differences have their roots in history.⁶ Engerman and Sokoloff (1997; 2002), for example, argued that countries in the Americas that relied heavily on slave labour developed unequal societies which continues to perpetuate high levels of inequality, and in turn hinders the economic progress of these countries up until today. Since the work of Engerman and Sokoloff was predominantly qualitative, in recent times scholars have begun empirically examining the main propositions arising out of their analysis. Acemoglu et al (2012), for example, examined the long-run impact of slavery on current development outcomes in Colombia.⁷ The study found that past slavery is associated with increased poverty, lower public good provision and higher levels of land inequality today.

The aim of this chapter is to empirically examine one part of Engerman and Sokoloff's hypothesis; that slavery resulted in adverse impacts on the development of those countries where the use of slave labour was prevalent. To do this, I examine the long-run impacts of slavery on contemporary economic development in a cross section of countries in the Americas by relating the prevalence of historical slave labour to income levels today. The empirical challenge in conducting such a test is that the effect of slavery is likely to be endogenous. The countries where slaves were located could have been determined by initial country characteristics, which are hard to control for, but continue to impact economic development today. For

⁶ See Engerman and Sokoloff (1997; 2002); Acemoglu et al. (2001; 2002); Nunn (2008; 2009).

⁷ Also see, Nunn (2008); Dell (2010); Bruhn and Gallego (2012) for review of this literature.

example, slave use was potentially dependent on the disease environment given that slave labour was typically prevalent in places with high mortality. Also, the use of slave labour in former slave colonies is potentially a signal for the quality of institutions that were present in those colonies during the slavery era. Economic development today may very well depend on such unobservable characteristics or initial conditions.

To partly deal with issues of endogeneity I control for as many observable characteristics as are available. Regressions include controls for demographic characteristics, as well as controls for health and human capital which are important determinants of development. Also, I include colonizer fixed effects which are intended to account for differences in colonial policies which may be important determinants of development. In addition to the cross-country analysis, I further explore the relationship between slavery and income today by looking for variation across counties and states in the United States. Overall, whether looking across countries within the Americas or across counties and states within the United States, I found that there is a negative relationship between slavery and current economic development. These results complement that found by Engerman and Sokoloff (1997, 2002) and Bruhn and Gallego (2012). In addition, the work in this chapter extends work done by Nunn (2008). While this analysis suggests a negative correlation between slavery and income today, I am unable to assert a causal relationship between the two variables. Instead in Chapter 4 I will attempt to explore and provide new insight on a potential transmission channel that may account for the effect of historical slavery on current levels of development.

The rest of the chapter is structured as follows. Section 3.2 discusses the theory and relevant literature. Section 3.3 provides a description of the data. Section 3.4 examines the relationship between slavery and contemporary economic development utilizing data on a cross section of countries in the Americas. In section 3.5 I further extend the analysis by looking for evidence across counties and states within the United States. Section 3.6 concludes.

3.2 Theory and Relevant Literature

In recent years, many studies have investigated some underlying determinants of development. The origins of this line of literature can be traced to research by Engerman and Sokoloff (1997, 2002, henceforth ES) who examined the importance of factor endowments and colonial rule for the subsequent economic development of colonies within the Americas. ES assert that levels of economic development in the Americas stem back to patterns of European colonization and focus their attention on differential paths of development among countries in the Americas. The authors argue that colonizers engaged in different types of economic activities depending on the factor endowments of colonies such as climate, geography and precolonial population density which subsequently led to different paths of economic development.

Colonies established in Latin America and the Caribbean such as Brazil and the islands of the Caribbean had the climate and soil suited to growing cash crops, such as sugar, which were highly valued on global markets, and were best cultivated using large scale plantations and slave labour. In these colonies, Europeans mainly engaged in economic activities such as sugar production and mining. On the other hand, in colonies with more temperate climates such as the United States and Canada, colonizers mainly engaged in economic activities such as subsistence farming and manufacturing. ES argue that areas that engaged in activities that relied heavily on slave labour developed institutions that concentrated power in the hands of small elite groups (mainly slave-owners and landowners). These colonies were characterized by high economic and political inequality which resulted in political and legal institutions that protected the privileges of the elite, and restricted the privileges of other members of the society (particularly natives and slaves). Also, sugar colonies generally had a narrow franchise for voting and low access to schooling. These initial conditions potentially hindered the evolution of institutions necessary for promoting sustained long term economic growth and development.

Acemoglu, Johnson and Robinson (2001, henceforth AJR) hypothesized that colonies with a high disease environment had low European settlement, and in those colonies Europeans mainly set up extractive institutions.

The focus in those “extractive colonies” was on obtaining as much resources as possible and transferring what was extracted to the colonizers homeland. One can imagine that during this period when several diseases plagued colonies in the tropics such as malaria, there would have also been low willingness of persons from Europe and other parts of the world who would want to willingly migrate from their homelands to work in the high mortality tropics. For example, AJR point out that the Pilgrims decided to settle in the United States rather than Guyana partly because of the high mortality rates in Guyana. The literature also documents that Europeans were aware of the mortality rates in the colonies as news on colonial mortality rates were frequently published by European news agencies (Cutin 1964, 1989, 1998). AJR claim that institutions in extractive colonies; such as in the Caribbean and Brazil, persisted overtime and endured after independence. These early institutions continue to impact current levels of economic development.

On the other hand, in places with low mortality Europeans settled in large numbers and replicated institutions from their home countries. These institutions generally promoted protection of property rights and had solid checks against government power. These settler colonies like the United States and Canada tended to be characterized by governments that were more democratic, and those colonies also had broader access to the franchise coupled with higher access to schooling. For instance, the literacy rate in the United States in 1870 was 80% compared to Jamaica whose literacy rate was 16% in 1871, and Brazil whose literacy rate was also 16% in 1872 (Sokoloff and Engerman, 2000). In terms of voting, the share of the voting population was 5 to 10 times higher in the US and Canada compared to Brazil, Chile, Bolivia and Ecuador well into the 20th century (Easterly and Levine, 2003). These differences in economic opportunities, political power, and suffrage and property rights had significant implications for long-run paths of economic development. AJR empirically show that countries which had low settler mortality have stronger institutions today (measured by protection against expropriation risk), and also have higher levels of GDP. They found the opposite to be true for countries which had high mortality.

In a subsequent paper, AJR (2002) provide further evidence that early conditions and institutions matter. They show that countries which had higher precolonial population density and precolonial urbanization rates in 1500 have weaker institutions and lower contemporary income. AJR document that some

extractive colonies that are the poorest today were the richest colonies around 1500. They argued that the establishment of extractive institutions in high urbanization locations compared to settler institutions in low urbanization locations led to a reversal of fortunes. Thus, in countries with high native populations such as Mexico and Peru it was more profitable for colonizers to set-up extractive institutions, and rely on native labour rather than slaves. In many cases, natives were forced to work in mines and on plantations. Dell (2008, 2010) examined the mita forced mining labour system used by the Spanish in Peru and Bolivia. Utilizing regression discontinuity Dell showed that mita districts have lower household consumption, lower public good provision, fewer land owners, less developed road networks and lower educational attainment today. Bruhn and Gallego (2012) showed using cross national and within country variation that colonies that engaged in economic activities using exploitation of local and imported labour have lower economic development today.

3.3 Data Sources and Description

A. Cross-Country Data

To examine the long-run effect of slavery on economic development in a cross section of countries within the Americas I construct a data set that covers 30 countries. The main outcome variable in my analysis is the current level of economic development of each country in the sample, measured by the natural log of per capita GDP which is adjusted for Purchasing Power Parity (PPP) estimates from the International Comparison Program. The data on GDP per capita generally come from the World Bank, *World Development Indicators* (WDI), for 2000.⁸

The main regressor of interest is slavery intensity which is measured using the proportion of the population that were slaves around 1750.⁹ I use the year 1750

⁸ Data for Argentina come from the latest version of the Penn World Tables.

⁹ Note that in some cases data on the closest available year to 1750 were used. For example; Data for Canada is from the 1784 Canadian Census, United States data is for 1774 and come from Jones (1980). Other data sources include; Andrews; 2004; Sater; 1974; Rout Jr.; 1976; Mcfarlane; 1993; Williams; 1987; Nunn, 2008; Bergad, 2006, and Higman, 1995.

as this is the earliest year for which consistent data on the presence of slaves in former colonies is available. Given that the importation of slaves into the Americas significantly intensified between the 17th and 18th centuries and none of the countries in the sample had abolished slavery in 1750, I can therefore reason that the proportion of slaves in 1750 provides a good approximation of the prevalence of slavery in the Americas. The data come largely from the work of Engerman and Higman (1997). The data are consistent with substantial evidence from other sources (see, for example, McEvedy and Jones; 1978 and Andrews; 2004). Because I also have data for all countries in the sample on the fraction of the population who were slaves in 1830, I carry out additional tests using the year 1830 to measure slavery intensity, and the results are reported in Appendix A.

Table 3.1 illustrates that Jamaica and Haiti were among countries in the Americas with the highest slavery intensity in 1750. In 1750 91% of Haiti's population were enslaved and 90% of the population of Jamaica were enslaved. Slaves were predominantly Africans, however in countries such as Brazil the slave population comprised a small proportion of mulatto slaves (Toplin 1974; Bergad 2006). For example, in Minas Gerais (the single largest slaveholding region in Brazil) out of a total population of 341,869 persons there was a total of 139,448 enslaved blacks and 17,764 enslaved mulattoes, and in 1872 out of a total population of 2.1 million persons, there were 272,791 enslaved blacks and 109,837 enslaved mulattoes. In Guyana, there were 244 Native American slaves in the population in 1750 (Engerman and Higman 1997).¹⁰ By 1830 slavery was abolished in Central America, Haiti, Mexico and Chile, and some countries had begun the gradual emancipation of slaves.¹¹ Recall from chapter 2 that Haiti was the first new world nation to abolish slavery in 1804 subsequent to slave revolts which commenced in 1791. Chapter 2 provides a discussion on the abolition of slavery, and as well provides a timeline on the abolition of slavery in American countries.

¹⁰ Native American slaves in the population in the Americas during this period was very rare. There were laws protecting Native Americans from being enslaved by colonizers, although coerced Native American labour occurred illegally in few instances. For more information on coerced Native American labour see Eltis and Engerman (2011).

¹¹ See Postma; 2003(pages XVII-XXII) for a chronology of events on the Atlantic Slave Trade and slavery in the Americas beginning with Africans enslaved by the Portuguese on the coast of Mauritania in 1441.

Table 3.1: Historical Slave Populations of the Americas, 1750 and 1830

Country	1750			1830		
	Total Population	Slaves	Slavery intensity	Total Population	Slaves	Slavery intensity
Antigua & Barbuda	35,053	31,273	0.89	36,503	30,100	0.82
Argentina	42,540	6,372	0.15	187,000	28,050	0.15
Bahamas	2,489	1,145	0.46	17,030	9,503	0.56
Barbados	80,417	63,410	0.79	102,150	82,026	0.80
Belize	170	114	0.67	4,200	1,898	0.45
Brazil	3,250,000	1,582,000	0.49	4,507,000	2,193,869	0.49
Chile	182,514	22,815	0.13	965,000	0	0.00
Colombia	815,668	64,981	0.08	1,206,000	61,000	0.05
Cuba	171,620	44,621	0.26	605,000	212,000	0.35
Dominica	7,787	5,769	0.74	19,000	14,706	0.77
Dominican Republic	70,625	8,900	0.13	91,544	15,000	0.16
Ecuador	600,000	8,000	0.01	500,000	5,000	0.01
Grenada	13,740	12,000	0.87	28,400	23,884	0.84
Guyana	8,778	7,987	0.91	100,600	88,666	0.88

(continued)

Country	1750			1830		
	Total Population	Slaves	Slavery intensity	Total Population	Slaves	Slavery intensity
Haiti	700,490	635,859	0.91	880,202	0	0.00
Jamaica	142,000	127,881	0.90	378,050	319,074	0.84
Mexico	2,477,277	20,131	0.01	6,587,000	0	0.00
Paraguay	97,882	3,945	0.04	143,000	4,000	0.03
Peru	1,071,399	40,336	0.04	1,317,000	40,000	0.03
Puerto Rico	44,883	5,037	0.11	323,838	34,240	0.11
Saint Lucia	12,794	9,764	0.76	18,400	13,395	0.73
St Kitts & Nevis	34,172	30,081	0.88	34,450	28,288	0.82
Suriname	53,827	51,096	0.95	55,854	48,784	0.87
St Vincent & Gren.	9,518	7,184	0.75	28,000	23,100	0.83
Trinidad and Tobago	4,133	3,392	0.82	56,215	35,308	0.63
Uruguay	2,501	658	0.26	55,000	7,000	0.13
United States	2,353,967	480,932	0.20	12,785,928	1,987,398	0.16
Venezuela	903,000	87,600	0.10	898,000	112,000	0.12

Notes: Slaves were generally Africans transported from various parts of Africa via the Atlantic Slave Trade. Slave population in Brazil in 1750 and 1830 included 92,000 and 131,632 mulatto slaves respectively. Estimates on the mulatto slave populations calculated based on data from Toplin 1974 and Bergad 2006. Slave population of Guyana consisted of 244 Native American slaves in 1750 (Engerman and Higman 1997).

Table 3.2 presents descriptive statistics for main variables of interest and other control variables used in the regressions which are potentially important determinants of economic development. Population density in 1750 which is a measure of initial conditions, is meant to capture the economic prosperity of each country in 1750, which was in turn determined by a multitude of factors such as climate, soil quality and the distance to international markets. The data are from Nunn (2008).

The variable measuring Ethnolinguistic Fractionalization is the average value of five different indices of ethnolinguistic fractionalization, and the data are from La Porta et al (1999). The value of the index ranges from 0 to 1. Easterly and Levine (1997) and La Porta et al (1999) show that higher ethnic fractionalization is associated with more interventionism (worse property rights and regulation), lower government efficiency (more corruption and lower tax compliance), inferior provision of public goods (provision of public schooling, insufficient infrastructure, etc.). All of which negatively affect income. One obstacle highlighted by Alesina et al (2003) with the ethnolinguistic fractionalization index is its heavy reliance on linguistic distinctions which may become problematic when examining American countries where language is relatively homogeneous, and racial origin more heterogeneous. As a robustness check, I also use a measure of ethnic fractionalization developed by Alesina et al (2003) which comprise a combination of racial and linguistic characteristics, and the results are reported in Appendix A.

Previous researches have argued for an effect of European settlement on current levels of income. These studies argue that countries where Europeans settled or where they became the majority of the population experience higher levels of income today. To control for this, I include the fraction of European settlers in 1750 as a regressor. The data are from Engerman and Higman (1997), and McEvedy and Jones (1978).

Some researchers have argued for a direct effect of climate on performance (for example, Gallup et al; 1999 and Hall and Jones; 1999). It has been argued that countries located in temperate zones have more productive agriculture and healthier climates which has enabled them to develop their economies and possibly their institutions (see for example, Landes; 1998). To control for this, I include latitude as a control variable. I use the absolute value of the latitude of the country that is

scaled to take values between 0 and 1, where 0 is the equator, and the data are from La Porta et al (1999). In addition to geography variables, I also include health variables such as life expectancy and infant mortality and human capital variables such as secondary school enrolment. Data on life expectancy and infant mortality are for the year 2000 and the data comes from the World Bank (WDI) database. Secondary and tertiary School enrolment data also come from the World Bank (WDI) database. From table 3.2 we see that the average slavery intensity in 1750 in the Americas was 45%. On average 80% of individuals who were of secondary education age were enrolled in secondary school in 2000, and 24% of persons were enrolled in tertiary school.

Table 3.2: Descriptive Statistics- Cross Country Data

Variable	Mean	Std. dev.	Min	Max	N
In real per capita GDP in 2000	9.34	0.65	7.46	10.74	30
Slavery intensity, 1750	0.45	0.36	0.00	0.95	30
Population density, 1750	0.18	0.41	0.00	1.84	30
Ethnolinguistic Fractionalization	0.18	0.20	0.00	0.75	30
Latitude	0.20	0.13	0.02	0.67	30
Percent European Settlers, 1750	0.34	0.27	0.02	1.00	30
Life expectancy at birth, 2000	71.98	4.26	57.42	79.24	30
Infant Mortality Rate, 2000	21.05	13.13	5.20	74.80	30
Mean temperature	22.77	5.78	4.00	28.00	30
Percent Secondary Enrolment, 2000	0.80	0.19	0.18	1.08	29
Percent Tertiary Enrolment, 2000	0.24	0.17	0.01	0.68	28

B. United States Data

To examine the long run effect of slavery on economic development within the United States, I collected data on a sample of 3110 U.S. counties and 50 U.S. States. The data on the outcome variable; per capita income in 2000, come from the Bureau of Economic (BEA) Regional Economic Accounts. Data on the main explanatory variable of interest; slavery intensity, come from the Decennial

censuses of the United States.¹² Also included in my regressions are variables that measure initial conditions such as population density. The data on population density are from the U.S. Census Bureau and Nunn (2008). To control for other determinants of development, I also include controls for demographic and human capital characteristics. These variables include; the fraction of the population residing in urban areas, the fraction of the population enrolled in secondary and tertiary schools, and the fraction of the population with bachelor's degrees or higher. Data on demographic and human capital control variables are also from the U.S. Census Bureau. Included in my state level regressions is a control for the percent of the workforce employed in mining in 1880. The data come from Mitchener (2003).

Table 3.3: Descriptive Statistics- United States County Level Data

Variable	Mean	Std.		Min	Max	N
		dev.				
Ln income per capita, 2000	10.02	0.23		8.92	11.36	3,110
Slavery intensity, 1790	0.22	0.21		0.00	0.76	283
Slavery intensity, 1830	0.19	0.21		0.00	0.89	964
Slavery intensity, 1860	0.16	0.22		0.00	0.93	2,014
Population density, 1790	0.40	1.01		0.005	14.40	283
Population density, 1830	0.39	2.90		0.00	88.08	964
Population density, 1860	0.55	8.02		0.00	353.77	2,033
Fraction urban, 2000	0.39	0.31		0.00	1.00	3,110
Frac. college/grad. school, 2000	0.23	0.14		0.00	0.90	3,109
Frac. 25+ with degree, 2000	0.16	0.08		0.05	0.61	3,109
Frac. speaks English poorly†	0.03	0.05		0.00	0.51	3,109

† This variable measures the fraction of the population that speaks a language other than English and speaks English less than very well.

Descriptive statistics for U.S. counties are reported in Table 3.3. In 1790, on average 22% of the population were slaves across U.S. counties, and by 1860 slavery intensity was reduced to 16%. 23% of persons were enrolled in college or graduate school in 2000, and 16% of the population who were 25 and over had

¹² Data on the fraction of slaves in the population across U.S. states between the 18th and 19th centuries can be sourced at <http://www.socialexplorer.com/> and <https://www.nhgis.org/>.

obtained a Bachelor's degree or higher. Table 3.4 presents descriptive statistics for the state level data. The table shows the mean slavery intensity across states was 14% in 1790, and in 1860 the average slavery intensity decreased to 13%. On average 5% of the population was employed in mining in 1880, and 71% of the population resided in urban areas in 2000.

Table 3.4: Descriptive Statistics- United States-State Level Data

Variable	Mean	Std. dev.	Min	Max	N
Ln income per capita, 2000	10.27	0.15	9.98	10.65	50
Slavery intensity, 1790	0.14	0.16	0.00	0.45	17
Slavery intensity, 1830	0.16	0.19	0.00	0.54	27
Slavery intensity, 1860	0.13	0.19	0.00	0.57	37
Population density, 1790	0.20	0.19	0.01	0.66	17
Population density, 1830	0.25	0.24	0.01	0.93	27
Population density, 1860	0.34	0.40	0.00	1.67	38
Percent workforce in mining, 1880	5.23	9.77	0.00	38.50	47
Avg. # of cooling degree days (100s)	1198.54	763.71	268	3375	37
Fraction urban, 2000	0.71	0.15	0.34	0.95	50
Frac. High school grad. or higher,2000	0.82	0.04	0.73	0.88	50
Frac. College/grad. school, 2000	0.31	0.05	0.19	0.47	50
Frac. 25+ with degree, 2000	0.24	0.04	0.15	0.33	50
Fract. speaks English poorly†	0.05	0.04	0.00	0.20	50

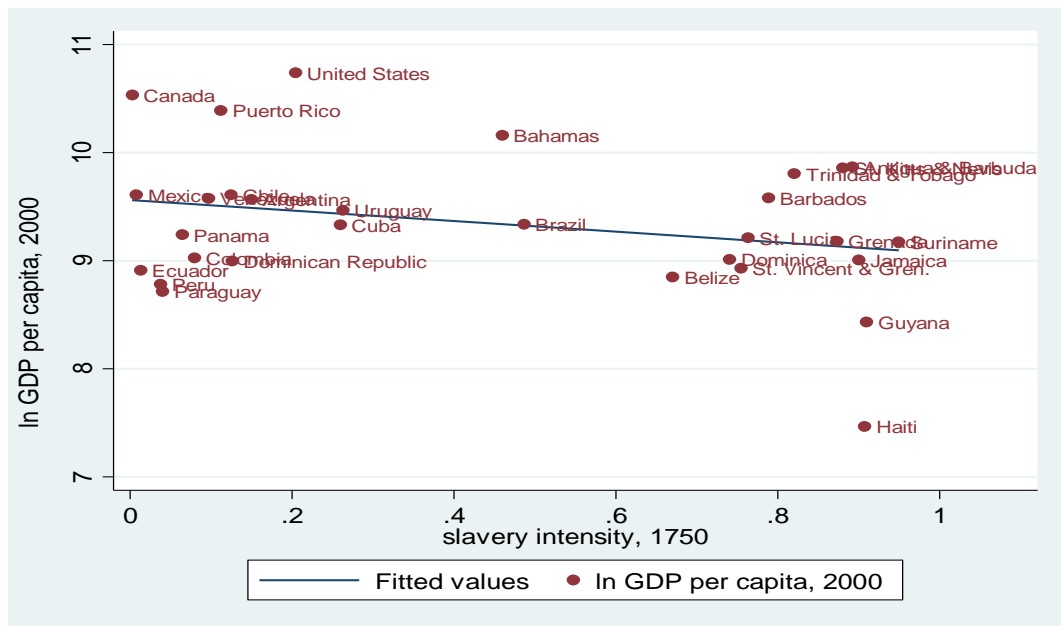
† This variable measures the fraction of the population that speaks a language other than English and speaks English less than very well.

3.4 Cross Country Examination of the Relationship between Slavery and Economic Development

In this section I examine the reduced form relationship between historical slavery and economic development today. A simple correlation between the fraction of the population that were enslaved in 1750 and current income per capita (2000) reveals a weak negative relationship (see figure 3.1). Jamaica has an income per capita of around one sixth that of the United States and a much higher slavery intensity; 90% of the population in Jamaica were slaves in 1750 compared to 20% of the U.S. population that were enslaved around this period. While this is

suggestive, the correlation between historical slavery and economic development today could be because of a myriad of other factors explaining both the variation in economic development and the prevalence of slavery. For example, natural endowments, climate, and distance to international markets, among other things, are all likely to be correlated with colonial slavery and could have an impact on the path of development.

Figure 3.1: Proportion of Slaves in 1750 vs. GDP per Capita in 2000- Cross Country



beta coef = -.27, t-stat = -1.51, N=30

3.4.1 Empirical Strategy

Moving beyond examining the simple correlation between slavery and contemporary economic development, I further test the relationship by estimating the following equation

$$Y_i = \beta_0 + \beta_1 S_i + C_i' \delta + X_i' \gamma + \varepsilon_i \quad (1)$$

where i indexes countries, Y_i is the natural logarithm of per capita GDP in 2000, S_i is a measure of slavery intensity which is the proportion of slaves in the total population in 1750, C_i is colonizer fixed effects for former British, French, Spanish, Dutch and Portuguese colonies. The colonizer fixed effects are included to capture differences in colonial strategies that may be important determinants of economic development. X_i is a vector of other covariates, and ε_i is a random error term. The coefficient of interest is β_1 in equation (1), the effect of historical slavery on income today.

Possible endogeneity problems

The relationship between slavery and income may potentially suffer from endogeneity bias. One of the issues is that colonies where the use of slave labour was prevalent were not randomly distributed. Instead these colonies tended to be located in tropical or semi-tropical locations. The soil and climate of the Caribbean region, for example, was more suitable for sugar production which encouraged Europeans to import slaves from Africa and set up labour-oppressive systems (Dunn, 2012 and Engerman and Sokoloff, 1997, 2000). Slave labour was also generally used in places which were more prone to diseases such as malaria or places with high mortality. It is possible that individuals did not want to voluntarily migrate to such locations to work, and hence the shortfall of labour supply which was supplemented with slave labour.

Another issue is that, some colonies were characterized with high precolonial population densities which may have induced types of economic activities that were essentially exploitative, such as mining and sugar production. Engerman and Sokoloff (1997, 2002) argue that depending on factor endowments such as climate, geography, and precolonial population density, colonizers engaged in different types of economic activities in different regions that consequently led to different growth paths. For example, the presence of abundant Amerindian labour in Meso-America was conducive to the establishment of forced labour systems. Another example is the Caribbean islands which were relatively densely settled in 1500. Soon after the arrival of Europeans there was a sharp decline in the population of these islands because of diseases upon European contact. Given this, there is the possibility that initial high populations in these islands induced

European colonizers to take the “extractive institutions” path, with these institutions later being further developed with the importation of slaves. Also, the prevalence of slave labour may also be correlated with the existence and strength of institutions in former slave colonies prior to colonization and as well during the colonial period.

The initial conditions of former slave colonies which affected the use of slave labour may potentially persist up until today and continue to affect development outcomes. While it is difficult to control for many potentially unobservable historical characteristics, I attempt at best to control for historical observables where data permits. Included in my regressions are controls for initial population density, as well as controls for geographic and climatic characteristics.

3.4.2 *Empirical Results*

Table 3.4 reports ordinary least squares (OLS) estimates of equation (1). The coefficient of interest in equation (1) is β_1 . Column (1) shows a negative and statistically significant coefficient on slavery intensity; a coefficient of -2.271. To assess the magnitude of β_1 in Column (1), I calculate the standardized beta coefficient which is -1.272. The standardized beta coefficient suggest that a one standard deviation decrease in slavery intensity results in an increase in income of over 1.2 standard deviations. Columns (2) and (3) include controls for other initial conditions, aside slavery. There may be concern that the slavery effect is simply picking up differences between places that were historically characterized with high and low European settlement. To account for this, in columns (3) to (5), I include a control for the fraction of the population that were of European decent in 1750. The coefficient on this variable is insignificant in all regressions, while the effect of slavery remains highly significant.

Columns (2) to (5) also include controls for other initial characteristics such as historical population density. In column (3), the magnitude of the slavery intensity coefficient is slightly reduced to -2.003. The standardized beta coefficient for slavery intensity in column (3) is -1.122. This suggests that a one standard deviation decrease in slavery intensity results in an increase in income of over one standard deviation. In Columns (4) and (5), I control for measures of current health characteristics by including variables measuring infant mortality and life expectancy. The coefficient on the infant mortality rate is significant in column (5)

and has the expected sign, while the coefficient on life expectancy is insignificant in both regressions. Generally, the inclusion of health predictors has little impact on the OLS estimate on slavery intensity.

Since there may be concern that slavery intensity is potentially correlated with geographic characteristics, I include a control for Latitude in columns (3) to (5). This variable is significant in all regressions and has the sign found by previous studies. Columns (4) and (5) include a control for ethnolinguistic fractionalization. The coefficient on ethnolinguistic fractionalization is significant in column (4) and has the sign found by previous studies, however the coefficient is insignificant in column (5). Column (5) further includes controls for contemporary human capital characteristics, and the coefficients of these variables are statistically insignificant. While the addition of these additional controls reduces the magnitude of the coefficient on slavery intensity, it remains a statistically significant predictor of income today.

Another concern may be that my results are driven by differences between the “Neo-Europes” in the sample and other countries in Latin America and the Caribbean. Per Alfred Crosby (1986), the Neo-Europes comprise of countries outside of Europe where European immigrants became the majority of the population such as the United States and Canada. European settlers in these countries tended to duplicate the institutions at home, and such countries tended to be characterized by a more relatively even distribution of income.

Column (6) shows that my results are not driven by the Neo-Europes. Excluding the United States and Canada from the sample still produces a statistically significant coefficient on slavery intensity, although the magnitude of the coefficient is slightly reduced. Because Haiti appears to be an influential data point which can potentially bias the results, I further exclude Haiti from the sample and the results are shown in column (7). Column (7) shows that when Haiti is also excluded from the sample, the results are generally unchanged. Overall Table 3.4 suggests that past slavery is significantly correlated with economic development today.

Table 3.5: OLS Regressions of the Impact of Slavery on Income- Country Level Data

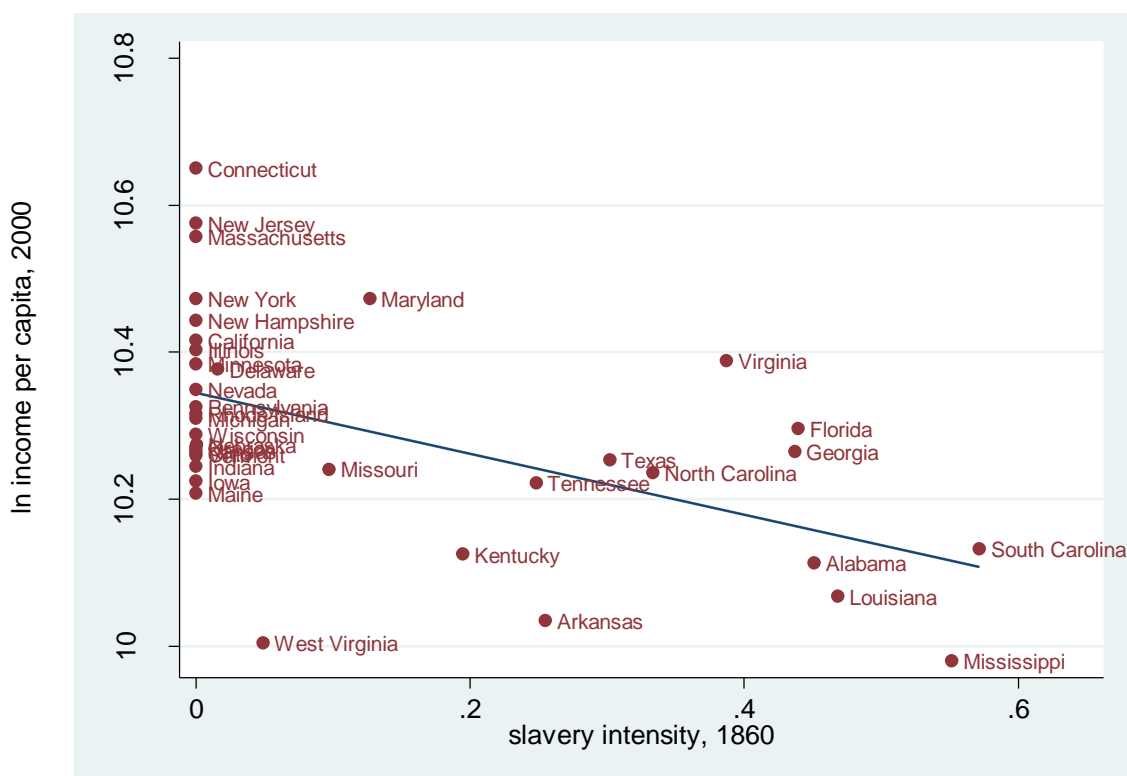
Dependent Variable: Ln GDP Per Capita, 2000	(1)	(2)	(3)	(4)	(5)	Base sample without Neo- Europes (6)	Base sample without Neo-Europes & Haiti (7)
<u>Initial Conditions:</u>							
Slavery intensity, 1750	-2.271*** (0.461)	-2.538*** (0.448)	-2.003*** (0.431)	-1.698*** (0.295)	-1.471*** (0.379)	-1.373* (0.644)	-1.373* (0.632)
Population density, 1750		0.468 (0.258)	0.403* (0.177)	0.125 (0.176)	0.126 (0.225)	0.147 (0.232)	0.147 (0.227)
Fraction European, 1750			-1.208 (0.818)	-1.143 (0.599)	-0.987 (0.611)	-1.035 (0.592)	-1.035 (0.581)
<u>Health:</u>							
Infant mortality rate , 2000				-0.021 (0.012)	-0.027* (0.010)	-0.029* (0.013)	-0.029* (0.012)
Life expectancy at birth, 2000				0.017 (0.042)	-0.007 (0.032)	-0.009 (0.035)	-0.009 (0.035)
<u>Human Capital:</u>							
Secondary School enrolment, 2000					-0.215 (0.520)	-0.207 (0.558)	-0.207 (0.547)
Tertiary enrolment, 2000					0.514 (0.531)	0.327 (0.686)	0.327 (0.673)
<u>Demographic/Geographic:</u>							
Ethnolinguistic Fractionalization				-0.912* (0.416)	-0.706 (0.379)	-0.661 (0.415)	-0.661 (0.407)
Latitude			4.679** (1.316)	2.756* (1.077)	2.499* (1.118)	2.542* (1.106)	2.542* (1.084)
Colonizer Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	30	30	30	30	28	26	25
R-Squared	0.45	0.50	0.68	0.83	0.86	0.79	0.64

*Slavery intensity is the fraction of slaves in the total population, measured in the year 1750. Population density is the total population in 1750 divided by land area. Colonizer fixed effects are for England, France, Spain, Portugal and the Netherlands. Standard errors are in parentheses and are corrected for heteroskedasticity. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.*

3.5 Evidence from the United States

This section further examines the relationship between historical slavery and contemporary economic development by looking for evidence across U.S. counties and states. Exploiting variation in income across states and counties provides me with methodological advantages in examining variation within a country rather than across countries. The empirical model used to estimate the relationship is like that of the previous section, except the unit of observation is now a state or county. I begin with examining a simple correlation between slavery intensity and current income per capita across U.S. states.¹³

Figure 3.2: Proportion of Slaves in 1860 vs. Income per Capita in 2000- U.S.



beta coef = $-.52$, t-stat = -3.62 , N=37

¹³ Figure 3.2 include 2 states that were U.S. territories in 1860. These states include; Nebraska and Nevada. In 1860 West Virginia was part of the state of Virginia and Kansas was admitted to the Union on January 29th 1861. As a robustness check I run regressions omitting these states and the results are reported in Appendix A.

A simple correlation between the fraction of slaves in the population in 1860 and income per capita in 2000 reveals a strong negative relationship (See Figure 3.2). It is clearly discernible from figure 3.2 that slave states such as Alabama, Louisiana, Mississippi and South Carolina have lower per capita income than that of Free states such as Connecticut, Massachusetts, New Jersey and New York. Again, although this is suggestive this correlation could be the consequence of other factors explaining both the variation in income and the prevalence of slavery.

I therefore further examine this relationship by estimating OLS regressions that controls for other potential fundamental determinants of economic development. Regressions include controls for initial conditions such as population density, as well as climatic and human capital factors. I begin by discussing empirical findings from conducting regressions at the state level that test the relationship between the fraction of slaves in the population across U.S. states in 1830 and 1860 and current levels of income. I report results measuring slavery intensity in other years in Appendix A. Table 3.5 reports a negative and statistically significant coefficient for slavery intensity in all regressions. To assess the magnitude of the estimated coefficient in column (1) I compare the impact of slavery on two states in the sample. For example, comparing Mississippi and Massachusetts; the estimated coefficient of -0.481 suggests that if slavery intensity in Mississippi had been of the degree of that of Massachusetts (less than 1% instead of 48%), then Mississippi's income per capita would be \$26,560 instead of \$21,582. This represents an increase of over 20% of the state's current income in 2000.

Like cross-country regressions, my cross-state regressions also include controls for human capital and geographic/climatic characteristics of U.S. states that may be important determinants of development. The coefficient on the proportion of persons residing in urban areas has the sign found by previous studies and is significant (see for example Arouri et al, 2014). The proportion of persons with undergraduate and graduate degrees is positively associated with income while the proportion of high school graduates is insignificant.

An alternative approach to examining the relative contribution of slavery intensity in the model would be to compare the explanatory power of this variable's coefficient to that of other variables in the regression model. To do this I perform a variance decomposition and compare the slavery intensity variable in column (5)

against the other explanatory variables.¹⁴ I found slavery intensity and all the other variables in the model (excluding controls for settler origin and region) together explain about 96% of the total variation in income today; slavery intensity accounts for 6% of this amount.

Table 3.6 reports results measuring slavery intensity in 1860. The estimated coefficients for the fraction of slaves in the population in 1860 and income in 2000 is significant in all regressions. To assess the magnitude of the coefficients, I compare the income per capita of states in the sample that had enslaved populations to states where all members of the population were free. For example; in 1860 57% of the population of South Carolina were enslaved while all members of the population of Connecticut were free. In 2000, South Carolina's income per capita was three fifths that of Connecticut. The coefficient of -0.415 in column (1) suggest that if all members of South Carolina's population were free in 1860, its income per capita would have been \$31,110 instead of \$25,143; an increase of nearly 25% of its current income. Similarly, 47% of the population of Louisiana was enslaved in 1860. This suggests that if Louisiana had no slaves in 1860, its income per capita in 2000 would have been \$28,253 instead of \$23,570. This is an increase in income of nearly 20%. After including controls for other determinants of development, the magnitude of the slavery coefficient is reduced but remains highly significant. The coefficient of -0.209 in column (4) suggests that South Carolina's income per capita would have been more than 10% over what it is today, and Louisiana would have realised an increase in income per capita about 10% more than what it is today.

At a more disaggregated level. Table 3.7 presents estimates of the relationship between historical slavery and current income across U.S. counties. Table 3.7 also confirms the hypothesis that slavery has lasting impacts on levels of income today. Counties where a higher proportion of the population were enslaved have lower levels of income in comparison to counties with low slavery intensity or where all members of the population were free during the 19th century. Generally, the evidence from the United States confirms the strong correlation between historical slavery and current economic development.

¹⁴ See Linderman et al (1980) and Feldman (2005) for a discussion on methods to assess the contribution of individual regressors in a multiple regression model.

Table 3.6: Relationship between Slavery in 1830 and Income in 2000- State Level Data

Dependent Variable: Ln Income per capita, 2000	(1)	(2)	(3)	(4)	(5)
<u>Initial Conditions</u>					
Slavery intensity, 1830	-0.481** (0.134)	-0.282* (0.123)	-0.315* (0.131)	-0.372* (0.165)	-0.388* (0.146)
Population density, 1830		0.402* (0.175)	0.162 (0.149)	0.064 (0.154)	-0.205 (0.196)
Percent of workforce in mining, 1880			0.005 (0.006)	-0.003 (0.008)	-0.015 (0.008)
<u>Human Capital</u>					
Fraction high school graduate or higher, 2000			0.630 (0.854)	0.159 (0.954)	-1.120 (0.927)
Fraction enrolled in college or graduate school, 2000			-1.315* (0.500)	-1.173* (0.522)	-0.981 (0.511)
Fraction Bachelor's degree or higher, 2000			2.135** (0.718)	2.492** (0.650)	3.267*** (0.653)
Fraction speaks English less than very well, 2000			0.815 (0.768)	0.141 (0.875)	-1.720 (1.131)
<u>Geographic/climatic</u>					
Fraction urban, 2000			0.243* (0.112)	0.282* (0.115)	0.606* (0.230)
Average number of cooling degree days (100s)			0.243* (0.112)	0.282* (0.115)	0.606* (0.230)
Settler Origin dummies	NO	NO	NO	YES	YES
Region dummies	NO	NO	NO	NO	YES
Number of observations	27	27	26	26	26
R-Squared	0.28	0.53	0.96	0.97	0.98

*Slavery intensity is the fraction of slaves in the total population, measured in the year 1830. Population density is the total population in 1830 divided by land area. Settler origin dummies are for England, France, Spain, and the Netherlands. Standard errors are in parentheses and are corrected for heteroskedasticity. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.*

Table 3.7: Relationship between Slavery in 1860 and Income in 2000- State Level Data

Dependent Variable: Ln Income per capita, 2000	(1)	(2)	(3)	(4)
<u>Initial Conditions</u>				
Slavery intensity, 1860	-0.415*** (0.100)	-0.322** (0.096)	-0.210*** (0.055)	-0.209*** (0.050)
Population density, 1860		0.157* (0.066)	0.027 (0.035)	-0.078 (0.056)
Settler Origin dummies	NO	NO	YES	YES
Region dummies	NO	NO	NO	YES
Number of observations	37	37	33	33
R-Squared	0.27	0.43	0.93	0.95

*Slavery intensity is the fraction of slaves in the total population, measured in the year 1860. Population density is the total population in 1860 divided by land area. Settler origin dummies are for England, France, Spain, and the Netherlands. Regressions include all controls as in table 4.5.1. Standard errors are in parentheses and are corrected for heteroskedasticity. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.*

Table 3.8: Relationship between Slavery and Current Income-County Level Data

Dependent Variable:	1830	1830	1830	1860	1860
Ln Income per capita, 2000	(1)	(2)	(3)	(4)	(5)
Slavery intensity	-0.190*	-0.180	-0.141*	-0.229**	-0.174***
	(0.091)	(0.088)	(0.066)	(0.067)	(0.046)
Population density		0.017***	0.008***		0.002***
		(0.003)	(0.002)		(0.000)
Fraction enrolled in college or graduate school, 2000			-0.342***		-0.391***
			(0.074)		(0.0437)
Fraction Bachelor's degree or higher, 2000			1.596***		1.819***
			(0.297)		(0.251)
Fraction speaks English less than very well, 2000			-0.417		-0.757*
			(0.403)		(0.298)
Fraction urban, 2000			0.284***		0.250***
			(0.044)		(0.0383)
Number of observations	964	964	964	2,014	2,014
R-Squared	0.03	0.08	0.59	0.05	0.59

*Slavery intensity is the fraction of slaves in the total population, measured in the years 1830 and 1860. Population density is the total population in 1830 and 1860 divided by land area. Standard errors are clustered at the state level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.*

3.6 Conclusion

The main aim of this chapter was to explore the relationship between the prevalence of slavery during the 18th and 19th centuries and current levels of economic development across American countries and the United States. This chapter was motivated by the empirical observation that levels of income show considerable variation across countries in the Americas, as well as across U.S. states, and some of the countries in continental America where slavery was prevalent are less developed in comparison to countries where slavery was less prevalent.

The empirical results in the chapter provide suggestive evidence that slavery has lasting effects on levels of economic development in the present day. Countries in the Caribbean that were characterized by high slave-to-free ratios during the 18th and 19th centuries such as Jamaica are currently less developed in comparison to countries with lower ratios such as Argentina, Uruguay, the United States and Canada. These results are consistent with Engerman and Sokoloff's (1997, 2002) hypothesis that slavery was harmful for economic development. These findings are also consistent with recent literature examining the impact of slavery on development outcomes within countries such as Colombia (Acemoglu et al, 2012) and Peru (Dell, 2010).

Although the evidence in this chapter takes a step forward in better understanding the long-term effects of slavery in the Americas, the analysis did not address mechanisms that can potentially explain the negative relationship. Previous researchers have explored economic inequality as a possible link, but failed to establish this as a significant mechanism (Nunn 2008; Bruhn and Gallego, 2012). If it is not economic inequality, then what other channels can explain this relationship? The next chapter of the dissertation examines one potential mechanism.

Chapter 4

Slavery and the Colonial Origins of Distrust in the Americas

“Deep rooted prejudices entertained by the whites; ten thousand recollections, by the blacks, of the injuries they have sustained; new provocations; the real distinctions which nature has made...”

—Thomas Jefferson¹⁵

4.1 Introduction

Chapter 3 found evidence that countries where slavery was prevalent also have lower levels of per capita income today, in comparison to countries where slavery was less widespread. An important question that remains is; what causal mechanisms can explain the negative relationship between historical slavery and current income? Papers that have attempted to test economic inequality as a causal mechanism have found this mechanism to be insignificant in explaining the effects of slavery on contemporary development (Nunn 2008; Bruhn and Gallego 2012). In this chapter, I therefore explore trust (in particular generalized trust, which is trust in anonymous individuals), as a plausible transmission channel through which historical slavery impacts contemporary economic development in the Americas.

Since the work of Arrow (1972) “Trust” has attracted increasing interest, particularly, in recent times because of its role in economic activity and development. Several researchers have found correlations between trust and economic growth, and assert that trust plays a key role in facilitating long-term growth through more efficient governments and financial markets (Knack and Keefer, 1997; Guiso, Sapienza, and Zingales 2004, 2008, 2009). A low trust environment can therefore potentially hamper the economic success of nations. Interestingly some of these studies have found that trust varies not only across

¹⁵ Notes on the State of Virginia (1784) by Thomas Jefferson-third President of the United States-taken from: “The Founders Constitution.” Philip B Kurland and Ralph Lerner, volume 1 (1987), page 534.

countries but also across regions within the same country (Nunn 2011; Algan and Cahuc 2013). Countries with higher levels of trust have also been found to have higher levels of income (Knack and Keefer, 1997; Tabellini 2010; Algan and Cahuc, 2013). Similarly, regions within the same country with higher levels of trust have been found to have higher levels of income per capita (Guiso et al 2008).

Algan and Cahuc (2013) found that developing countries such as Trinidad and Tobago have much lower levels of trust than advanced countries such as Norway. Using the World Values Survey (1981-2008) they found that on average 3.8% of the population in Trinidad and Tobago trust other people in general compared to 41% of the population of the United States who trust others in general. Because the prevalence of slavery was much higher in countries such as Trinidad and Tobago compared to the United States, and such countries also have lower levels of income in comparison to the U.S., in this chapter I explore trust as a plausible transmission mechanism that can partly explain the negative relationship between historical slavery and contemporary development which we observed in chapter 3. Particularly I examine the reduced form relationship between historical slavery and trust today. Maybe through this channel, which I consider “deep determinants” we can find some possible explanations for poor trust cultural traits among the populations of countries in Latin America, the Caribbean and the Southern U.S. which stems back to the days of slavery and which persist up until today.

To examine the relationship between historical slavery and modern-day trust, I combine contemporary individual-level survey data on trust with historical data on slave populations. As discussed in previous chapters, slaves during the colonial period were predominantly Africans shipped across the Atlantic to various countries in the Americas. African slaves who survived the middle passage, experienced broken connections to family and tribe. In addition, slave families were split up in many instances after settlement. Aside from being captured by state organized raids and warfare in Africa, many Africans were sold into slavery through kidnapping and trickery by family and friends. The fact that slaves were tricked into slavery by individuals close to them suggests that slavery may have eroded trust even in the most intimate relationships (Nunn, 2011). Also, apart from the fact that slavery was a dehumanizing, traumatizing and exploitative institution, Africans had very limited prospects for skill upgrading and incorporation into free

society in the Americas. Additionally, the capture and mixing of slaves from various tribes and ethnic groups created ethnic rivalry among African slaves in the Americas. As noted in Knight (1997): “It was not only Africans’ mistrust of other Africans which divided early slave society. Creole, or Caribbean-born slaves, usually regarded themselves as superior to those directly from Africa. The specific African origin of slave and then the question of African or Caribbean birth were therefore significant barriers to early slave unity”.

I begin examining the relationship between slavery and trust by looking for evidence in a cross-section of countries in the Americas. The Americas presents an interesting setting in which the determinants of trust can be studied given its legacy of slavery, and the fact that, during the colonial period, the population transitioned to a majority of non-natives, being immigrants (both voluntary and involuntary) and their descendants from Europe, Africa and Asia. The cross-country study uses data from the World Values Surveys (WVS) for years 1990 and 2006 to measure individual trust. After analysing the relationship between slavery and trust using cross-country data, I then turn my attention to looking for evidence within the United States. For the United States, individual level trust is measured using data from the General Social Surveys (GSS) for years 1973-2014. The prevalence of slavery in both analyses is measured using data mainly from historical censuses on slave and free populations for years 1750-1860.

Results from both the cross-country and United States analyses indicate that there is a significant negative correlation between the historical prevalence of slaves in the population from an individual’s ethnic/racial group and the individual’s level of trust today. The estimates reveal that blacks in particular, a large proportion of whom are slave descendants are less likely to trust others than non-blacks/ or non-slave-descendants. This holds even when individual characteristics such as age, gender, education, income and religion are held constant. My results also suggest that countries or regions with a higher share of blacks or slave descendants in the population also have lower levels of trust today. Countries with low trust environments; for example, countries in the Caribbean such as Trinidad and Tobago, also have weaker legal and political institutions today. This therefore suggests that a cultural trait such as poor trust is likely to

impede the development of both good culture and good local institutions.¹⁶ Recent work has stressed the importance of culture and institutions for economic growth and development, although some studies have acknowledged identification obstacles in disentangling causality, as culture and institutions are likely to be co-determined. Alesina and Giuliano (2015) propose a two-way causal effect between culture and institutions, and suggest that culture and institutions interact and evolve in a complementary way.

The work in this chapter is closely related to the growing literature on the importance of history for present-day economic development, as well as studies on the importance of culture, in particular cultural traits such as trust, for a range of economic outcomes.¹⁷ My study is particularly closely linked to work done by Nunn and Wantchekon (2011) who show that within Africa low levels of trust can be traced back to the legacy of the slave trade. The authors obtain data from shipping records on the number of slaves exported from different ethnic groups across several African countries during the period of the Trans-Atlantic and Indian Ocean slave trades, and found that individuals whose ancestors were heavily affected by the slave trade have lower levels of trust today. My work differs from Nunn and Wantchekon (2011), in that I focus on the impact of slavery on trust in slave destinations, and in particular on the descendants of slaves who disembarked in the Americas.

The rest of the chapter is structured as follows. Section 4.2 provides a brief review of related literature while Section 4.3 discusses the theoretical framework on which my hypothesis is based. Section 4.4 presents the analysis of the relationship between slavery and trust in a cross-section of countries in the Americas. Section 4.5 extends the analysis by looking for evidence within the United States. Section 4.6 concludes the chapter.

¹⁶ For related literature on the interplay between culture and institutions see Nunn 2011 and Alesina and Giuliano 2015.

¹⁷ For more examples of related literature see papers by; Algan and Cahuc 2010; Nunn and Wantchekon 2011; Spolaore and Wacziarg 2013; and Alesina and Giuliano 2015.

4.2 Theory and Relevant Literature

In 1972 Kenneth Arrow stated that “Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness of the world can be explained by the lack of mutual confidence.” Since Arrow the role of trust in economic development has attracted increasing attention. Several papers have found that a country’s level of trust is correlated with its level of income (Knack and Keefer, 1997; Algan and Cahuc, 2010). Countries with higher levels of trust are found to have higher levels of income, while countries with lower levels of trust are found to have correspondingly lower levels of income.

Given this seemingly important role of trust in a country’s rate of economic growth, an important part of the trust literature has begun focusing attention on the reasons for the differences in trust levels across countries, and at a micro-level among individuals. Understanding differences in trust levels would necessitate understanding how trust is built up. In some instances, cultural traits such as trust are historically determined, and are transmitted unchanged from generation to generation (Guiso, Sapienza, and Zingales, 2006). It is these insights from papers by Guiso et al. and papers in anthropology by Boyd and Richerson (1985, 2005) amongst others which form the starting point of my hypothesis. Boyd and Richerson define culture as decision-making heuristics or rules-of-thumb that have progressed to aid us in making decisions in complex and uncertain environments. Using theoretical models, they show that if acquiring information is either costly or imperfect, using heuristics or rules-of-thumb in decision making can emerge optimally.

Using these insights, I hypothesize that slavery which was dehumanizing and traumatizing for every slave that disembarked in the Americas, as well as the impact of suffering broken connections to family and tribe along with continued family life disruptions whilst in the Americas created an insecure environment and resulted in the destruction of trust. This distrust cultural trait is being transmitted from generation to generation up until today; about 150 years after the abolishment of slavery. Several papers provide elucidations for this hypothesis by showing how distrust can persist in a society for several generations. Guiso, Sapienza, and Zingales (2007) for example, provide an illustration how multiple equilibria in

cultural outcomes can occur. If a society is in low trust equilibrium it is possible for that society to shift into a high trust equilibrium position. Guiso et al show that if the net benefits of cooperation are not sufficiently high, a society starting with diffuse priors will be trapped in a mistrust equilibrium. A positive shock to the benefit of cooperation can permanently shift this mistrust equilibrium to a cooperative one even when the shock is temporary. They show that even a brief (from a historical perspective) positive experience of cooperation (2-3 generations) can have permanent effects as the good experience is transmitted across generations. In the absence of a positive shock, a society starting off in a low trust equilibrium position can be trapped in that position, as the negative experience is transmitted across generations. This provides one reason for the persistent effects of slavery where there may have been a permanent shift to an equilibrium symbolized by high levels of distrust among the descendants of slaves.

Tabellini's (2008) model illustrates another reason why there can be a persistence of distrust in a society. Tabellini builds on the work of Bisin and Verdier (2001), and Bisin, Topa and Verdier (2004) who posit that parents optimally choose what values to pass on to their children but assess their children's well-being with their own values. According to Tabellini this paternalistic altruism or "imperfect empathy" assumption suggest that the equilibrium is both backward and forward looking in the sense that parents' values influence their educational choices (backward-looking), but also parents adapt their educational choices to the future environment of their children. This results in complementarities between values and behaviour. Parents also pass on norms to their children in areas such as voting. In low trust-environments if it is the norm to select institutions that weakly apply the rule of law for example, and to select governments that continue to engage in bribery and corrupt practices without taking appropriate actions against such behaviour, not only will future generations inherit these same norms but also distrust and weak institutions will also continue to persist in those societies; Nunn (2011) posits that this creates a self-enforcing outcome.

The persistence of cultural traits is supported in the literature by several others papers that study the long-term effects of historical factors on income today by paying particular attention to the ancestral composition of populations (examples include; Spolaore and Wacziarg 2009; Putterman and Weil 2010; Comin, Easterly, and Gong 2010; Ashraf and Galor 2013; Spolaore and Wacziarg

2013). These papers show that the historical legacies of the populations currently inhabiting several countries around the world are important determinants of contemporary outcomes. They find that the history of ancestor populations matters more than the past history of locations.¹⁸ Thus a population's historical acquaintance with certain types of norms of behaviour or culture appears to be imperative to understanding comparative development. This line of literature also posits the idea that cultural evolution is inevitably a slow process.

Generally this line of literature suggests a key role for the persistence of intergenerational cultural traits in explaining development outcomes in the long-run. The previous theories and models presented also suggest that the negative shocks created by slavery have not fully died out, and several countries where slavery was prevalent are currently inhabited by populations that are characterized with low levels of trust. The quality of domestic institutions is to a large extent determined by the populations that inhabit those countries. Thus environments of low trust also perpetuate weak institutions which in turn adversely impacts development. Applying this to the Americas, suggest that countries where slavery was prevalent developed a history of low-trusting populations determined in excess of one hundred years ago. These countries not only developed weak institutions but these weak institutions continue to persist up until today as norms are persistently transmitted from generation to generation. For example, former slave colonies such as Haiti where slavery was prevalent should have lower levels of trust than mixed slave societies like the United States where slavery was less prevalent. Within the US, former slave states such as those in the US South where slavery was more prevalent should generally have lower levels of trust. Given this I expect to find evidence of higher levels of distrust in countries or regions with larger proportions of slave descendants in the population. My study specifically examines generalized trust; that is the belief that 'most people can be trusted.' Generalized trust corresponds to trust in strangers who are likely to be different from ourselves (Uslaner, 2011) or it is the trust persons have towards a random member of an identifiable group (Guiso, Sapienza, and Zingales, 2004; McEvily et al., 2006).

¹⁸ Past history of locations includes the historical legacy of geographical locations; examples includes factors such as the number of years since the adoption of agriculture. For more information see Putterman and Weil (2010).

At this juncture, I wish to highlight that I am not suggesting that slavery is the only determinant of poor trust among the lineages most affected by slavery, and neither am I suggesting that other short run determinants such as education, income and recent experiences are insignificant, but my focus in this chapter is understanding long-run determinants of cultural traits such as trust, and attempting to understand the contribution of slavery in determining such cultural traits.

4.3 Testing the Reduced Form Relationship between Slavery and Trust: Looking Across the Americas

Social survey data reveal a substantial variation in the magnitude to which people trust others across countries. In this section I explore the extent to which historical factors such as slavery can explain those variations in trust among individuals across different countries. First, I describe the data used in the analysis, after which I discuss the empirical strategy and the results.

4.3.1 Data and descriptive statistics

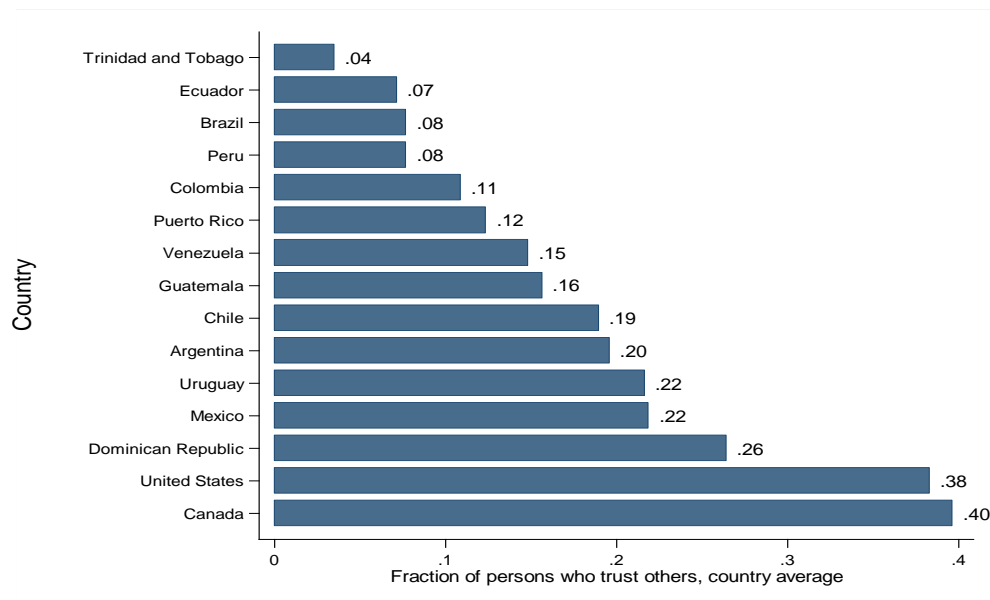
A. WVS Generalized trust data – Cross-country

My main source of information on individual level trust is the World Values Survey (WVS). This data are collected by the Inter University Consortium for Political and Social research (ICPSR). The WVS consists of nationally representative surveys conducted in over 117 countries which contain almost 90 percent of the world's population, using a common questionnaire, and includes interviews with almost 400,000 respondents. The data include individuals from the age of 16 years and older interviewed on their perceptions on some of the following areas; family, environment, politics, work, religion, morale and security. The WVS database contains surveys from 1981 to 2014, and is currently being used by many researchers from different fields; including political scientists, sociologists, anthropologists, and economists. Groups at the World Bank have also used the database to analyze linkages between cultural factors and economic development.

The WVS dataset includes six waves of data collected over the following periods: the first wave covers 1981-1984; second wave 1990-1994, third wave 1995-1998, fourth wave 1999-2004, fifth wave 2005-2008, and the final wave covers the period 2010-2014. My analysis utilizes data from the WVS waves 1-6. To measure trust I use the following question from the WVS: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” The respondents choose between two possible answers: “Most people can be trusted or “Need to be very careful”. Since respondents’ answers are categorical I convert the categorical responses into a variable that assigns a number to each response. I construct a trust indicator that takes on the value of 0 or 1; where 0 corresponds to the response “need to be very careful” and 1 corresponds to the response “most people can be trusted.” This WVS-type question measures generalized trust towards others where “others” refer to people the respondent does not know (Alesina and Giuliano 2015).

Figure 4.1 shows the average levels of generalized trust for 15 countries in the Americas constructed from responses to the World Values Survey. Trust levels vary noticeably from one country to another.

Figure 4.1: Average Levels of Generalized Trust in the Americas, by Country



Notes: Data on the fraction of persons who trust others is taken from the World Values Survey Waves 1-6 (years 1981-2014). The trust measure is calculated as the country average from the responses to the question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” Trust equals 1 if the respondent answers “Most people can be trusted” and 0 otherwise.

Canada has the highest level of trust in the sample with 40% of the population trusting others. On the contrasting end is Trinidad and Tobago; the country with the lowest level of trust in the sample where only 4% of the population trust others. Although the data on historical slavery intensity will be described in the next sub-section I will make brief mention here that in the sample of 15 countries presented in figure 4.1, Trinidad and Tobago had the highest slavery intensity during 1750-1830; on average about 73% of the population in Trinidad were slaves during this period. On the opposite extreme in terms of slavery prevalence is Canada; where virtually 0% of the population were slaves during 1750-1830.¹⁹

From the raw data, I also observe that average trust varies across individuals from different ethnic or racial groups. Prior to discussing the trust patterns in the data across those groups, I will briefly describe the ethnicity data in the WVS dataset. Some of the ethnic groups as contained in the WVS include; White, Black, South Asian, East Asian, Central Asian, Mulatto, Mestizo, Quecha, and Aymara. I aggregate the ethnic group variable into 5 ethnic groups, combining individuals with similar ethnic or ancestral origins into the same group. This aggregation applies mostly to respondents with ancestral origins in various Asian countries, indigenous groups, and to individuals of mixed ancestries. The 5 ethnic groups are defined as follows; White- individuals with European ancestry, Black- individuals with African ancestry, Asian – individuals whose ancestors originate from countries in Asia such as India, China and Japan, Mestizo – individuals who are of mixed European and Native American ancestries, and Native American- descendants of the indigenous people of the Americas.²⁰

Mulattoes who are of mixed European and African ancestries are grouped with blacks (roughly 7% of the sample). A large share of mulattoes in the sample reside in countries such as Brazil, Colombia, the Dominican Republic, Ecuador, Peru and Puerto Rico; several of these countries had high historical rates of miscegenation between Europeans and Africans. The mestizos in the sample

¹⁹ According to the 1784 Canada Census there were 304 slaves in the population. This was nearly 0% of the population at that time. (<http://www.bac-lac.gc.ca/eng/census/pages/census.aspx>).

²⁰ Ethnic group classifications are consistent with substantial evidence from other sources, see, for example; CIA World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/fields/2075.html>) and Encyclopaedia Britannica (<https://www.britannica.com/>).

largely reside in countries such as Mexico and Ecuador. While mestizos are predominantly of mixed Spanish European and Native American ancestries, recent genetic data show a 10% contribution of Africans to the ancestry of mestizos who account for roughly 60% of Mexico's population (see Putternam and Weil 2010). Appendix B provides descriptive statistics on the demographic data from the WVS for both my aggregated sample, as well as the disaggregated data from the WVS.

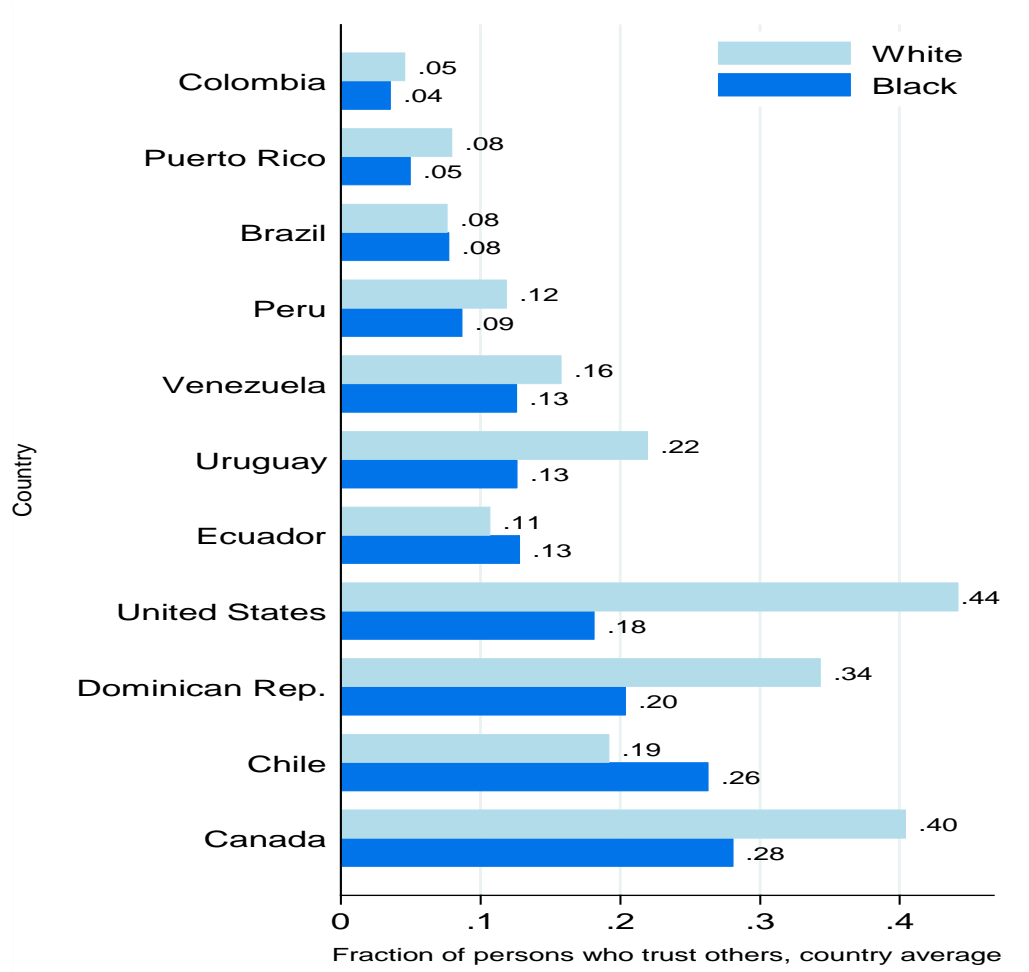
Ethnicity and race are very closely related terms which are frequently defined using a combination of physical or racial (appearance, skin colour, and facial features), linguistic, cultural, ancestral and religious characteristics (Nagel 1994; Alesina et al 2003). Alesina et al (2003) found that in African and European countries linguistic criteria are largely used to define ethnic groups while racial or physical criteria are seldom used. The authors found this to be different for Latin American and Caribbean countries where racial criteria are normally used to distinguish between ethnic groups. Thus, it appears that in countries where the population is more homogenous in terms of physical characteristics, linguistic criteria are largely used to distinguish between ethnic groups; this is generally the case for countries in the 'Old World' (Africa, Europe and Asia). On the other hand, in countries where physical characteristics are more heterogeneous and linguistic characteristics more homogenous, physical or racial criteria is largely taken into account; this is generally the case for New World countries; for example, the United States, Latin America and the Caribbean.

The concept of race is a large part of American history where race is used to classify persons with distinct ethnic/ancestral origins or characteristics into the same group. It was historically common in the United States to define someone as black if he or she had "one drop" of black blood or African ancestry (Saks 2000; Kennedy 2000). This one drop rule was used as a legal principle to prohibit interracial marriages between whites and blacks. Also, during the period of slavery in the United States children born to black mothers and white slaveholders (mainly due to widespread rape) were considered black, and the slavery status of the mother was passed on to the children (Higginbotham and Kopytoff 2000; Kolchin 2003). Similarly, there is evidence of mulatto slaves in Brazil during the period of slavery (See Toplin 1974 and Bergad 2006 for statistics on mulatto slaves in the population of Brazil during the period of slavery). As my sample comprise individuals in the New World, my ethnicity variable largely reflects racial or ancestral characteristics

of the populations in American countries. This is logical since the ancestry of New World populations originate from various countries in Europe, Africa, and Asia.

Figure 4.2 graphically depicts the distribution of the trust question in the WVS among whites and blacks. The figure illustrates that there are differences in the degree of trust among whites and blacks. The figure shows that generally blacks have a lower propensity to trust others compared to whites.

Figure 4.2: Average Levels of Generalized Trust in the Americas, by Country and Ethnicity/Race



Notes: Data on the fraction of persons who trust others is taken from the World Values Survey Waves 1-6 (years 1981-2014). The trust measure is calculated as the country average from the responses to the question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” Trust equals 1 if the respondent answers “Most people can be trusted” and 0 otherwise. The data is sorted in descending order based on black ethnic/racial group.

In the United States while on average 44% of all whites said that they can trust others, less than one-fifth of blacks said that they can trust others. Not only is the level of trust lower among blacks compared to whites, but the level of trust is also generally lower among blacks compared to individuals from other ethnic groups such as Asians and Native Americans. In the United States for example; 41% of all Asians believe that they can trust others, while in Canada 35% of Asians think that they can trust people in general, and 33% of Native Americans responded that they can trust others. See Appendix C for a full distribution of responses to the trust question in the WVS.

B. Slavery intensity data- Cross-country

The data on slave populations of American countries used in this section is the same slavery data used in chapter 3 of the dissertation. Utilizing the slavery data for years 1750-1830, I construct an average slavery intensity index, and assign values to individuals belonging to different ethnic groups. Average slavery intensity is the average proportion of slaves in the total population of a given country during 1750-1830 from an individual's ethnic group. Individuals of mixed ancestry are assigned average slavery intensity values of different weighting to that of individuals who are not of mixed ancestry. For example, a different weight is attributed to an individual of mixed European and African ancestry (mulatto) compared to an individual who is predominantly of African descent. The average slavery intensity index for an individual of mixed ancestry is as follows:

$$SI (Mixed\ Ancestry_{i,c}) = 0.5 \sum_{e=1}^2 A_{e,c} \quad (1)$$

where $A_{e,c}$ is the average proportion of slaves in the total population from ethnic group e in country c during 1750-1830. In some cases where genetic data is available, as in the case of Mexico, I construct values for mestizos applying slightly different weights to take into account the contribution of Africans to the ancestry of the mixed mestizo population.

4.3.2 Empirical Strategy

I start by estimating the relationship between the average proportion of slaves in the population from an individual's ethnic group for years 1750-1830 and the individual's current level of trust. To test this relationship I estimate the following equation:

$$Prob(Trust_{i,e,c} = 1) = \beta_0 + \beta_1 SI_{i,e,c} + X'_{i,e,c}\Phi + \alpha_e + \alpha_c + \varepsilon_{i,e,c} \quad (2)$$

where i indexes individuals, e ethnic groups, and c countries. $Trust_{i,e,c}$ is an indicator variable which varies across individuals, and equals 1 if an individual responds that "most people can be trusted", and 0 otherwise. $SI_{i,e,c}$ is the average slavery intensity for individual i belonging to ethnic group e and residing in country c . $X'_{i,e,c}\Phi$ is a set of individual level covariates which include; age, gender, and education. α_e are ethnicity fixed effects, α_c are country fixed effects that capture time-invariant country level factors that may affect individual trust, and $\varepsilon_{i,e,c}$ is a random error term.

4.3.3 Empirical Results

Table 4.1 reports estimates of equation (2) where individual trust is regressed on the average proportion of slaves in the population during 1750-1830 from an individual's ethnic group (that is, the average slavery intensity). In column (1) when individual trust is regressed on slavery intensity, the estimated coefficient for slavery intensity is negative and statistically significant. A one standard deviation increase in slavery intensity (roughly 0.11) decreases trust by 16% of its sample mean. Column (2) includes controls for other individual characteristics which may be correlated with trust. After controlling for respondents age, education, income religious affiliation etcetera, the estimated coefficient of slavery intensity remains highly significant. Some of these other individual characteristics are also highly correlated with individual trust. For example trust is positively correlated with income; a one standard deviation increase in income increases trust

by 10% of its sample mean. Similarly, individuals who are more educated have higher levels of trust; a one standard deviation increase in education increases trust by 27% of its sample mean. The magnitude of the coefficient for slavery intensity in column (2) suggest that a one standard deviation increase in slavery intensity decreases trust by 14% of its sample mean. As a comparison, the results suggest that the magnitude of the effect of slavery is larger than that of income on individual trust.

Column (3) includes controls for population and the ethnic or racial fragmentation of the region in which the respondent resides. These controls are intended to account for the characteristics of the respondents region which may be correlated with their level of trust. Previous studies have found ethnic fragmentation to be correlated with trust (Easterly and Levine 1997; Alesina and Ferrara 2002). When these additional controls are included in the regression, the coefficient on slavery intensity remains significant but decreases in magnitude. Columns (4) include ethnicity fixed effects, while column (5) includes country fixed effects. Including ethnicity fixed effects reduces the magnitude of the estimated slavery coefficient; however, the coefficient remains significant at the 1% level. A one standard deviation increase in slavery intensity reduces trust by 9% of its sample mean. Column (6) includes two-way fixed effects for ethnicity and country. Inclusion of country fixed effects allows me to exclude that slavery picks up time-invariant characteristics at the country-level. Columns (4) to (6) show that even when country and ethnicity fixed effects are included in the regression, the coefficient on slavery intensity remains significant at the 1% level. These results generally suggest that individuals whose ancestors were most profoundly impacted by slavery are less trusting today, and these individuals are more likely to respond “need to be very careful” when asked whether they trust others, and less likely to answer “most people can be trusted”.

Table 4.1: OLS Estimates of Individual Determinants of Trust: Cross-Country

Dependent Variable:						
Trust Others	(1)	(2)	(3)	(4)	(5)	(6)
Slavery intensity	-0.314*** (0.010)	-0.308*** (0.012)	-0.255*** (0.012)	-0.174*** (0.013)	-0.145*** (0.018)	-0.152*** (0.022)
Female		0.004 (0.004)	0.003 (0.004)	-0.001 (0.004)	-0.003 (0.004)	-0.003 (0.004)
Age		0.001** (0.001)	0.001** (0.001)	0.001* (0.001)	0.001 (0.001)	0.001* (0.001)
Education		0.025*** (0.001)	0.025*** (0.001)	0.024*** (0.001)	0.019*** (0.001)	0.019*** (0.001)
Income level		0.026*** (0.002)	0.022*** (0.002)	0.019*** (0.002)	0.013*** (0.002)	0.012*** (0.002)
Catholic		-0.046*** (0.005)	-0.036*** (0.005)	-0.026*** (0.005)	0.008 (0.005)	0.007 (0.005)
Protestant		0.031*** (0.007)	0.038*** (0.007)	0.040*** (0.007)	0.036*** (0.007)	0.036*** (0.007)
Muslim		-0.081*** (0.023)	-0.071*** (0.022)	-0.024 (0.023)	-0.052** (0.023)	-0.026 (0.023)
Hindu		-0.169*** (0.010)	-0.142*** (0.010)	-0.084*** (0.013)	-0.058*** (0.014)	-0.030** (0.014)
Jew		0.075** (0.037)	0.078** (0.037)	0.067* (0.037)	0.020 (0.037)	0.017 (0.037)
Buddhist		0.045 (0.037)	0.039 (0.037)	0.040 (0.038)	0.028 (0.037)	0.035 (0.037)
Racial fragmentation (region)			-0.154***	-0.097***	0.043**	0.053***

(continued)

Dependent Variable: Trust Others	(1)	(2)	(3)	(4)	(5)	(6)
			(0.012)	(0.012)	(0.019)	(0.019)
Population (ln) in region			0.023***	0.019***	-0.000	-0.000
			(0.002)	(0.002)	(0.002)	(0.002)
Black				-0.077***		-0.024
				(0.005)		(0.006)
Native				-0.099***		-0.006
				(0.013)		(0.014)
Asian				-0.103***		-0.068***
				(0.009)		(0.011)
Country fixed effects	NO	NO	NO	NO	YES	YES
Observations	47,192	37,230	37,230	37,230	37,230	37,230
R-squared	0.01	0.05	0.06	0.07	0.11	0.11

Notes: Slavery intensity is the average slavery intensity for years 1750-1830. Trust data and data on other individual characteristics are from the World Values Surveys 1981-2014. Sample includes 14 countries; Argentina, Brazil, Canada, Chile, Colombia, Dominican Republic, Ecuador, Mexico, Peru, Puerto Rico, Trinidad and Tobago, United States, Uruguay, and Venezuela. I use information from the WVS on social class to proxy for individual income. Social class categories in the WVS include; upper class, upper middle class, lower middle class, lower class and working class. All regressions include survey wave/year dummies. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

4.4 Testing the Reduced Form Relationship between Slavery and Trust: Looking Within the United States

In this section I exploit within-country variation to study the relationship between slavery and current levels of trust. Using data on historical slavery and current levels of trust in the United States, I examine my hypothesis that slavery has lasting effects on the degree of trust of those individuals whose ancestors were most profoundly impacted by slavery. Using within-country data to examine this hypothesis provides me with some advantages. First, the within-country approach allows me to examine in more detail the local conditions that determine individual trust, and secondly it provides me with an opportunity to examine reasons why trust can vary substantially within the same country. In the next sub-sections, I describe the data, after which I discuss the empirical strategy and present the results.

4.4.1 Data and descriptive statistics

A. Generalized trust data

To measure individual level trust, I use data from the 1973-2014 General Social Surveys (GSS) conducted in the United States.²¹ Trust is measured using the following question from the survey: “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” The generalized trust question in the GSS is like that of the WVS. However, the GSS allows for three answers: “Most people can be trusted”, “Can’t be too careful”, or “Depends”. I follow the literature and construct a trust indicator that takes on the value of 1 if the respondent answers “Most people can be trusted” and 0 if the

²¹ The GSS is a cross-national longitudinal dataset collected by the National Opinion Research Centre (NORC) at the University of Chicago. The survey has been conducted since 1972, however, there were a total of thirteen years during this time period in which the survey was not conducted (1979, 1981, 1992, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011 and 2013). In addition the ‘trust’ variable is missing for two-fifths of these years. Also because state and county data is not available for 1972, my sample does not include this year.

respondent answers “Can’t be too careful” or “Depends”.²² High-trusting individuals are defined as those who respond “most people can be trusted”, and individuals with low to moderate trust in others are defined as those who respond “you can’t be too careful” or ‘it depends’. The share of respondents who answer “Depends” is negligible across all states in the surveys. I perform robustness checks by dropping the answers “Depends” or by grouping this answer with the answer “Most people can be trusted” and the results are reported in Appendix D. Robustness checks show that this strategy barely affects my results, and I can draw the same conclusions using all approaches.

From the raw data, I observe large differences in the level of trust across U.S. states. Figure 4.3 depicts mean trust levels for 48 U.S. states and the District of Columbia. The average level of trust across states is calculated by averaging individual responses from the GSS for years 1973-2014. The figure shows that the level of trust is lower in Southern states such as Mississippi, Alabama, Georgia, Louisiana, and North Carolina compared to Northern and Western states such as North Dakota, New Hampshire, Massachusetts, Illinois, California and Colorado. For example, in New Hampshire and North Dakota over 60% of respondents said that they can trust others, while in Mississippi less than 20% of respondents said that they can trust others, and in Alabama 25% of respondents can trust others. This is noteworthy, and important for my analysis as the states with the lowest levels of trust are also those which had the highest proportions of their population enslaved between the 18th and 19th centuries.

In the raw data, I also observe that the level of trust varies across individuals from different ethnic or racial groups. Before discussing these patterns, I briefly describe the racial/ethnicity/ancestry information provided in the GSS. The GSS provides information on individuals’ race and country of family or ancestral origin. The GSS ‘race’ variable categorizes individuals into 3 racial groups; white, black, and other. The GSS question on race asks individuals: “What race do you consider yourself?” More than half of the respondents categorized as ‘other’ originate from Latin American countries such as Mexico and Puerto Rico, I therefore classify those individuals as mixed race (that is, mestizos/mulattoes). The GSS variable

²² See Alesina and La Ferrara 2002; and Algan and Cahuc 2010 for examples on the construction of the Trust variable.

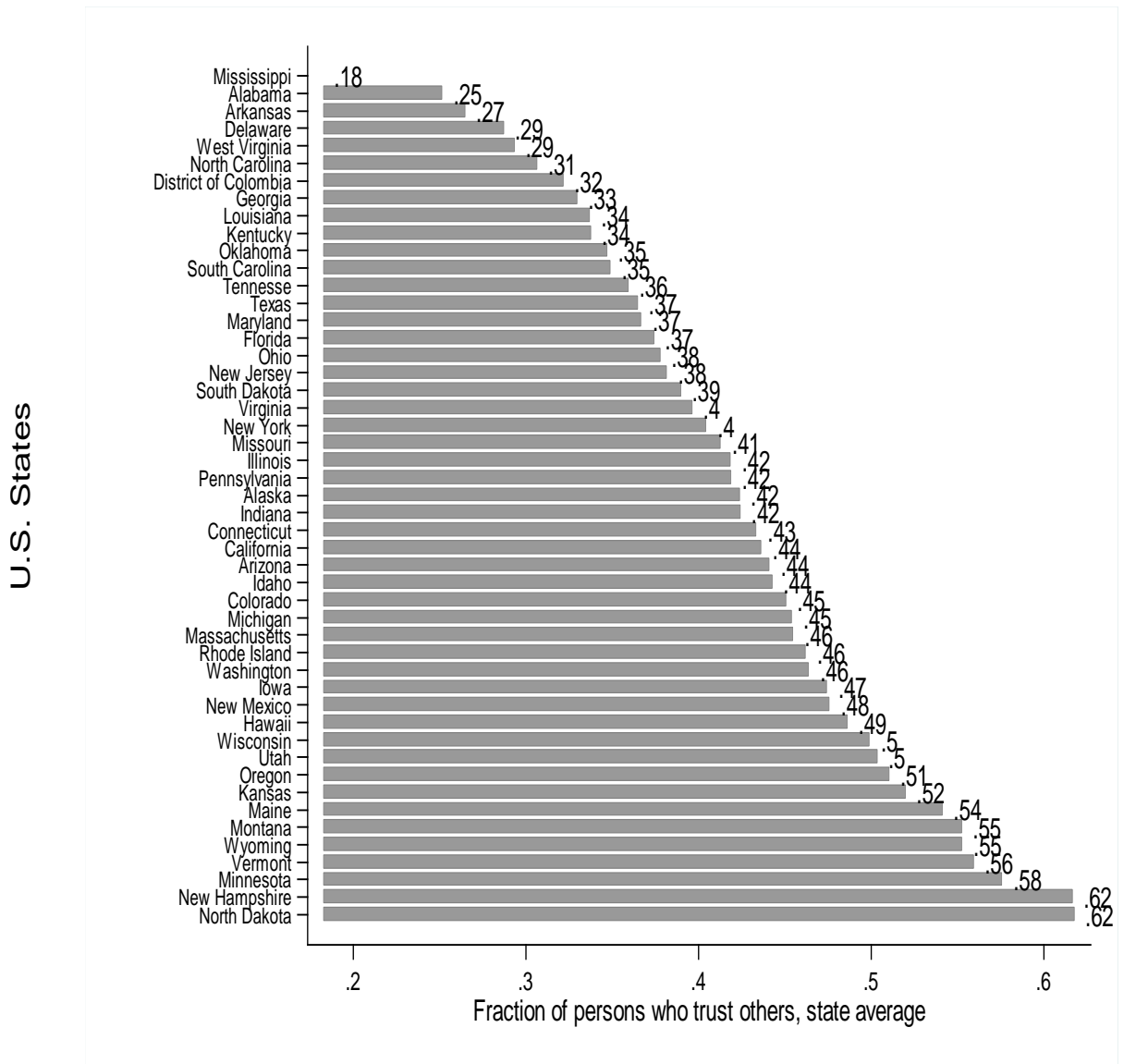
'ethnic' identifies 34 countries of national or ancestral origins (see appendix B for descriptive statistics on the demographic data from the GSS). The GSS question on country of origin asks respondents the following question: "From what countries or part of the world did your ancestors come?" The countries of origin include virtually all European countries, Africa, Asian countries such as Japan and India, and other American countries such as Mexico, Puerto Rico and the West Indies.

Since the foreign-born population from Africa (that is recent African migrants) represent a very small share of the immigrant population in the United States (less than 1% in 1970 and about 4% for the period 2008-2012), a large proportion of the black population in the U.S. today would be descendants of the enslaved Africans transported to the United States through the transatlantic slave trade.²³ Individuals of African descent in the U.S. also originate from other countries in the Americas such as countries in the West Indies, as well as countries in Latin America.

Figure 4.4 depicts average trust levels in U.S. states by respondents' ethnicity/race. In figure 4.4 I only present the distribution of responses for individuals belonging to white and black ethnic or racial groups (See Appendix C for a distribution of trust responses for some selected states). Figure 4.4 provide indications that generally across all states blacks have a lower propensity to trust others compared to whites. For example, in Mississippi, about 33% of all white respondents said that they can trust others in general, while only 1% of black respondents said that they can trust other people in general. In New York, 44% of white respondents said that they can trust others, while 17% of black respondents believe that they can trust other people. From the raw data, the level of trust among whites also appears to be lower in southern states compared to northern states. In Alabama, while 34% of white respondents said that they can trust others, a higher proportion of white respondents in Massachusetts and Illinois (46% and 47% respectively) thought that they can trust other people. In the raw data, I observe that on average blacks have the lowest levels of trust among all ethnic/racial groups in the United States. The low tendency of black Americans to trust others is noteworthy, particularly since a large share of black Americans today are of slave descent.

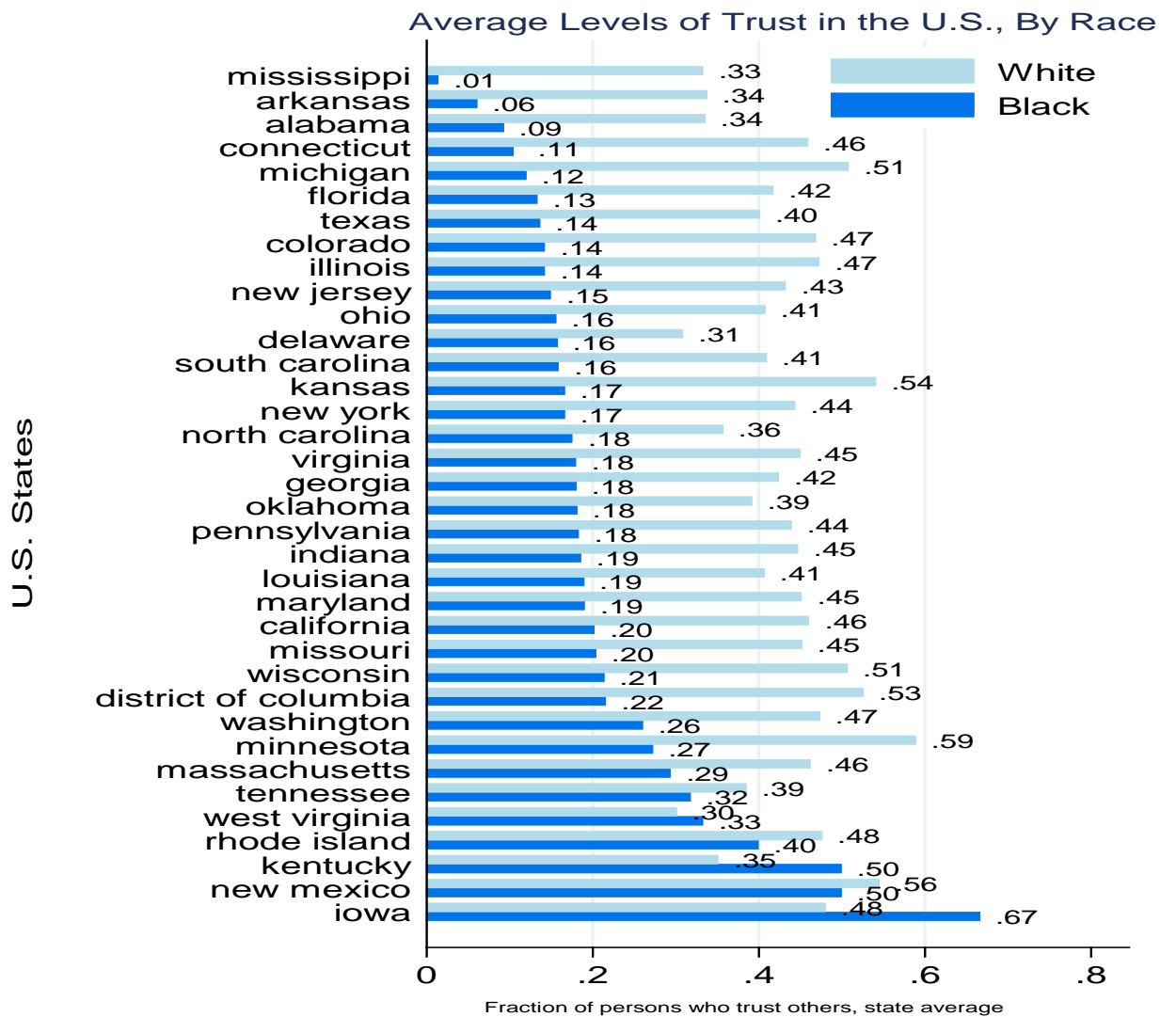
²³See: www.census.gov/content/dam/Census/library/publications/2014/acs/acsbr12-16.pdf.

Figure 4.3: Average Levels of Generalized Trust in the U.S., by State



Notes: Data on the fraction of persons who trust others is taken from the General Social Survey (1973-2014). The trust measure is calculated as the state average from the responses to the question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” Trust equals 1 if the respondent answers “Most people can be trusted” and 0 otherwise.

Figure 4.4: Average Levels of Generalized Trust in the U.S., by State and Race/Ethnicity



Notes: Data on the fraction of persons who trust others is taken from the General Social Survey (1973-2014). The trust measure is calculated as the state average from the responses to the question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” Trust equals 1 if the respondent answers “Most people can be trusted” and 0 otherwise. The data is sorted in descending order based on black racial category.

B. Slave Intensity Data

I use the slavery data from chapter 3 to construct average slavery intensity indices for my U.S. sample.²⁴ Average slavery intensity as defined earlier, is a measure of the average proportion of slaves in the population at a given point in time from an individual's ethnic group. Table B.4 in Appendix B presents the statistics of slave and free populations, as well as, slave intensities for U.S. states for years 1790-1860.

Figure 4.5: Current Map of the United States Depicting Slavery Status across States in 1860

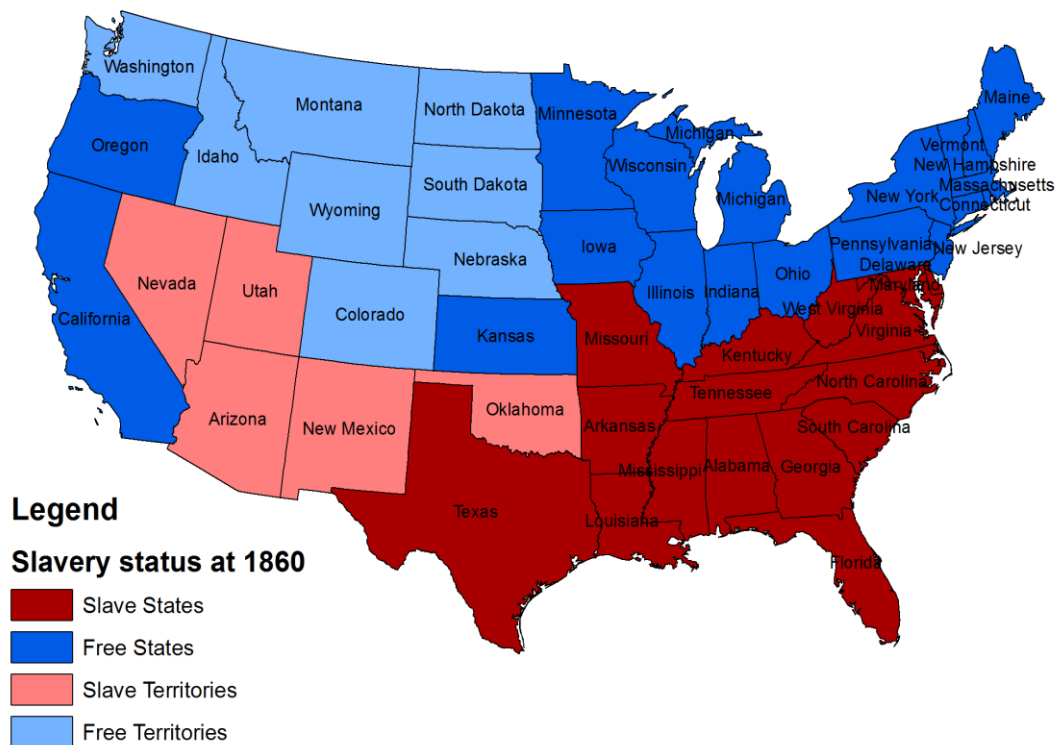


Figure 4.5 provides a visual picture of the slave and Free states in the United States as at 1860. The data indicates that slavery intensity was highest in states in the Deep or Lower South also historically referred to as the “Cotton States”

²⁴ Data on the fraction of slaves in the population across U.S. states between the 18th and 19th centuries can be sourced at <http://www.socialexplorer.com/> and <https://www.nhgis.org/>.

(Alabama, Georgia, Louisiana, Mississippi, and South Carolina), and some parts of the Upper South (historically called Upper South to differentiate from Lower South) such as Virginia, North Carolina and Maryland. For example, in 1830 over 1/2th of the population in South Carolina and Louisiana were slaves. Today some of the U.S. states with the largest shares of blacks are those that were historically characterized with large proportions of African slaves in their populations between the 18th and 19th centuries. According to the U.S. 2010 census, in 2010 37.3% of the population of Mississippi were black, and 32.4% and 30.5% of the populations of Louisiana and Georgia were black.

4.4.2 Empirical Strategy

To analyse the relationship between historical slavery and an individual's current level of trust I estimate the following regression model:

$$Prob(Trust_{i,a,s} = 1) = \beta_0 + \beta_1 SI_{i,a} + X'_{i,a,s} \gamma + \alpha_a + \alpha_s + \varepsilon_{i,a,s} \quad (3)$$

where i indexes individuals, a countries of origin or ancestries, and s states. $Trust_{i,a,s}$ is an indicator variable which varies across individuals, and equals 1 if an individual responds that “most people can be trusted”, and 0 otherwise. To construct the slavery intensity index for my U.S. sample, I identify individuals in the sample from different countries of origin, and use a combination of the country of family origin and race data from the surveys to assign slavery intensity values to those individuals. I use a measure of the average proportion of slaves in the U.S. population during 1790-1860 from an individual's ethnic or ancestral group. Within each country of origin in the GSS data set there are individuals belonging to different racial or ethnic groups (See Appendix B for demographic samples of the GSS). For example, countries of origin such as Mexico and Puerto Rico are characterized by respondents belonging to different ethnic/racial groups such as whites and blacks, as well as individuals who are of mixed ancestries. Like cross-country methodology, I assign different weights to mixed populations such as mestizos and mulattoes. Thus, $SI_{i,a}$ is the average slavery intensity for individual i from country of origin a . $X'_{i,a,s} \gamma$ is a set of individual level covariates such as age, gender, education, religion, a dummy variable equal to 1 if the individual is

divorced or separated, and a dummy variable equal to 1 if the individual is married. Regressions also include controls for the characteristics of the county in which the respondent resides.²⁵ One such variable is the racial fragmentation of the respondent's county which measures the racial configuration of the county. I follow the literature in constructing this measure as follows (Alesina and La Ferrara 2002):

$$Race_j = 1 - \sum_k S_{kj}^2 \quad (4)$$

where j represents a county, and k the following races: (i) White; (ii) Black, (iii) Native American, and (iv) Asian. The racial fragmentation index measures the probability that two randomly drawn individuals in a given county belong to different races. Previous studies have shown this variable to be correlated with trust (Alesina and La Ferrara 2002; Nunn 2011). α_a are country of origin fixed effects, and α_s are state fixed effects which are meant to capture time invariant state characteristics which may affect trust. $\varepsilon_{i,a,s}$ is a random error term. The coefficient of interest in equation (3) is β_1 .

4.4.3 Empirical Results

The estimates in Table 4.3 show that historical slavery is negatively correlated with individual trust in others today. The estimated coefficient of -0.786 in column (1) is statistically significant, and suggest that a one standard deviation increase in slavery intensity decreases trust by 10% of its sample mean. Regressions include controls for other individual characteristics such as age, gender, education, various kinds of religious association and income. Trust is positively correlated with income; a one standard deviation increase in income increases trust by 5% of its sample mean. Like the cross-country regressions, the magnitude of the estimated slavery coefficient is larger in comparison to income.

The age coefficients indicate that an individual's level of trust in others increases with age, however at a diminishing rate. The coefficients on years of education are statistically significant, and indicate that more educated individuals have higher levels of trust. This relationship has also been found in other studies by

²⁵ A county in the United States is a geographic and political subdivision of a state, usually assigned some level of government authority. It is therefore a level of disaggregation finer than a U.S. state. The United States has a total of 3143 counties and county-equivalents.

Alesina and Ferrara (2002) and Helliwell and Putnam (2007). The results on years of education indicate that a one standard deviation increase in education results, on average, in about one-fifth a standard deviation increase the propensity to trust. The variable divorce/separated which captures recent traumatic experiences is negatively correlated with trust, although the magnitude of the effects is smaller than that of slavery. Religious affiliation is generally insignificant in U.S. regressions, and this is similar to results found by Alesina and Ferrara (2002) who suggest that this may be because trust is more correlated with social interactions than with philosophical or religious attitudes, and it may not be religious beliefs but rather the organized forms of religion in different parts of the world that may influence social behaviour in different ways. This implies that overtime American society may becoming more homogeneous or there is greater fusion where religion is concerned (that is, “the melting pot” theory). This result differs from the cross-country analysis where religious association was found to generally be a significant predictor of trust.

The racial fragmentation of a county or community is negatively correlated with an individual’s level of trust. This is consistent with the results found by previous studies (Alesina and Ferrara 2002; Uslaner 2012) who found that communities that are more racially fragmented or more diverse have lower levels of trust. The coefficient on slavery intensity remains significant even after controlling for unobserved heterogeneity. Column (4) includes country of origin fixed effects, while Column (5) includes state fixed effects. The specification in column (6) includes two-way fixed effects for country of origin and state. State fixed effects allows me to exclude that slavery picks up time-invariant characteristics at the state level. After controlling for as many observables as possible, and controlling for unobserved heterogeneity the estimated coefficient on slavery intensity remains a significant predictor of individual trust today.

Table 4.2: Relationship between Historical Slavery and Individual Trust in the U.S. – OLS Estimates

Dependent variable:						
Trust others	(1)	(2)	(3)	(4)	(5)	(6)
Slavery intensity	-0.786*** (0.019)	-0.770*** (0.017)	-0.751*** (0.016)	-0.749*** (0.017)	-0.712*** (0.015)	-0.720*** (0.024)
Age	0.010*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.013*** (0.002)
Age squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000** (0.000)
Female	-0.034*** (0.003)	-0.032*** (0.003)	-0.032*** (0.003)	-0.032*** (0.003)	-0.031*** (0.003)	-0.025** (0.007)
Years of education	0.039*** (0.004)	0.039*** (0.004)	0.039*** (0.004)	0.038*** (0.004)	0.038*** (0.004)	0.037*** (0.004)
Children	0.002 (0.003)	0.002 (0.003)	0.002 (0.002)	0.002 (0.002)	0.001 (0.002)	-0.001 (0.002)
Working part-time	0.048*** (0.009)	0.046*** (0.009)	0.046*** (0.008)	0.046*** (0.008)	0.041*** (0.008)	0.069*** (0.007)
Unemployed/laid-off	-0.027* (0.011)	-0.025* (0.010)	-0.025* (0.010)	-0.025* (0.010)	-0.027* (0.011)	-0.015 (0.024)
Retired	-0.017** (0.004)	-0.018** (0.004)	-0.018** (0.004)	-0.019** (0.004)	-0.019** (0.004)	0.030* (0.013)
Protestant	0.001 (0.005)	-0.001 (0.004)	-0.001 (0.004)	-0.000 (0.004)	0.010 (0.005)	-0.004 (0.011)
Catholic	0.015** (0.005)	0.012* (0.005)	0.011 (0.006)	0.012* (0.006)	0.011 (0.006)	-0.016 (0.009)
Jew	-0.025** (0.007)	-0.027** (0.007)	-0.025** (0.008)	-0.026** (0.008)	-0.012 (0.006)	-0.019* (0.008)
Muslim	-0.080* (0.036)	-0.079* (0.033)	-0.073* (0.033)	-0.073* (0.032)	-0.077* (0.034)	-0.106 (0.097)
Buddhist	0.070 (0.038)	0.071 (0.038)	0.077 (0.037)	0.078 (0.037)	0.059 (0.036)	-0.038 (0.026)
Hindu	0.005 (0.045)	0.004 (0.045)	0.006 (0.044)	0.003 (0.043)	0.006 (0.037)	0.055* (0.025)

(continued)

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
Trust others						
Divorced/separated		-0.040*** (0.003)	-0.040*** (0.003)	-0.040*** (0.003)	-0.039*** (0.002)	-0.040*** (0.007)
Racial fragmentation (county)			-0.098*** (0.013)	-0.100*** (0.014)	-0.061*** (0.005)	-0.074*** (0.014)
Same state at age 16				-0.013** (0.004)	-0.016* (0.006)	-0.009 (0.006)
Real income (ln)						0.016* (0.006)
Country of origin fixed effects	YES	YES	YES	YES	YES	YES
State fixed effects	NO	NO	NO	NO	NO	YES
Observations	24,428	24,426	24,426	24,426	24,426	11,125
R-squared	0.12	0.12	0.12	0.12	0.13	0.13

Notes: Slavery intensity is the average slavery intensity for years 1750-1860. Trust data and data on other individual characteristics are from the General Social Survey (1973-2014). Standard errors are adjusted for clustering of the residuals at the race level. All regressions include dummies for survey year. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

4.4.4 Robustness Checks

The validity of my approach relies on the assumption that the relationship between slavery and individual trust is not driven by omitted variable bias. Although I control for time-invariant factors, the exogeneity of slavery might still be of concern. In this section I consider various robustness checks. Because it is impossible to account for all un-observables, my results may still be biased by unobservable factors. One robustness check I undertake is to use a strategy that uses selection on observables to assess the bias from unobservable. This strategy was proposed by Altonji, Elder, and Taber (2005), and used in other papers such as Nunn and Wantchekon (2011). Altonji et al suggest that one can use selection on observables to assess selection bias or possible bias from un-observables. In order to do this, one needs to measure how much stronger selection on un-observables, relative to selection on observables, must be to explain away the full estimated effect on the variable of interest, that is, to explain away the entire slavery effect.

The measure used to calculate selection bias is the following ratio: $\hat{\beta}^F / (\hat{\beta}^R - \hat{\beta}^F)$ where R stands for Restricted and F stands for Full. This ratio is decreasing in $(\hat{\beta}^R - \hat{\beta}^F)$ because the smaller the difference between $\hat{\beta}^R$ and $\hat{\beta}^F$, the less will the estimate be affected by selection on observables, and the selection on un-observables will need to be stronger relative to observables to explain away the entire effect. In the numerator, the larger $\hat{\beta}^F$, the larger the effect that needs to be explained away by selection on un-observables, and thus the greater the ratio.

To test this I, consider two sets of restricted covariates and two sets of full covariates. The restricted covariates include; one with no controls and another with a few set of controls which include age, age squared, and the gender indicator variable. The full covariates include one with all controls excluding fixed effects, and the other including all controls plus fixed effects. This strategy therefore provides me with four combinations of restricted and unrestricted controls that can be utilized to calculate the ratios. I use this strategy to explore the possibility of selection bias in cross-country and United States regressions, and the results are reported in table 4.4. Table 4.4 shows that none of the ratios are less than 1. For the cross-country regressions, the ratios range from 1.5 to 5.0, and for the United States

regressions the ratios range from 1.8 to 5.4. This suggest that for both the cross-country and United States regressions selection on un-observables would have to be at least two times greater than selection on observables to explain away the entire slavery effect.

Table 4.3: Using Selection on Observables to Assess the Bias from Un-Observables

Controls in the restricted set	Controls in the full set	Cross-country Ratio	U.S. Ratio
None	Full set of controls from equation 1 excluding fixed effects	5.01	4.73
None	Full set of controls from equation 1 including fixed effects	1.63	1.79
Age, age squared, gender	Full set of controls from equation 1 excluding fixed effects	4.28	5.39
Age, age squared, gender	Full set of controls from equation 1 including fixed effects	1.54	1.83

Finally, I examine how my core regression coefficients perform when alternative estimation methods are used. Instead of using linear probability models, I check for robustness by estimating equations (2) and (3) using logit models. The results for cross-country specifications are reported in table 4.6, while U.S. specifications are reported in table 4.7. The logit estimates are qualitatively like that of OLS estimates. The estimated coefficient on slavery intensity is negative and significant at the one percent level in all regressions.

Table 4.4: Logit Estimates of the Determinants of Trust - Cross-Country

Dependent Variable: Trust Others	(1)	(2)	(3)	(4)	(5)	(6)
Slavery intensity	-0.574*** (0.033)	-0.552*** (0.045)	-0.434*** (0.037)	-0.286*** (0.031)	-0.277*** (0.044)	-0.269*** (0.054)
Female		0.004 (0.004)	0.003 (0.004)	-0.001 (0.004)	-0.003 (0.004)	-0.003 (0.004)
Age		0.002** (0.001)	0.001* (0.001)	0.001* (0.001)	0.001 (0.001)	0.001 (0.001)
Education		0.023*** (0.001)	0.024*** (0.001)	0.023*** (0.001)	0.018*** (0.001)	0.018*** (0.001)
Income level		0.025*** (0.002)	0.021*** (0.002)	0.018*** (0.002)	0.011*** (0.002)	0.011*** (0.002)
Catholic		-0.044*** (0.005)	-0.035*** (0.005)	-0.028*** (0.005)	0.007 (0.005)	0.006 (0.005)
Protestant		0.027*** (0.006)	0.034*** (0.007)	0.035*** (0.007)	0.030*** (0.007)	0.029*** (0.007)
Muslim		-0.084*** (0.022)	-0.078*** (0.023)	-0.040 (0.031)	-0.060* (0.0244)	-0.038 (0.029)
Hindu		-0.158*** (0.008)	-0.150*** (0.009)	-0.133*** (0.013)	-0.100*** (0.018)	-0.087*** (0.021)
Jew		0.040 (0.028)	0.044 (0.028)	0.034 (0.027)	0.003 (0.029)	0.002 (0.022)
Buddhist		0.043 (0.036)	0.040 (0.035)	0.044 (0.036)	0.024 (0.033)	0.033 (0.033)
Racial fragmentation (region)			-0.148*** (0.012)	-0.099*** (0.012)	0.047** (0.018)	0.061*** (0.019)
Population (ln) - region			0.024*** (0.002)	0.020*** (0.002)	0.000 (0.002)	0.000 (0.002)
Ethnicity dummies	NO	NO	NO	YES	NO	YES
Country dummies	NO	NO	NO	NO	YES	YES
No of observations	47,192	37,230	37,230	37,230	37,230	37,230
Pseudo R-squared	0.01	0.06	0.07	0.07	0.12	0.12

Notes: Slavery intensity is the average slavery intensity for years 1750-1830. Trust data and data on other individual characteristics are from the World Values Surveys 1981-2014. Sample includes 14 countries; Argentina, Brazil, Canada, Chile, Colombia, Dominican Republic, Ecuador, Mexico, Peru, Puerto Rico, Trinidad and Tobago, United States, Uruguay, and Venezuela. All regressions include survey wave/year dummies. The $\hat{\beta}$'s are marginal logit coefficients calculated at the means. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

Table 4.5: Logit Estimates of the Determinants of Trust – U.S. Data

Dependent Variable: Trust Others	(1)	(2)	(3)	(4)	(5)
Slavery intensity	-1.000*** (0.014)	-0.980*** (0.013)	-0.955*** (0.011)	-0.953*** (0.011)	-0.920*** (0.024)
Age	0.011*** (0.000)	0.012*** (0.000)	0.012*** (0.000)	0.012*** (0.000)	0.012*** (0.000)
Age squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Female	-0.037*** (0.004)	-0.034*** (0.004)	-0.034*** (0.004)	-0.034*** (0.004)	-0.034*** (0.004)
Years of education	0.043*** (0.001)	0.043*** (0.001)	0.043*** (0.001)	0.043*** (0.001)	0.043*** (0.001)
Children	0.002 (0.003)	0.002 (0.003)	0.001 (0.003)	0.001 (0.003)	0.000 (0.003)
Employed	0.053*** (0.006)	0.051*** (0.006)	0.051*** (0.005)	0.051*** (0.006)	0.046*** (0.006)
Unemployed	-0.034*** (0.006)	-0.032*** (0.006)	-0.031*** (0.006)	-0.031*** (0.006)	-0.035*** (0.007)
Retired	-0.019*** (0.005)	-0.021*** (0.005)	-0.021*** (0.005)	-0.021*** (0.005)	-0.021*** (0.005)
Protestant	0.004 (0.004)	0.001 (0.004)	0.001 (0.004)	0.002 (0.004)	0.015*** (0.003)
Catholic	0.018** (0.007)	0.015* (0.007)	0.013 (0.008)	0.014 (0.008)	0.013 (0.008)
Jew	-0.030*** (0.004)	-0.033*** (0.004)	-0.031*** (0.004)	-0.031*** (0.004)	-0.016*** (0.004)
Muslim	-0.167*** (0.024)	-0.162*** (0.025)	-0.156*** (0.027)	-0.156*** (0.027)	-0.157*** (0.023)
Buddhist	0.074 (0.047)	0.076 (0.046)	0.083 (0.045)	0.084 (0.046)	0.061 (0.043)
Hindu	0.015 (0.050)	0.015 (0.050)	0.016 (0.049)	0.014 (0.048)	0.018 (0.042)

(continued)

Dependent Variable:	(1)	(2)	(3)	(4)	(5)
Trust Others					
Divorced		-0.042*** (0.002)	-0.041*** (0.002)	-0.042*** (0.002)	-0.041*** (0.002)
Racial fragmentation (county)			-0.115*** (0.007)	-0.117*** (0.007)	-0.074*** (0.002)
Same state at 16				-0.011* (0.006)	-0.016** (0.006)
Country of origin dummies	YES	YES	YES	YES	YES
State dummies	NO	NO	NO	NO	YES
Observations	24,428	24,426	24,426	24,426	24,426
Pseudo R Squared	0.10	0.10	0.10	0.10	0.11

Notes: Slavery intensity is the average slavery intensity for years 1750-1860. Trust data and data on other individual characteristics are from the General Social Survey (1973-2014). Standard errors are adjusted for clustering of the residuals at the race level. All regressions include dummies for survey year. The $\hat{\beta}$'s are marginal logit coefficients calculated at the means. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

4.5 Conclusion

The level of trust inherent in a society is essential for several socio-economic outcomes. High levels of trust enhance the capacity to cooperate, sometimes referred to as social capital. Trust while easy to break, can be hard to build. In this chapter I use the Americas as a case study, and empirically investigate the determinants of interpersonal trust. This research adds to a new and growing literature that seeks to understand the role that culture and norms play in a country's development outcomes. I add to this literature by trying to understand the origins of cultural differences in the Americas by looking into history. The Americas provides a unique laboratory for identifying the origins of cultural differences among descendant populations as in the Americas everyone's ancestry is mainly not from their 'own location'. Meaning that American populations are mostly characterized by descendants of non-inhabitant or indigenous groups. This is quite different in "Old World" countries in Europe, Africa and Asia where everyone's ancestry is mostly from their own location. In addition, historical events such as slavery provide a plausible source of identifying the heterogeneous effects of such events across generations and countries.

The results in this chapter provide evidence that low levels of trust can be traced back to the legacy of slavery. I find that an individual's level of trust of others is lower if their ancestors were more profoundly impacted by slavery, and argue that one mechanism through which past slavery adversely affects trust today is through the intergenerational transmission of beliefs over time. Slavery thus appears to have engendered a culture of distrust which is being transmitted across generations, particularly among blacks; the majority of whom are slave descendants. I also found that the average trust of racially fragmented communities is lower. In the United States, communities that are more racially diverse generally tend to have a higher proportion of blacks, and in these communities the level of trust of the white population goes down compared to white populations in less diverse communities. This result is like that found by Alesina and Ferrara (2002)

who propose that this may be because blacks have a lower tendency to trust, the average trust in communities with blacks is lower, and hence everyone will trust less as an equilibrium response to a low trust environment.

Among the sample of countries, average trust is lowest in Trinidad and Tobago where more than one third of the population is black. Although my sample does not include countries such as Haiti and Jamaica, I would expect similar findings of low levels of average trust in those populations. The United States presents interesting results, in that, the average trust is generally lower in former slave-states compared to former free-states.

Previous studies have shown that institutions with weaker enforcement tend to persist in low trust environments, and in these environments low levels of trust and weak institutions persist among future generations. Acemoglu et al (2001), found that American countries in Latin America and the Caribbean such as Brazil, Haiti, Peru, Jamaica and Trinidad and Tobago, tend to have lower levels of expropriation risks and thus weaker institutions in comparison to American countries such as the United States and Canada. A more detailed analysis on the link between slavery, the ancestral populations of American societies and institutions is thus an important area for future research.

Chapter 5

Interracial Marriages, Inequality & Social Mobility: An Empirical Study of Racial Minorities in the United States

“Marriage is one of the ‘basic civil rights of man’, fundamental to our very existence and survival. ...To deny this fundamental freedom on so unsupportable a basis as the racial classifications embodied in these statutes, classifications so directly subversive of the principle of equality at the heart of the Fourteenth Amendment, is surely to deprive all the state’s citizens of liberty without due process of the law.”

—Chief Justice Earl Warren²⁶

5.1 Introduction

The United States presents a special case, in that, the post-abolition period saw a sequence of events restricting the civil rights of freed slaves and their descendants. One such restriction applied to the social life of freed slaves and their descendants, where intermarriage with whites was forbidden. Over time laws prohibiting interracial marriage or exogamy also applied to Asians, particularly in western states. Marriage was not the only restriction, other segregation policies also applied to other areas such as; housing, transportation and education. These policies had the effect of limiting such things as blacks’ occupational and educational attainment, and contributing to the perpetuation of black-white inequality in education and earnings. A recent, but growing body of empirical literature has shown that school desegregation had the impact of improving blacks’ educational attainment, and increasing their subsequent adult incomes (Guryan, 2004; Ashenfelter et al., 2005; Jonhson, 2011). However, although black-white equality in income and education has shown greater convergence in recent times, there has

²⁶ See Congressional Record: Proceedings and Debates of the 110th Congress, First Session Volume 153 Part II.

been less convergence in other spheres such as marriage and housing. Whether greater convergence occurs in all 3 spheres (that is; marriage, education and income) depends partly on the degree of social and economic barriers separating the two groups. This also applies to other racial minority groups in the U.S. such as Asians and Native Americans.

In this chapter I aim to explore whether anti-miscegenation laws that prohibited interracial marriages and predominantly black-white marriages, hindered unions that would have resulted in higher incomes for minorities and that of their children. Such an analysis presents empirical issues as the decision to enter a marriage whether endogamous or exogamous is likely to be endogenous. To deal with issues of endogeneity, I use a two-stage model which is explained further in the chapter.

Intermarriage has longed been studied by sociologists and is seen as a mechanism affecting social mobility (see, e.g., Dunton and Featherman 1983). In addition, an increasing number of economists have also started to consider the determinants of intermarriage as well as its consequences (see, e.g., Meng and Gregory 2005). The rate at which the gap narrows on dimensions such as income and education between white and non-white Americans may partly depend on the rate of intermarriage. The rate of intermarriage can potentially also provide a reasonable measure of assessing changes in social mobility and inequality in the United States.

This chapter adds to a growing body of research on intermarriage, its causes and consequences, by utilizing data from the Integrated Public Use Microdata Series (IPUMS) one percent samples of the United States population from 1940 to 2000. I examine the relationship between intermarriage and outcomes such as socioeconomic status/earnings, intergenerational mobility and inequality. Most the literature to date has focused on the determinants of intermarriage as well as some consequences of intermarriage for US immigrants. However, Fryer (2007) began to consider the determinants of intermarriage for all Americans in general, as well as, the importance of interracial marriage in understanding racial dynamics and social integration in American society. The chapter adds to the literature by taking initial steps in understanding some of the consequences of interracial marriages, and to the best of my knowledge this is the first study that makes an interracial marriage link to inequality and intergenerational social mobility utilizing US data.

The remainder of the chapter is organized as follows. Section 5.2 provides a historical background of interracial marriages in the United States, as well as some statistics on historical trends in interracial marriage. The section also provides a brief discussion of the era of anti-miscegenation laws in the US. Section 5.3 discusses the theoretical framework used in the chapter. Section 5.4 provides a description of the data as well as some descriptive statistics. Section 5.5 analyses the relationship between an individual's marital status (whether they are in an exogamous or endogamous marriage) and their socioeconomic status. Sections 5.6 and 5.7 analyse intermarriage as a plausible channel affecting social mobility and inequality respectively. Section 5.8 concludes and suggests avenues for future research.

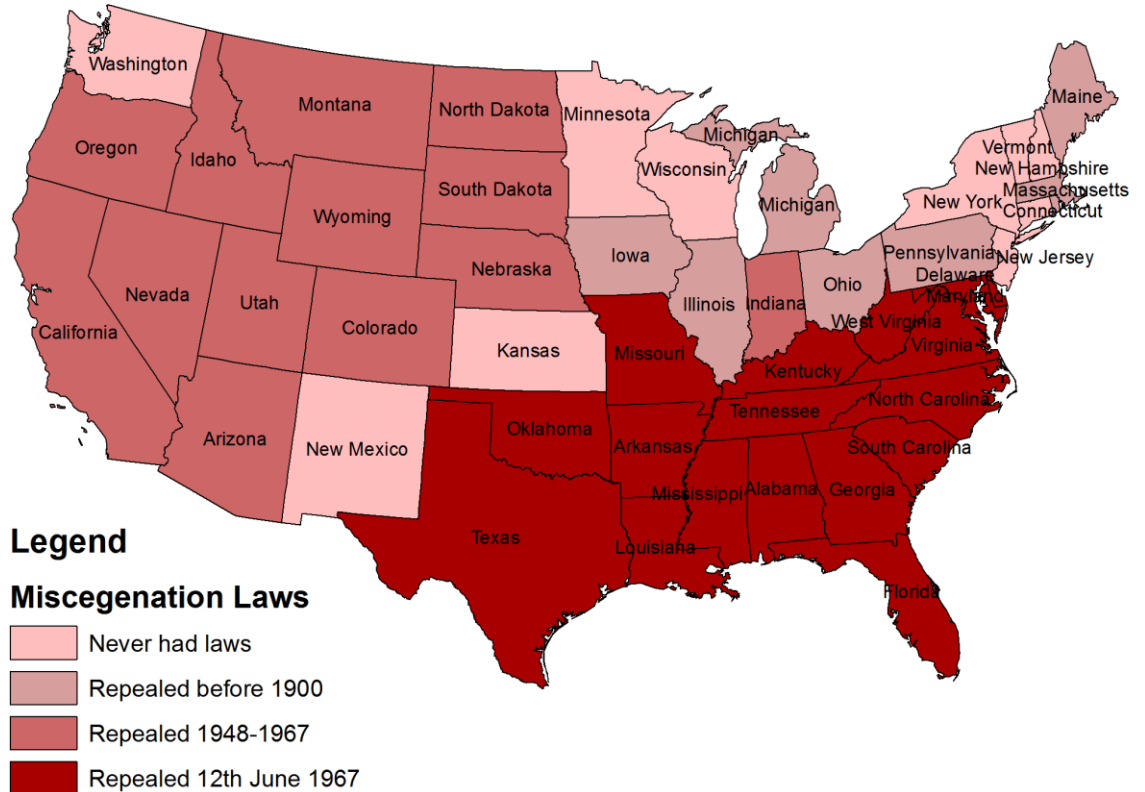
5.2 Historical Background

In this section I discuss the historical background to motivate the theoretical framework and empirical strategy used in the study. Prior to the 1868 14th Amendment to the U.S. constitution 35 states, almost 50% of which were in the south, had anti-miscegenation laws in place, and by 1960 27 of those states still had laws in place. The term miscegenation was invented in the US in 1863 during the American Civil War over debates of the possibility of black-white intermarriage after the abolition of slavery. In the 1660s Maryland became the first colony to enact laws against interracial marriage, and by the 1750s all the Southern states, as well as Massachusetts and Pennsylvania had anti-miscegenation laws in place. White-black marriages were illegal in all states which had anti-miscegenation laws. Over time interracial marriage also became prohibited between whites and other racial groups – Asians (Chinese and Japanese) and Filipinos (Browning 1951; Fryer 2007).

The 14th Amendment to the US Constitution (1868) during the reconstruction period granted former slaves citizenship rights and equal protection of the law. However, various states particularly in the South continued to have discriminatory policies such as anti-miscegenation laws after the passage of the 14th Amendment. Some states in the North, Midwest and West repealed anti-miscegenation laws after the passage of the amendment (example; Illinois repealed the law in 1874), and there were a few states particularly in the North that never

had anti-miscegenation laws such as Connecticut and New Jersey. Table E.1 in Appendix E provides data on permanent repeal of anti-miscegenation laws by state, including providing data on the races whites were banned from marrying. Figure 5.1 graphically depicts U.S. States by the year of repeal of Anti-miscegenation laws.

Figure 5.1: U.S. States by Year of Repeal of Anti-Miscegenation Laws

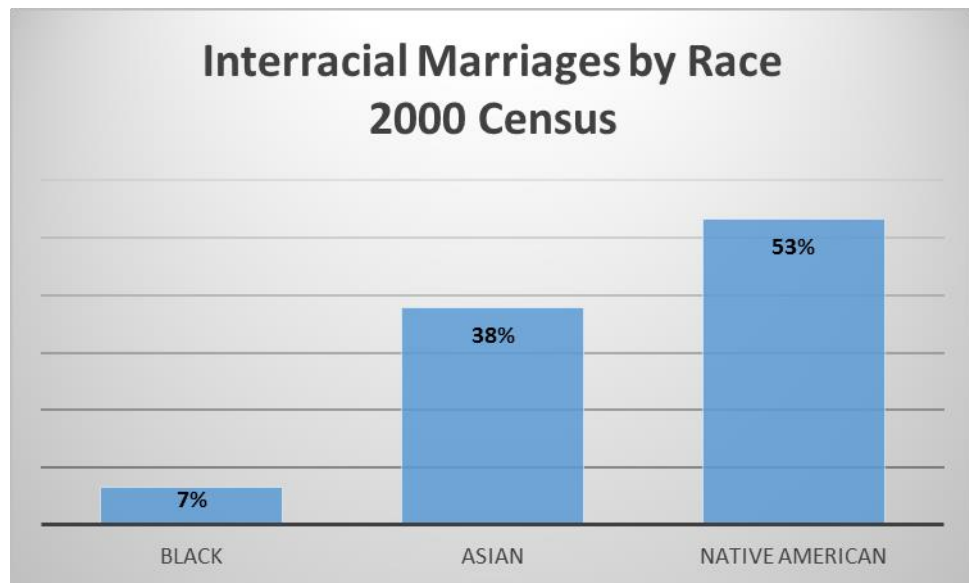


Sources: Browning, 1951, Fryer, 2007

By 1967 16 states (all in the South) still had anti-miscegenation laws in place. These states only repealed laws after a ruling by the US Supreme Court (*Loving vs Virginia*) which viewed these laws as unconstitutional. Prior to 1967 interracial marriages were rare, for example, in 1880 interracial marriages were about 0.1% of all marriages. However, from 1980 to 2000, interracial marriages have been on a significant upward trend, doubling every decade. In 1980 2% of all marriages were interracial, and by 2000 that figure more than doubled to 5%. Looking at interracial marriage trends among racial minority groups such as Blacks, Asians, and Native Americans; in 1940 out of all blacks 1% were in an exogamous

marriage, by 1980 and 2000 the percentage of blacks in exogamous marriages grew to 3% and 6% respectively. Comparing the trends for Asians to Blacks, the data shows that Asians were more likely to be in an exogamous marriage compared to blacks. In 1940 15% of all married Asians were in an interracial marriage, by 1980 and 2000 the percentage of Asians in interracial marriages grew to about 21% and 38% respectively. Many these interracial marriages were either white-black or white-Asian marriages; Black-Asian interracial marriages were extremely rare. Native Americans have the highest interracial marriage rate among all racial minority groups. In 1940 13% of all married Native Americans were in an interracial marriage, and by 1980 and 2000 the percentage of Native Americans in interracial marriages grew to about 53% in both years. Figure 5.2 graphically depicts the variation in interracial marriages by race using the 2000 1% sample.

Figure 5.2: Percentage of Persons in 2000 Married to Someone of a Different Race

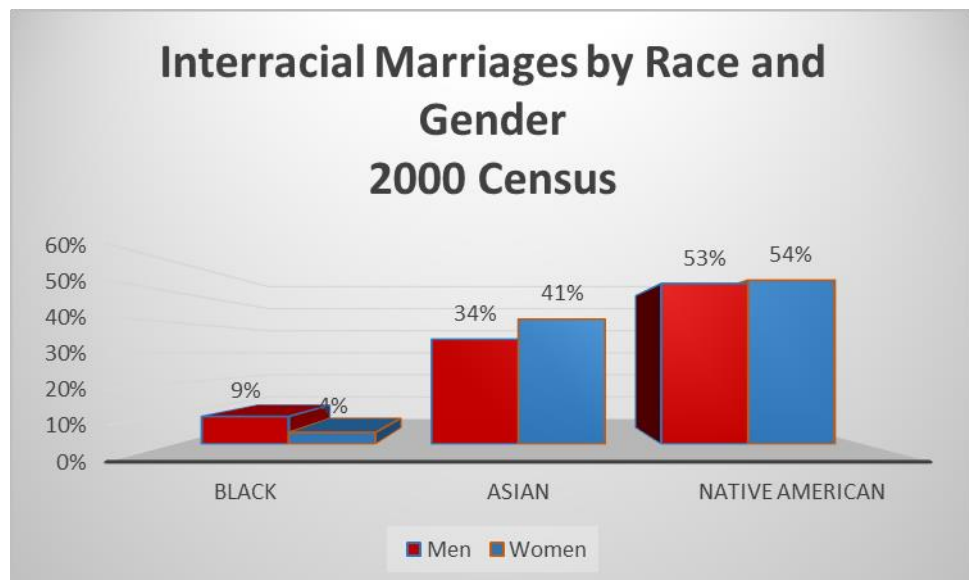


Notes: All groups are single race and of non-Hispanic origin. Asians exclude Pacific Islanders. Native Americans include American Indians and Alaska Natives.

The overall numbers depict significant gender gaps for married persons within these racial groups (see figure 5.3). Black males were more likely to be in an interracial marriage compared to black females. In 1980 4% of black males were in an exogamous marriage compared to 1% of black females, and in 2000 9% of all

married black males were in an interracial marriage, while 4% of all married black females were in an interracial marriage. Prior to 1960 Asian men were more likely than Asian women to be in an interracial marriage, however this pattern reversed around the 1960s. In 1960 10% of Asian females were in an exogamous marriage compared to 7% of Asian males, and by 2000 the percentage of Asian females in interracial marriages increased significantly to about 41%, while for males the figure increased to about 34%. Given this, one can clearly see that by 2000, Asian women were twice as likely to intermarry compared to Asian men. Native American women have always been slightly more likely to intermarry than the men in this group. In 1940 15% of Native American females married outside their race, compared with 12% of Native American men, and by the 2000 census 54% of Native American women had intermarried compared to 53% of Native American men. This increasing trend of interracial marriages is potentially related, at least in part, to changing social norms.

Figure 5.3: Interracial Marriage Trends by Race and Gender- 2000 census



Notes: All groups are single race and of non-Hispanic origin. Asians exclude Pacific Islanders. Native Americans include American Indians and Alaska Natives.

Following the abolition of slavery and the 1868 14th amendment black Americans continued to face severe discrimination, not only when it pertains to whom to marry but also there was segregation in schools. Prior to the revolutionary

civil rights decision of the US Supreme Court which struck down remaining bans on interracial marriage, a pivotal part of the civil rights journey was the Supreme Court decision which ended segregation in American schools where black and white children could be educated in the same classroom. The civil rights movement was not only essential for black Americans, but also for all other racial minority groups. Although overtime there has been increasing convergence in economic and social outcomes such as in income, health and education between whites and non-whites, there are still great inequities between the two groups. Black children are three times more likely than white children to be living in poverty, and Native American families are more likely than white and Asian families to be living in poverty (Costello et al 2001; Hurst 2015). Martin Kilson (1981) argues that blacks who come out of the 1960s and 1970s poverty ridden are more likely to pass on this status to their children. The income of Asian Americans is above that of all other minority groups and they are more likely to be living in mix neighbourhoods. An intriguing question is: How much of this can be attributed to their increasing intermarriage rates? Historically blacks were the most socially excluded group in the United States, however today several barriers which inhibited the economic progress of blacks are non-existent, yet still black-white equality seems farfetched. Interracial marriages appear to be an understudied factor that can play an important role in bridging this divide.

5.3 Theoretical Framework

The conceptual framework used in this chapter relies on influential work by Becker(1973,1974) who took an economic approach to understanding marriage. Becker posited that in a marriage market individuals match based on characteristics- such as age, education, income and race- that are either substitutes or complements in household production. Within this framework two individuals will marry if the marriage decision exceeds the sum of their utility from remaining single. Marriage market equilibrium is achieved through the sorting of mates that maximizes the total output over all marriages. The sorting of mates in the marriage market can result in either positive or negative assortative matching. Positive assortative matching occurs when people marry those with traits that are complementary or similar to theirs (matching of likes) while negative assortative

matching occurs when individuals marry those with traits that are substitutes to theirs (matching of unlikes).

Since Becker, economists have thought more about marriage markets and its determinants, as well as its implications on various economic and social outcomes such as education, labour supply, and inequality (Fernandez and Rogerson 2001; Fernandez 2001; Abramitzky 2011). Increased marital sorting has been found to significantly increase inequality. If individuals tend to interact more with individuals who are similar to themselves and less with others that differ on characteristics such as race, then societies will be more segregated and hence this can perpetuate inequality. The work of Becker has been extended in other ways, and several economists have also began studying interethnic marriage, its determinants and consequences (Meng and Gregory 2005; Fryer 2007). It is not surprising that similar variables which affect marriage decisions also affect intermarriage decisions. Thus human capital variables such as age and education used in marriage models are also typically used in intermarriage models.²⁷

The theory used widely in sociology to explain interracial marriage is Merton's (1941) social exchange theory. The theory predicts that marrying across racial lines is a cost. Given that whites are believed to be at the top of the social hierarchy, whites bare a cost to marrying someone from a lower status racial group and thus interracial marriage is a social cost to whites. Intermarriage with whites, however, is regarded as a benefit to other racial groups, in particular minority groups such as blacks, asians and native americans. Whites will therefore only intermarry if they are compensated with some other favourable quality or characteristic in a spouse such as income or education. For example, if a minority is intelligent, well educated and attractive these qualities may represent a trade between objective characteristics and social status (Fryer, 2007).²⁸

Recently the literature has shown that interethnic marriage affects the outcomes of immigrants such as their education levels and earnings (Meng and Gregory, 2005; Ours and Veenman, 2008). Others have shown marriage and

²⁷ Furtado (2006) and Furtado et al (2008) study the mechanisms through which education affects intermarriage. Also see Meng and Gregory, 2005 and Fryer, 2007 for a discussion on the determinants of intermarriage.

²⁸ See Fryer, 2007 for a more detailed discussion on theoretical models used to explain intermarriage. Other models include; search/interaction models.

therefore correspondingly intermarriage as a mechanism affecting social mobility (Roth and Peck, 1951; Dunton and Featherman, 1981; Clark, 2014). Marriage between elite families will increase the probability of maintaining the status of certain groups of people in the society. Applying this to the United States where the average black family earns less than the average white family, intramarriage among whites is expected to maintain status relevant traits of this racial group and lead to increasing inequality. The opposite is expected to be true for intermarriage between whites and blacks where it is expected that intermarriage will decrease inequality and increase the mobility of racial minorities in American society. Increasing rates of interracial marriage can also be used as an indicator of improved race relations and greater social integration.

5.4 Data Description

The data used throughout the chapter come from the U.S. censuses from 1940 to 2000 which are one percent random samples of the population.²⁹ The data set provides information for many households and individuals within those households. The censuses include data on age, sex, race, education, occupation and income among other individual characteristics, such as State of birth. Interracial couples are identified using the “spouse location” variable. A marriage is considered interracial if spouses report a different race at the time of the census. The sample is restricted to all U.S. born married persons 18 years and older who have a spouse present. Married individuals with spouses away from home are dropped from the sample as I am unable to identify the characteristics of the spouses of those individuals.

To conduct my analysis on the relationship between exogamy and an individual’s socioeconomic status, I use the spouse location variable to identify individuals in exogamous marriages, and link this data to the individuals’ occupational income score as a measure of their socioeconomic status. The census assigns an occupational income score to each individual based on their

²⁹ The data is publicly available online from IPUMS at <https://usa.ipums.org/usa/>. The appendix provides details on all the variables used in the analysis.

occupation.³⁰ The occupational score has been used in other papers and is seen as a reasonable proxy for socioeconomic status (Angrist 2002; Darity et al 2001; Sacerdote 2005). Table E.2 in Appendix E shows the 1940 to 2000 occupation and income scores for all racial minority groups. Physicians and Surgeons have the highest score of 80 in the table. Some of the lowest scores were those of housekeepers and farm laborers; scores of 6 and 9 respectively. Figures E.1 to E.6 in Appendix E show the full distribution of scores by race and gender for the 1940, 1970 and 2000 1% samples.

The analysis on interracial marriages and social mobility is conducted using data that links fathers to sons in the 1940-2000 1% samples. The 1940-2000 1% US census samples consists of a total of 4,329,209 sons and 3,234,985 fathers. From this data, I extract a total of 714,473 sons belonging to racial minority groups (excluding Hispanics and persons who listed their race as two or more major races). The sample of 714,473 sons belong only to households where the parents are married; sons whose parents are single, divorced, widowed or the father's spouse is absent are not included. The fathers in the sample are the male heads of household, and in a very small number of cases the fathers are probable step or adopted fathers. Sons with step or adopted fathers are retained in the sample since the objective of the study is not to measure genetic transmission but rather the transmission of economic status based on the household in which an individual grew up. Robustness checks are conducted by dropping sons with probable step/adopted fathers, and the results are reported in the Appendix.

I further restrict my sample of sons to those who are 18-40 years of age and whose fathers are 40-65 years of age, and retain the eldest son in households with multiple sons. Additional results are also reported in the Appendix for households with multiple sons between 18-40 years of age. After removing these observations, I am left with a sample of 35,005 sons and an equal number of fathers. The analysis on social mobility focuses on father-son correlations in earnings where the occupational income scores of sons and their fathers are used as a measure of income or socioeconomic status. The occupational income score as mentioned previously is the annual median income by occupation in hundreds of 1950 dollars.

³⁰ IPUMS links each occupation to the median total income (in hundreds of dollars) from the 1950 census to allocate an occupational income score to each occupation.

In the final analysis, I examine inequality and mobility patterns across U.S. states, and lay some foundations for interracial marriages as a potential channel that affects mobility and inequality. The data on income inequality come from the U.S. Census Bureau, and is measured using the Gini Coefficient for each state. The U.S. Census Bureau provides data on Gini coefficients for years 1969-1999 by state.

5.5 Interracial Marriage and Socioeconomic Status

In this section I look at the relationship between interracial marriages and an individual's socioeconomic status. The hypothesis is that individuals from racial minorities in exogamous marriages are wealthier than those in endogamous marriages. I hypothesize that interracial marriages increases the social and economic status of these individuals. For example, black persons in exogamous marriages are expected to be wealthier on average than their counterparts in endogamous marriages. One reason why intermarriage may contribute to increasing the socioeconomic status of blacks is that it may provide access to better networks and opportunities.

5.5.1 Empirical Strategy

A. Model Specification

I conduct my analysis in a few ways using the 1940 to 2000 censuses. Firstly, using individual data from the 1970 and 2000 censuses I analyze the relationship between an individual's marital status (that is, whether they are in an exogamous or endogamous marriage) and their socioeconomic status. At the individual level the following model is estimated:

$$Y_{ijs} = \beta_0 + IM_{ijs}\delta + X'_{ijs}\gamma + \theta_s + \theta_j + \varepsilon_{ijs} \quad (1)$$

where Y_{ijs} is the occupational income score for individual i , in racial group j , born in state s .³¹ IM_{ijs} is a dummy variable equal to one if individual i in racial group j , born in state s is in an exogamous marriage and zero otherwise. X'_{ijs} is a vector of covariates including age, years of education, gender and veteran status. θ_s are state-of-birth dummies that capture time-invariant state level factors. θ_j are a set of racial dummies and ε_{ijs} is the error term. The coefficient on IM_{ijs} (δ) is the coefficient of interest.

B. Econometric Issues

If the decision to enter into an exogamous marriage depends partly on the potential incomes within each family type then interracial marriage choices will be endogenous. In addition, if more educated, successful or productive individuals are likely to enter into an exogamous marriage then the endogeneity of interracial marriages should be taken into account when estimating the relationship between an individual's marital status and his/her socioeconomic status. This therefore means that equation (1) would need to be rooted in a system of equations developed from a theory of marriage³². First to estimate the contribution of different factors to the probability of interracial marriages, and in particular, the contribution of anti-miscegenation laws, I estimate equation (2) by OLS.

Using the census individuals cannot be followed over time, however I can track groups that are constant over time. I therefore construct synthetic cohorts where I can follow groups of individuals sharing common characteristics. Pseudo or synthetic panels have been used widely in the economics literature (Deaton 1985; Muney 2005; Clark and Royer 2013), and it has been shown that individuals sharing common characteristics such as year of birth can be grouped into cohorts after which the observations within these cohorts are treated as observations in a pseudo panel. I aggregate the census data by gender, ethnicity, cohort and state of birth, and I follow these cohorts over the 1940 to 2000 censuses.

³¹ The variable is a measure of socioeconomic status and varies across individuals.

³² Since similar variables that affect marriage also affect intermarriage it is assumed that the system of equations will be developed in the same manner for both marriage and intermarriage. This approach has been used by researchers studying the relationship between intermarriage and earnings for immigrants (Meng and Gregory 2005).

Using this methodology, I estimate equation (2) by grouping individuals into cohorts, and pooling the individual data from the 1940 to 2000 censuses. At the individual level the following model is estimated:

$$IM_{ijcs} = \sigma_1 + \omega ML_{jcs} + X'_{ijcs}\delta + \mu_c + \mu_s + v_{ijcs} \quad (2)$$

where IM_{ijcs} is a dummy variable equal to 1 if individual i , in racial group j , belonging to birth cohort c and born in state s is in an exogamous marriage and 0 otherwise. ML_{jcs} is a dummy variable equal to 1 if the anti-miscegenation law was repealed for individuals in racial group j , belonging to birth cohort c and born in state s when they were 18 years of age, 0 otherwise. X'_{ijcs} are other individual characteristics, μ_c and μ_s are cohort and state dummies respectively, and v_{ijcs} is a random error term. In equation (2) ω is the coefficient of interest.

Since the decision to intermarry is likely to be endogenous as discussed previously, fitting equation (1) directly to the data is likely to lead to bias and inconsistent results when examining the relationship between intermarriage and an individual's socioeconomic status. Thus, another approach I take is to aggregate the individual data by gender, race, cohort (birth-year) and state-of-birth and estimate the following two stage least squares (2SLS) model:

$$IM_{gijcs} = \sigma_1 + \omega ML_{jcs} + X'_{gijcs}\delta + \mu_c + \mu_s + v_{gijcs} \quad (3)$$

$$Y_{gijcs} = \beta_1 + IM_{gijcs}\theta + X'_{gijcs}\pi + \alpha_c + \alpha_s + \varepsilon_{gijcs} \quad (4)$$

where g indexes genders, j racial groups, c cohorts, and s states-of-birth. Y_{gijcs} is the average occupational income score for a group g of individuals in a given j racial group, c cohort, and s state-of-birth. IM_{gijcs} is the proportion of group g individuals in exogamous marriages in a given j racial group, c cohort, and s state-of-birth. ML_{jcs} is a dummy variable equal to 1 if anti-miscegenation laws were repealed for a group j of individuals in a given c cohort, and s state-of-birth when they were 18 years of age, 0 otherwise. X'_{gijcs} are other average characteristics for a group g of individuals in a given j racial group, c cohort, and s state-of-birth. μ_c

and μ_s are cohort and state-of-birth dummies respectively. $\varepsilon_{g jcs}$ and $v_{g jcs}$ are random error terms. The coefficient on exogamy, θ in the reduced form equation is the coefficient of interest. Equation (4) uses fitted values from equation (3).

C. Anti-miscegenation Laws, Year of Birth and Interracial Marriages

Anti-miscegenation laws which were in existence in many states before 1967 allows me to use a quasi-natural experiment to deal with issues of endogeneity, and provides me with an excellent opportunity to analyze the effects of changes in these laws on interracial marriage rates and subsequently on changes in the socioeconomic status of individuals from racial minority groups. The assumption is that the law does not have a direct effect on the socioeconomic status of individuals except through its effect on interracial marriages.

Figures 5.4 and 5.5 illustrate the proportion of individuals in exogamous marriages by year of birth. This is based on the sample of individuals in the 1940 to 2000 census. The graphs show generally an increasing trend in the rate of interracial marriages for individuals born in the 1920s and 1930s. The graphs also show that the rate of exogamy tends to be higher, on average, for individuals in states where interracial marriage was legal when they were 18 years of age.

Figure 5.4: Exogamous Marriages and Year of Birth-1920s Cohort- First Stage

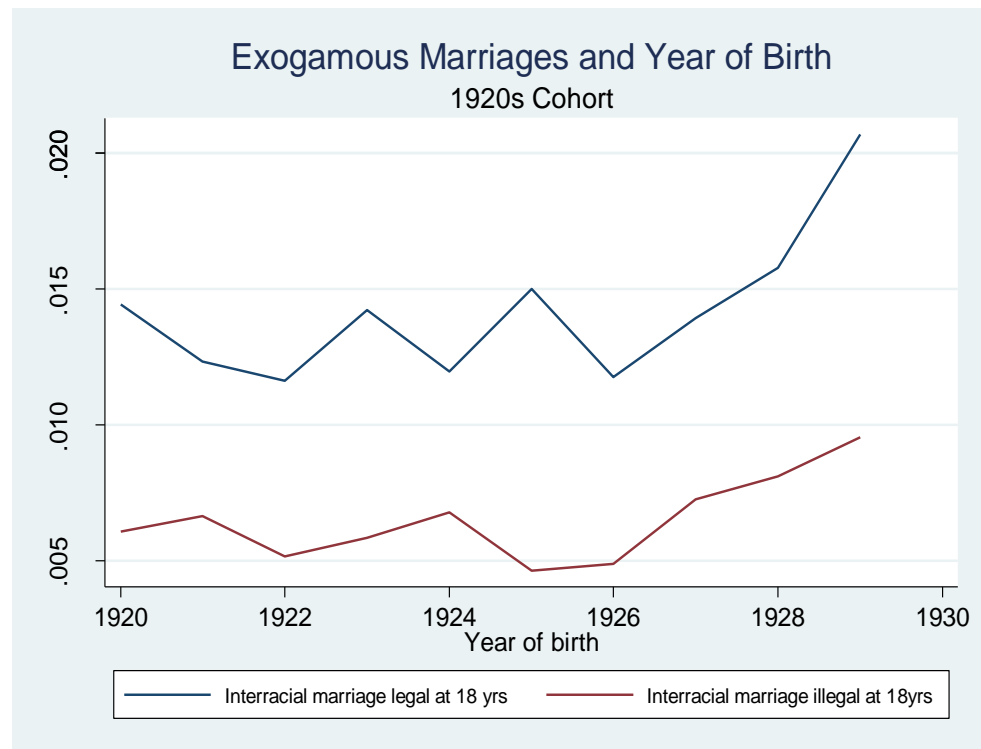


Figure 5.5: Occupational Income Score by Year of Birth-1920s Cohort- Reduced Form

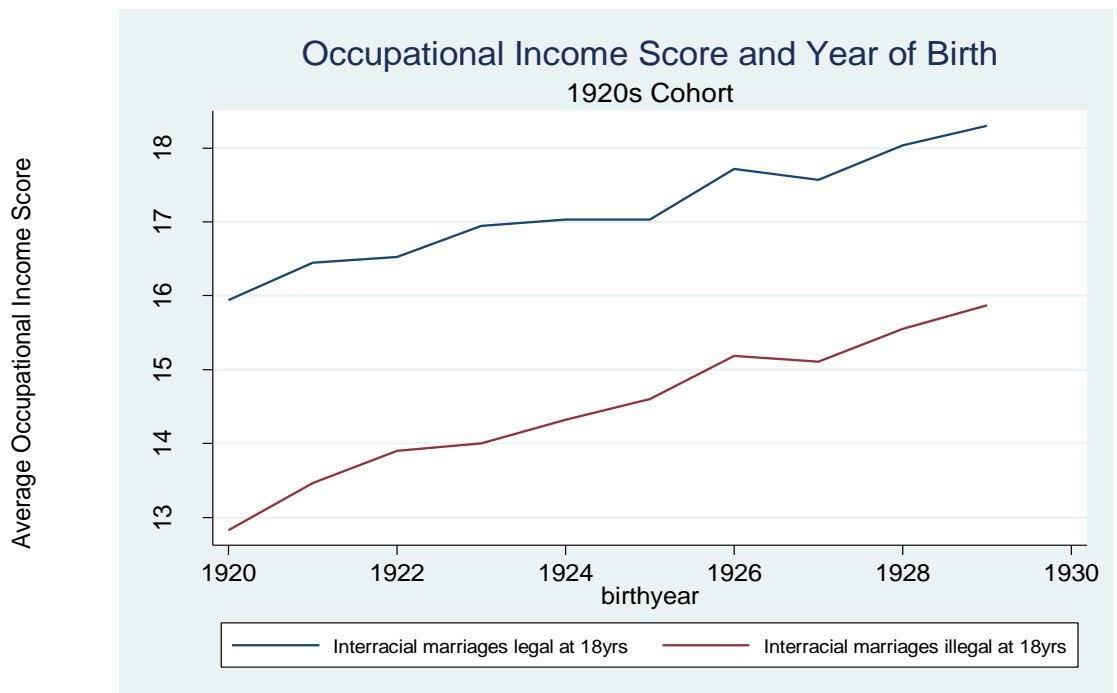


Figure 5.6: Exogamous Marriages and Year of Birth-1930s Cohort- First Stage

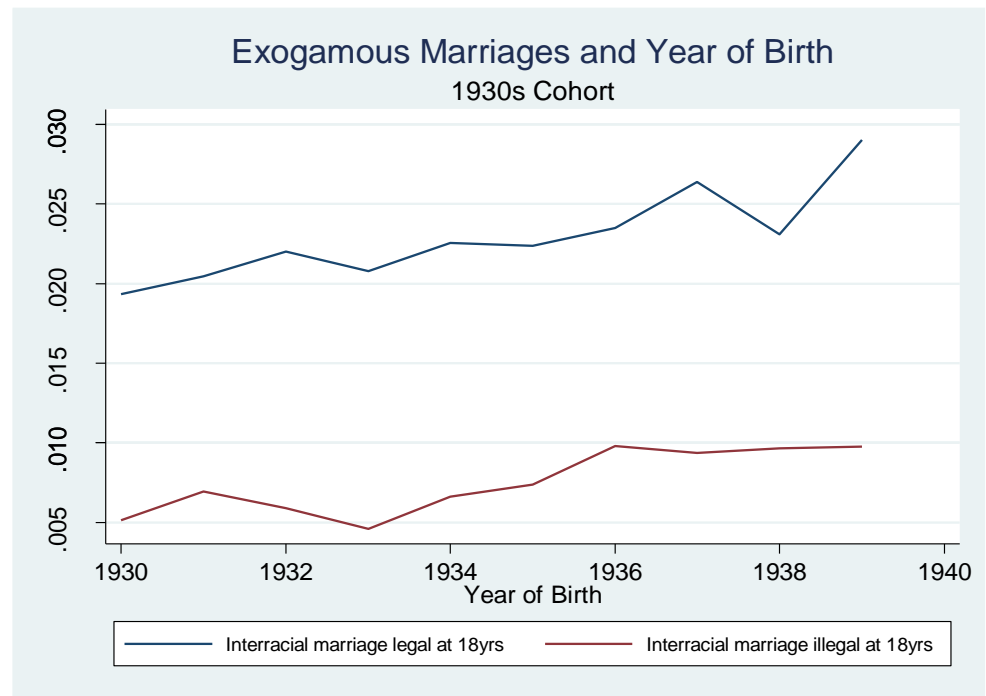
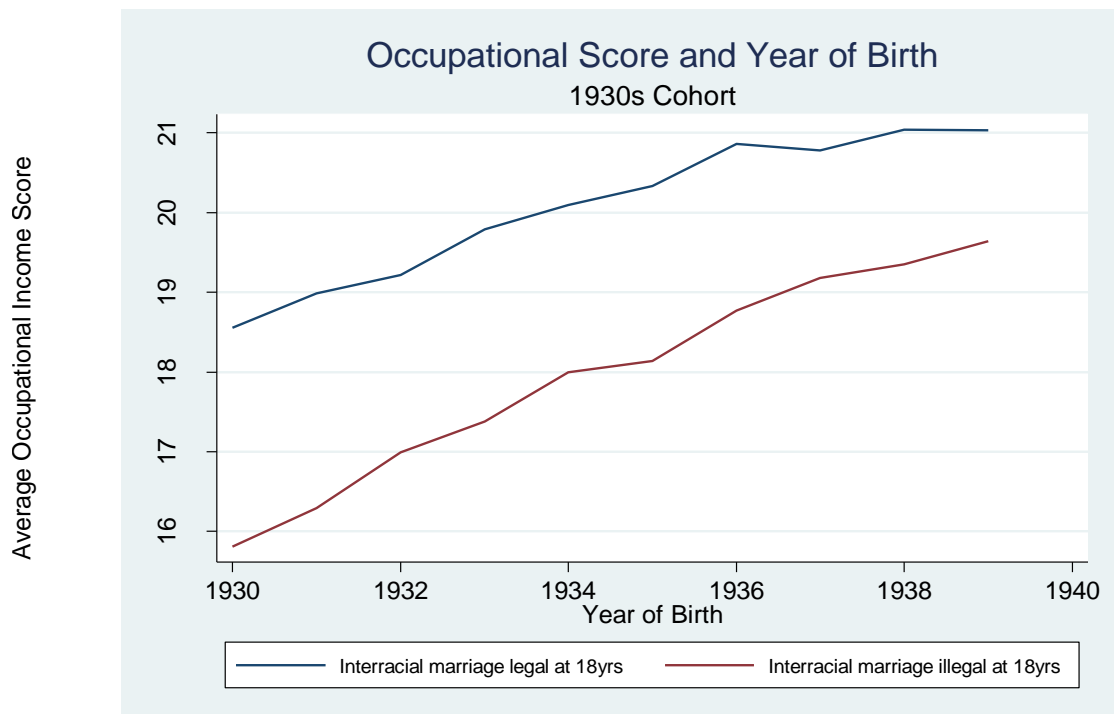


Figure 5.7: Occupational Income Score by Year of Birth-1930s Cohort- Reduced Form



Figures 5.6 and 5.7 show average occupational income scores by year of birth for the sample used to construct figures 5.4 and 5.5. The figures show that occupational

income scores are higher, on average, for individuals in states where interracial marriage was legal when they were 18 years of age. This is suggestive that there is a relationship between the 2 sets of diagrams.

5.5.2 *Empirical Results*

Tables 5.1 and 5.2 estimate the determinants of an individual's socioeconomic status using the 1970 and 2000 censuses. The tables suggest that intermarried minorities have higher social standing than minorities in endogamous marriages. The effects of an interracial marriage are generally both positive and statistically significant. Column (1) of Table 5.1 suggest that intermarried persons on average earn about 6% more than their counterparts in endogamous marriages. In column (2) when state-of-birth effects are held constant, the effect of exogamy on socioeconomic status remains significant with similar magnitude.

The coefficients on years of education and age have the expected signs and are significant. An extra year of schooling results in an income increase of about 7% on average for all individuals. If we only consider the men in the sample, table 5.1 reports that an extra year of schooling generates 4% increase in earnings for the average man, and for women the rate of return for an extra year of schooling is 11%. Also in table 5.1, intermarried men earn about 5% more than men in endogamous marriages, and intermarried women earn about 10% more than women in endogamous marriages.

The results for the 2000 census are similar, except the effect of exogamy is insignificant for women while for men the effect of exogamy is highly significant. Also, by the 2000 census intermarried men earned on average 10% more than men in endogamous marriages compared to a figure of about 5% in the 1970 census. Tables 5.1 and 5.2 also suggest that individuals who live in a different state to their state-of-birth ("movers") have higher occupations and thus earn more. The results in tables 5.1 and 5.2 which show the effect of exogamy on individual status are highly suggestive and may potentially suffer from issues of endogeneity explained in section 5.5.1.

Table 5.1: Individual Determinants of Socioeconomic Status-1970 Census

Dependent Variable: Ln(Occscore)	(1) Full Sample	(2) Full Sample	(3) Males	(4) Males	(5) Females	(6) Females
exogamy	0.062** (0.022)	0.059* (0.025)	0.050** (0.019)	0.048* (0.022)	0.094* (0.046)	0.102* (0.047)
male	1.039*** (0.008)	1.037*** (0.008)				
Age	0.047*** (0.002)	0.045*** (0.002)	0.075*** (0.002)	0.074*** (0.002)	0.026*** (0.003)	0.025*** (0.003)
Years of education	0.070*** (0.001)	0.068*** (0.001)	0.039*** (0.001)	0.036*** (0.001)	0.112*** (0.002)	0.112*** (0.003)
Mover	0.102*** (0.008)	0.114*** (0.009)	0.058*** (0.008)	0.074*** (0.009)	0.142*** (0.014)	0.142*** (0.015)
Native dummy		-0.062 (0.032)		-0.042 (0.031)	-0.072 (0.044)	-0.068 (0.056)
Asian dummy		0.149*** (0.040)		0.136*** (0.004)	0.218*** (0.039)	0.126 (0.068)
State-of-birth dummies	NO	YES	NO	YES	NO	YES
No. of observations	65,606	65,606	33,002	33,002	32,603	32,603
R2	.28	.29	.24	.24	.15	.16

Standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

Table 5.2: Individual Determinants of Socioeconomic Status-2000 Census (OLS)

Dependent Variable: Ln(Occscore)	(1) Full Sample	(2) Full Sample	(3) Males	(4) Males	(5) Females	(6) Females
exogamy	0.047*** (0.011)	0.058*** (0.012)	0.102*** (0.013)	0.094*** (0.014)	0.038 (0.022)	0.031 (0.022)
male	0.377*** (0.008)	0.376*** (0.008)				
Age	0.069*** (0.002)	0.069*** (0.002)	0.078*** (0.002)	0.078*** (0.002)	0.066*** (0.002)	0.066*** (0.002)
Years of education	0.091*** (0.002)	0.089*** (0.002)	0.076*** (0.002)	0.075*** (0.002)	0.106*** (0.002)	0.106*** (0.002)
Mover	0.056*** (0.008)	0.066*** (0.009)	0.059*** (0.010)	0.065*** (0.012)	0.058*** (0.012)	0.068*** (0.013)
Native dummy		-0.061** (0.019)	-0.015 (0.019)	0.004 (0.024)	-0.128*** (0.024)	-0.129*** (0.031)
Asian dummy		0.065* (0.026)	0.118*** (0.028)	0.174*** (0.032)	0.037 (0.031)	-0.034 (0.040)
State-of-birth dummies	NO	YES	NO	YES	NO	YES
No. of observations	75,810	75,810	38,557	38,557	37,253	37,253
R2	.33	.34	.35	.35	.31	.31

Standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

Before reporting the two stage results, I first provide evidence of changes in interracial marriage rates generated by changes in anti-miscegenation laws (the first stage). Table 5.3 shows the results and exploits pooled individual data from the 1940 to 2000 censuses. The variable ML (miscegenation law) is defined at the cohort and state-of-birth level. The regressions are estimated using OLS, and estimate the contribution of different factors to the probability of exogamous marriages. The coefficient on ML is both positive and highly significant in all regressions. The estimations suggest that the repealing of anti-miscegenation laws is associated with increased rates of exogamy. Column (1) shows that the repeal of anti-miscegenation laws is associated with an increase in the incidence of intermarriage by 13%. Most of the other variables have the expected signs, for example an increase in years of education increases the probability of an exogamous marriage for both men and women.

The repeal of Anti-miscegenation prohibiting interracial marriages varies across U.S. states, and across year of birth. Thus, the laws were a binding constraint on individuals in some states, as well as on individuals belonging to some birth cohorts. Therefore, because the repealing of the laws varies across states, the relationship between miscegenation laws and the probability of an interracial marriage is expected to vary among states with different laws. In addition, variability is expected across states for individuals belonging to different birth cohorts. To allow the effect of the law to vary by state-of-birth and year of birth, I include a set of state-of-birth dummies as well as a set of cohort dummies in columns 3 and 4 in Table 5.3. Column 3 additionally includes interactions between region-of-birth and race. Incorporating the cross-state variation in anti-miscegenation laws, we see that the effect of the repeal of the laws is associated with an increased incidence of interracial marriages of 10% in column (2) and about 6% in column (3). Columns 4 to 7 report results from specifications by gender. The coefficient on miscegenation law is positive and significant for both men and women at the 1 percent level.

Table 5.3: Determinants of Exogamous Marriage among Racial Minorities-Individual Data (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable:	Full	Full	Full				
exogamy	Sample	Sample	Sample	Males	Males	Females	Females
ML	0.129*** (0.001)	0.095*** (0.002)	0.061*** (0.002)	0.135*** (0.001)	0.0721*** (0.003)	0.123*** (0.001)	0.049*** (0.003)
male	0.017*** (0.001)	0.016*** (0.005)	0.017*** (0.001)				
age	0.003*** (0.000)	0.002*** (0.001)	0.002*** (0.000)	0.003*** (0.000)	0.002*** (0.000)	0.003*** (0.000)	0.001*** (0.000)
Years of education	0.003*** (0.000)	0.000 (0.000)	-0.000** (0.000)	0.004*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	-0.001*** (0.000)
Sex ratio				0.042*** (0.003)	-0.031*** (0.003)	-0.042*** (0.002)	-0.021*** (0.003)

(continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable:	Full	Full	Full				
exogamy	Sample	Sample	Sample	Males	Males	Females	Females
Mover	0.037*** (0.001)	0.039*** (0.001)	0.037*** (0.001)	0.042*** (0.001)	0.045*** (0.001)	0.031*** (0.001)	0.029*** (0.001)
State-of-birth dummies	NO	YES	YES	NO	YES	NO	YES
Cohort dummies	NO	YES	YES	NO	YES	NO	YES
Region-of-birth*race	NO	NO	YES	NO	YES	NO	YES
No. of observations	771,428	771,428	771,428	388,186	388,186	383,242	383,242
R2	.07	.14	.21	.08	.18	.07	.25

*Standard errors in parentheses. Sample consists of individuals born in the United States. The sample is drawn from the 1 percent sample of the 1940 to 2000 censuses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.*

In table 5.4, I report results of the effect of the law by race. The incidence of interracial marriage given repeal of the laws is highest for Asians. Column (2) of table 4 shows that the repeal of laws is associated with a 17% increase in the incidence of exogamous marriages among Asians. The magnitude of the effect for blacks is the smallest with an effect of an increased incidence of interracial marriage among blacks of about 1% on average. Asian and Native American women are more likely to intermarry compared to the men in these groups. On the other hand, black men are more likely to intermarry than black women. Table 5.4 suggest that the repeal of laws is associated with an increase in the frequency of intermarriage among Asian females of about 17% compared to about 16% among Asian males. For black males, the effect of the repeal of the laws generates an increased incidence of intermarriage of 2% compared to less than 1% for black females. Slightly more Native American women intermarry compared to Native American men.

Table 5.5 reports 2SLS results using aggregated data at the gender/race/cohort and state-of-birth level. In column (3) the estimate for exogamy is positive and significant at the 1 percent level. The coefficient of 0.551 suggests that persons belonging to minority groups who marry outside their race earned on average 55% more than their counterparts who marry individuals of their same race over the 7 census years. From the table, we see that intermarriage is still positively and significantly associated with earnings/socioeconomic status even after controlling for human capital and demographic characteristics. The human capital variables such as years of education have the expected sign and is statistically significant. In column (3), an additional year of schooling is associated with a 5% increase in income. Also, individuals who reside in a different state from where they were born earned on average about 8% more than individuals who reside in the same state as their state-of-birth. In other words, the earnings/socioeconomic status of “movers” is higher than that of “non-movers”.

Table 5.6 reports results from the Wald estimation using data aggregated at the gender/race/cohort/region-of-birth and miscegenation law levels. Angrist (1991) show that the Wald estimator and 2SLS are similar given that both are constructed from the same data. The Wald slope estimate is the difference in

dependent variable group means divided by the difference in regressor group means. In column (1) the Wald estimate on exogamy of 0.13 is significant at the 1 percent level. The coefficient of 0.13 suggests that on average persons in exogamous marriages earned about 13% more than those in endogamous marriages over the 7 census years. In column (2) when year of birth effects are held constant, the coefficient on exogamy reduces in magnitude to 0.09. In Column (4) when year of birth and region-of-birth dummies are included in the regression, the coefficient on exogamy is 0.10. Overall the results suggest that intermarried minorities earnings/socioeconomic status is significantly higher than that of minorities who are not in an exogamous marriage.

Table 5.4: Selected Results of Determinants of Exogamous Marriage by Race- Individual Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent Variable: exogamy	Full Sample Blacks	Full Sample Asians	Full Sample Native	Black Males	Black Females	Asian Males	Asian Females	Native Males	Native Females
ML	0.010*** (0.001)	0.166*** (0.009)	0.048*** (0.012)	0.020*** (0.001)	0.006*** (0.001)	0.156*** (0.013)	0.173*** (0.012)	0.050** (0.018)	0.051** (0.017)
male	0.022*** (0.000)	-0.021*** (0.005)	-0.019*** (0.004)						
age	0.000*** (0.000)	0.017*** (0.001)	0.000*** (0.001)	0.000*** (0.000)	0.000 (0.000)	-0.014*** (0.002)	-0.019*** (0.002)	-0.002 (0.001)	0.001 (0.001)
Years of education	0.001*** (0.000)	0.013*** (0.001)	0.023*** (0.001)	0.002*** (0.000)	0.000*** (0.000)	0.010*** (0.001)	0.015*** (0.001)	0.023*** (0.001)	0.023*** (0.001)
Sex ratio				-0.029*** (0.002)	0.002 (0.001)	-0.028*** (0.011)	-0.078*** (0.011)	0.000 (0.005)	-0.008 (0.005)
Mover	0.021*** (0.000)	0.094*** (0.007)	0.167*** (0.006)	0.032*** (0.001)	0.009*** (0.001)	0.079*** (0.009)	0.104*** (0.010)	0.159*** (0.008)	0.175*** (0.008)
State-of-birth dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
No. of observations	691,535	25,857	43,202	349,118	342,417	12,809	13,048	21,334	21,868
R2	.03	.14	.27	.05	.01	.13	.16	.29	.25

Standard errors in parentheses. Sample consists of individuals born in the United States. The sample is drawn from the 1 percent sample of the 1940 to 2000 censuses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels. Columns (3), (5), and (7) include interactions between region and cohort.

Table 5.5: 2SLS Estimates of the Determinants of Socioeconomic Status – Aggregate Data

	(1)	(2)	(3)	(4)
Panel A: 2SLS	Dependent Variable: Ln(Occscore)			
exogamy	0.979*** (0.071)	0.747*** (0.078)	0.551*** (0.075)	0.616*** (0.124)
Male	0.273*** (0.019)	0.318*** (0.018)	0.310*** (0.017)	0.309*** (0.017)
Years of education	0.072*** (0.003)	0.049*** (0.002)	0.047*** (0.002)	0.048*** (0.002)
Mover	0.020 (0.013)	0.042*** (0.013)	0.080*** (0.014)	0.078*** (0.015)
State-of-birth dummies	NO	NO	YES	YES
Cohort dummies	NO	YES	YES	YES
Region-of-birth*race	NO	NO	NO	YES
No. of observations	18,023	18,023	18,023	18,023
Adj R-squared	.10	.23	.31	.29
Panel B: First Stage	Dependent Variable: Exogamy			
ML	0.024*** (0.001)	0.144*** (0.007)	0.151*** (0.008)	0.094*** (0.002)
Controls as in stage 2	YES	YES	YES	YES
Adj R-squared	.12	.13	.16	.26

Standard errors in parentheses. Sample consists of individuals born in the United States. The sample is drawn from the 1 percent sample of the 1940 to 2000 censuses. 2sls aggregate use data aggregated at the gender/race/cohort/state-of-birth Level. ***, **, and * indicate significance at the 1, 5, and 10 percent Levels.

Table 5.6: Wald Estimates of the Determinants of Socioeconomic Status – Aggregate Data

Dependent Variable: Ln(Occscore)	(1)	(2)	(3)	(4)
exogamy	0.130*** (0.018)	0.093*** (0.018)	0.141*** (0.017)	0.103*** (0.018)
Male	0.270*** (0.035)	0.321*** (0.036)	0.268*** (0.035)	0.319*** (0.036)
Years of education	0.099*** (0.003)	0.067*** (0.004)	0.097*** (0.003)	0.060*** (0.004)
Mover	0.032 (0.024)	0.056* (0.025)	0.071** (0.027)	0.116*** (0.028)
region-of-birth dummies	NO	NO	YES	YES
Cohort dummies	NO	YES	NO	YES
No. of observations	6,385	6,385	6,385	6,385
Adj R-squared	.31	.34	.34	.35

*Standard errors in parentheses. Sample consists of individuals born in the United States. The sample is drawn from the 1 percent sample of the 1940 to 2000 censuses. Wald uses data aggregated at the gender/race/cohort/region-of-birth and anti-miscegenation law levels. ***, **, and * indicate significance at the 1, 5, and 10 percent Levels.*

5.6 Interracial Marriage and Social Mobility

Previous literature has shown that the level of social mobility in a society affects the level of inequality that a generation inherits from previous generations (Bjorklund and Jantti 1997; Solon 2002; Corak 2013). Social mobility studies typically analyze the degree of intergenerational mobility existing in a society, that is; the degree to which a child's social and economic status depends on that of their parents. Much of the economic analysis of mobility use empirical models that measure the degree to which a child's income (occupation) depends on that of his parents. The literature has mostly focused on father-son correlations, potentially due to difficulty in obtaining data that will allow for analysis beyond two generations.

5.6.1 Empirical Strategy

The most common method in the literature has been to estimate the following equation:

$$\ln Y_{i,t} = \alpha + \beta \ln Y_{i,t-1} + \varepsilon_i \quad (5)$$

where Y represents permanent income (in natural logarithms) for individuals from family i across two generations, t and $t-1$, and ε represents other influences not associated with parental income. The constant term α takes into account the trend in average incomes across generations that may be due to factors such as changes in technology and productivity. The coefficient of interest in this equation is β , which measures the percentage difference in a child's income for each percentage point difference in parental income. β is usually referred to as the Intergenerational Earnings Elasticity (IGE) as it measures the degree of generational income mobility in a society. Equation (5) has also been extended in the literature to include controls for age. Using data on sons 18-40 years old and their fathers who are between the ages of 40 to 65 in the 1940 to 2000 censuses, I

follow the empirical literature and estimate equation (5) but also incorporate controls for age and region-of-residence. To conduct my analysis, I link sons born 1950-1960 to fathers born 1915-1940.³³ I then compare the IGE estimates for sons whose father is in an exogamous marriage to sons whose father is in an endogamous marriage. I rewrite equation (5) as:

$$SI_{is} = \alpha + \beta FI_{is} + \mathbf{X}'_{is}\gamma + \theta_s + \varepsilon_{is} \quad (6)$$

where SI_{is} is the occupational income score for son i residing in state s , and FI_{is} is the occupational income score of the father of son i residing in state s . \mathbf{X}'_{is} includes controls for age among other individual characteristics. θ_s are state dummies, and ε_{is} is the error term. The coefficient of interest in equation (6) is β ; the intergenerational elasticity (IGE).

5.6.2 Empirical Results

Tables 5.7 and 5.8 present estimates of β based on ordinary least squares estimation (OLS) of equation (6). The estimated elasticities come from a log-linear regression of son's occupational income score on father's occupational income score. Table 5.7 report results for sons where the father is black, and Table 5.8 report results for sons where the father is Native American. Column (1) of table 5.7 report the IGE estimate for children of interracial married couples. The estimate of 0.13 suggests that if the incomes of two sets of parents differ by 100 percent and the incomes of their children differ by 13 percent, the generational persistence of incomes will be about 13% since about one-eighth of the difference in parental income is passed on to the children.³⁴

³³ The fathers are those who belong to racial minority groups, and the sons will be of either mixed race or same race as the father depending on whether the father is in an exogamous or endogamous marriage. One of the limitations with this data set is that it does not provide me with longitudinal data that permits me to follow the same families and children overtime. Thus, I am unable to follow children as they grow into adulthood and relate their income to their parents at different points in time. Therefore there may be some bias in comparing fathers and sons at different life stages.

³⁴ See Corak 2006 for a more detailed explanation on arriving at calculations.

Comparing this estimate to children whose parents are of the same race; we see that the IGE estimate in column (2) is 0.24. This therefore suggests that the generational persistence of incomes or socioeconomic status of children who belong to families where both parents are black is about 24% or about one quarter of the difference in parental income/status is passed on to children. This also suggests that there is lower mobility for individuals belonging to families where both parents are black. For example; a child born to black parents can expect lower mobility in their life chances than a child born to one parent who is black and the other is white. In columns (3) and (4) when region effects are held constant, the magnitude of the coefficients are slightly reduced, however the estimate of β remains highly significant.

Table 5.8 report father-son correlations where the father is Native American. In columns (3) and (4) where both parents are Native Americans, the IGE estimate is on average about 0.17, meaning that on average about 17% of the father's status is transmitted to sons of Native American parents. Like sons in table 5.7, mobility for sons belonging to families where the parents are of different races is higher than that of sons belonging to same race families, although the coefficients are insignificant (potentially due to small sample size). Nonetheless, the IGE estimates reflect that an individual's income or status is partly related to that of their parents. β thus, summarizes in a single value the fraction of economic advantage or disadvantage that is on average transmitted across generations. The higher the value of β , the lower the mobility in the society, and the higher the persistence of economic advantage or disadvantage that will be passed on to children. Given that the sample consists of individuals who are minorities, and given that non-white incomes are on average less than that of white incomes one will expect that higher elasticities can translate into the potential persistence of great disadvantage to children from low income families.

Table 5.7: Intergenerational Transmission of Occupational Income Score from Father to Son

Dependent Variable:	Black Male Heads of Household			
	Father Black/ Mother White	Father Black/ Mother Black	Father Black/ Mother White	Father Black/ Mother Black
Son's Occscore	(1)	(2)	(3)	(4)
Father's Occscore	0.131 [*] (0.059)	0.240 ^{***} (0.010)	0.110 [*] (0.056)	0.225 ^{***} (0.010)
Age	0.007 (0.061)	0.098 ^{***} (0.007)	-0.012 (0.062)	0.097 ^{***} (0.007)
Age ²	0.000 (0.001)	-0.002 ^{***} (0.000)	0.001 (0.001)	-0.002 ^{***} (0.000)
Years of education	-0.000 (0.011)	0.023 ^{***} (0.002)	-0.001 (0.011)	0.022 ^{***} (0.002)
No. of siblings in household	0.011 (0.020)	-0.015 ^{***} (0.002)	0.001 (0.019)	-0.014 ^{***} (0.002)
region dummies	NO	NO	YES	YES
No. of observations	217	17,761	217	17,761
R-squared	0.17	0.29	0.23	0.29

Standard errors in parentheses. The sample is drawn from the 1 percent sample of the 1940-2000 US censuses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels. Sample includes fathers between the ages of 40 to 65 and sons between the ages of 18 to 40. All regressions include census year dummies.

Table 5.8: Intergenerational Transmission of Occupational Income Score from Father to Son

Dependent Variable:	Native American Male Heads of Household			
	Father Native/ Mother White (1)	Father Native/ Mother Native (2)	Father Native/ Mother White (3)	Father Native/ Mother Native (4)
Son's Occscore	0.030	0.179***	0.032	0.158***
	(0.056)	(0.048)	(0.059)	(0.046)
Age	0.149***	0.030	0.144***	0.032
	(0.032)	(0.036)	(0.032)	(0.036)
Age ²	-0.003***	-0.001	-0.003***	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Years of education	0.017	0.024**	0.018	0.024**
	(0.010)	(0.009)	(0.010)	(0.009)
No. of siblings in household	-0.012	0.023**	-0.015	0.023**
	(0.016)	(0.009)	(0.016)	(0.009)
region dummies	NO	NO	YES	YES
No. of observations	428	616	428	616
R-squared	0.12	0.27	0.16	0.28

*Standard errors in parentheses. The sample is drawn from the 1 percent sample of the 1940-2000 US censuses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels. Sample includes fathers between the ages of 40 to 65 and sons between the ages of 18 to 40. All regressions include census year dummies.*

5.7 Social Mobility and Inequality

The extent to which income status is transmitted from one generation to the next may affect the level of inequality that is transmitted across generations. Previous research has shown that social mobility is low in countries with high levels of inequality such as the United States, and higher in countries with low levels of inequality such as Denmark (Corak; 2013). Rising inequality can thus signal a concern for the degree of mobility for the next generation of young adults. In this section I examine the relationship between mobility and inequality across US states by utilizing the IGE estimates for each state from OLS regressions, and linking these estimates to a measure of income inequality; the Gini coefficient. The Gini coefficient of income inequality for each state is from the U.S. census bureau³⁵.

It has been common in the literature to represent the relationship between income inequality and social mobility using the “Great Gatsby Curve.” This curve typically shows that countries with higher levels of income inequality also tend to have a higher proportion of economic advantage or disadvantage passed on between parents and children.³⁶ Using this framework, I present evidence that U.S. States with more inequality at one point in time also experienced less mobility across generations. The relationship between inequality and intergenerational mobility for 34 states in my sample is depicted in Figure 5.8. The horizontal axis shows income inequality in a state measured by the Gini coefficient for the year 1969³⁷. The vertical axis is a measure of the intergenerational economic mobility using a cohort of sons 20 years and older and their fathers who are 40 years and older using data from the 1970 census.

Looking at Figure 5.8, in the raw data one can observe a positive relationship between inequality and intergenerational mobility which is statistically

³⁵ The data can be accessed from Table S4 at <http://www.census.gov/data/tables/time-series/dec/historical-income-states.html>

³⁶ See Andrews and Leigh (2009); Bjorklund and Jantti (2009); Kruger (2012); Blanden (2013); Corak, 2006, 2013.

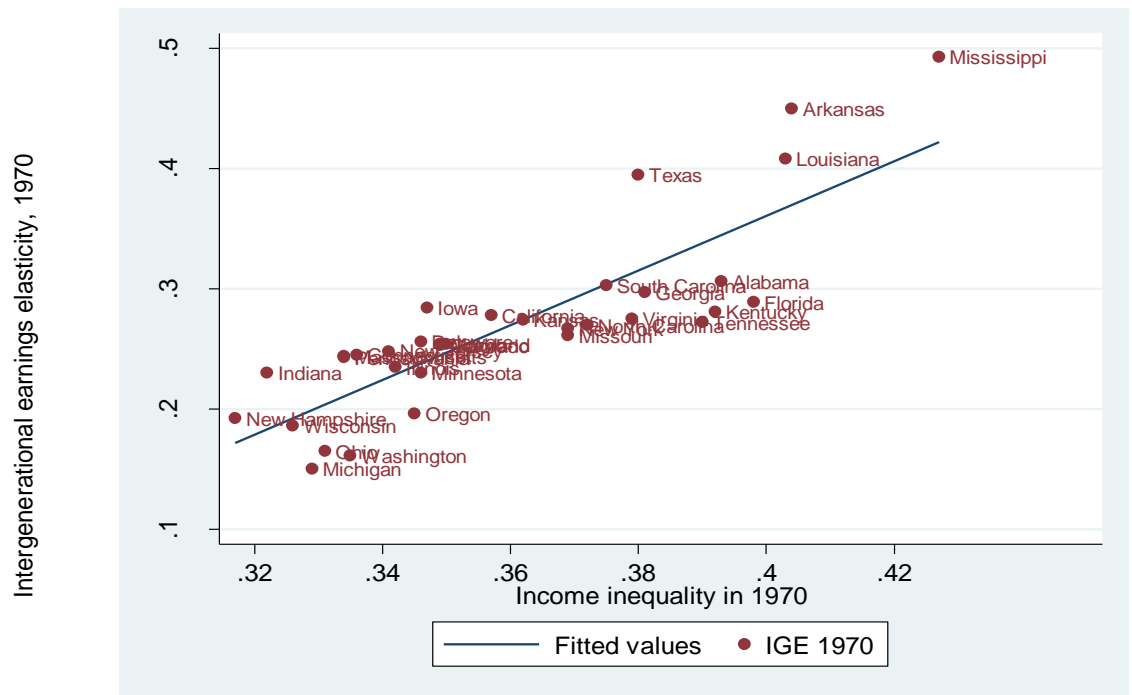
³⁷ I approximate income inequality in 1970 using inequality in 1969, which is the closest year for which the inequality measures are available in order to relate inequality to the IGE estimates for the year 1970.

significant at the one percent level. Southern states such as Mississippi, Louisiana and Arkansas which have very high levels of inequality also have low levels of mobility. In Mississippi for example, about one half of any economic advantage or disadvantage is transmitted from father to son. On the other hand, Northern states such as Illinois, Indiana and Michigan which have lower levels of inequality compared to the southern states previously mentioned, also have higher levels of mobility. In those Northern States about a fifth of any economic advantage or disadvantage is passed on from father to son. Relating this to the previous section which explored the relationship between intermarriage and social mobility, we saw that children from minority racial groups born to parents who are intermarried on average experience higher mobility than children born to parents who are both same race. From the raw data, we can observe that the incidence of intermarriage among minorities is lower in states such as Alabama, Louisiana and Mississippi compared to states such as Indiana, Illinois, Michigan and California.

The relationship between income inequality and the proportion of persons in racial minority groups intermarried in 2000 is shown in Figure 5.9. The vertical axis shows the proportion of those individuals that were married to someone of a different race using the 2000 census. The horizontal axis shows income inequality in a state measured by the Gini coefficient for the year 1999³⁸. In the raw data one observes strong evidence of a relationship between inequality and intermarriage. There is a negative and statistically significant relationship between the two variables. Figure 5.9 suggests that states where a lower proportion of individuals from minority groups intermarry have higher levels of inequality compared to states where a higher proportion of individuals intermarry. For example, in 2000 income inequality in Louisiana was higher than that of Michigan; Gini coefficients of 0.483 and 0.440 respectively, and the proportion of interracial marriages in 2000 were 4% and 14% respectively. Although the relationship between intermarriage and inequality appears remarkably strong, the evidence presented thus far is suggestive and further research would need to be undertaken to examine the relationship in more detail.

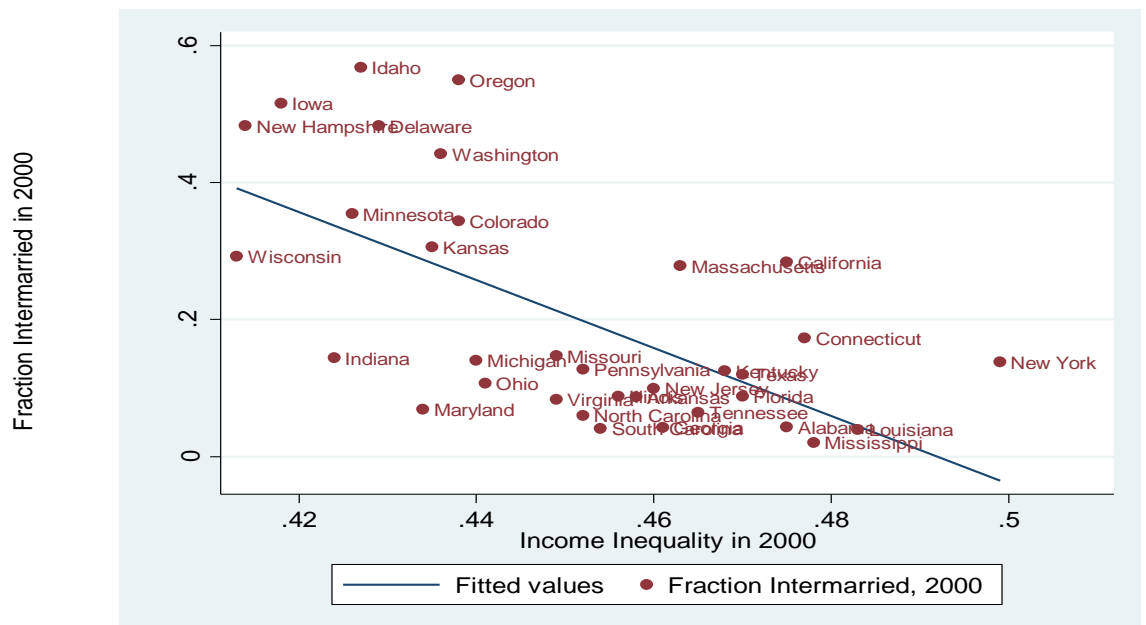
³⁸ I approximate income inequality in 2000 using inequality in 1999, which is the closest year for which the inequality measures are available in order to relate inequality to the proportion of persons that were intermarried in 2000.

Figure 5.8: The Great Gatsby Curve: More Inequality Less Social Mobility across Generations



Beta coefficient=2.28, t-stat=8.72, N=34, R²=0.70

Figure 5.9: The Relationship between Income Inequality and Intermarriage in 2000



Beta coefficient=-4.96, t-stat=-4.43 N=34, R²=0.40

5.8 Conclusion

This chapter has utilized differences across U.S. states in when anti-miscegenation laws were repealed as a plausible source of exogenous variation to analyze the impacts of interracial marriages on individual earnings/socioeconomic status. Further, the chapter examines intermarriage as a mechanism affecting social mobility and explores the relationship between mobility and inequality, as well as, the relationship between intermarriage and inequality utilizing U.S. data. The exogeneity of the timing of the permanent repeal of anti-miscegenation laws across different states is supported by the documented legal history of the repeal of the laws. The analysis in section 5.5 capitalizes on this source of identifying variation.

The findings of this study contribute to the literature in important ways. First, I find evidence of a relationship between interracial marriages and earnings. The socioeconomic status of intermarried minorities is significantly higher than that of minorities who are in endogamous marriages. By the 2000 census intermarried men earned 10% more than men in endogamous marriages, and generally intermarried persons earned about 6% more than persons in exogamous marriages. Much larger effects are observed when interracial marriages are treated as endogenous. Secondly, examining mobility patterns for sons whose fathers are intermarried and sons whose fathers are not, I found that the generational persistence of incomes or status is stronger for sons who belong to families where both parents belong to the same race. For example, I found that a son whose father and mother are both black can expect about a quarter of his father's income to be passed on to him compared to one eighth of generational transmission of income for a son whose father is black and mother is white. The strong evidence of father-son correlations in income is consistent with previous literature. Third, when I examine the relationship between mobility and income inequality in a cross section of U.S. states I found that states with higher levels of income inequality also tend to have lower levels of mobility. In 1970 states, such as Illinois, Indiana and Michigan had lower levels of inequality compared to states such as Arkansas, Mississippi and Louisiana. I also found that the relationship between parental economic status and a child's adult earnings is weakest in states with lower levels of income inequality. For example, in Illinois and Michigan less than a third of any

economic advantage or disadvantage is passed on from father to son, but in states such as Mississippi and Louisiana, where income inequality is higher, nearly 50 percent of any advantage or disadvantage is passed on to the son in adulthood. Finally, I found evidence of a strong relationship between intermarriage and income inequality in the United States. States with higher levels of inequality also tend to have a lower incidence of intermarriage, while states with lower levels of inequality tend to have a higher incidence of intermarriage.

The findings in this chapter take initial steps in understanding possible long run consequences of interracial marriages. Further research can analyze education differentials between children belonging to families where parents are of different marital status: that is, parents are in exogamous or endogamous marriages. Another possible extension of this chapter would be to further analyze the relationship between intermarriage and the black-white income gap. Thus if social barriers are reduced or if there is increased social integration in the United States will black-white convergence in income occur at faster rates?

Chapter 6

Conclusion

My dissertation has comprehensively examined the long-run effects of slavery, and post abolition events in the United States that restricted the rights of freed slaves and their descendants well into the twentieth century. Consistent with recent scholars' emphasis on deeper and fundamental factors that can explain differences in income and development across societies, I find that historical slavery provides a potential candidate in which the impact of deep historical factors can be examined. Despite the plethora of historical literature on the causes and consequences of slavery, little research has focused on slavery's impact on modern human populations residing in former slave colonies. The findings in my dissertation provides new evidence that suggest that slavery plays a significant role in cultural traits transmitted across generations, and perhaps through this channel the adverse impacts of slavery in American countries is still being experienced today.

Chapter 3 has shown that American countries where slavery was prevalent are less developed today compared to countries where slavery was less prevalent. The evidence found in chapter 3 suggests a strong significant negative relationship between historical slavery intensity (that is, the fraction of the population enslaved) and current income. In my cross-country analysis, I find that countries with higher historical slavery intensities have lower per capita GDP today in comparison to countries where slavery was less prevalent. Data for the United States also reveals that the negative relationship between historical slavery and current income holds even when looking across counties and states within the United States. The evidence suggests that states where slavery was more intense are characterized with lower income levels in comparison to states where slavery was less prevalent.

In Chapter 4, I examine trust as a potential channel that could be the link between historical slavery and current levels of economic development. I find a significant negative correlation between historical slavery intensity and contemporary trust. The results suggest that individuals whose ancestors were more intensely enslaved are less trusting today. African descendants in American countries have very low levels of trust, and this can potentially be traced back to

slavery. The evidence suggests that this poor trust cultural trait have been potentially transmitted across generations over the long-run.

My dissertation also examines the special case of the United States where slavery persisted well into the nineteenth century, and where a lack of civil rights after the Civil War and abolition principally in the South was common. Previous literature has examined extensively the effects of desegregation in public schools on black educational and earnings outcomes. I take a new approach by examining the effects that the repeal of anti-miscegenation laws had on the incidence of interracial marriages, and subsequent effects of interracial marriages on intergenerational mobility and inequality. I find evidence which suggest that the repeal of anti-miscegenation laws has positive effects on the incidence of interracial marriages, and this effect is particularly large for Asian Americans.

Utilizing data from United States census samples from 1940 to 2000, I link fathers to sons to measure the degree of generational income mobility among racial minorities in American society. In comparing IGE estimates for sons whose fathers are intermarried to those whose fathers are not, I find evidence of strong generational persistence of income or socioeconomic status for children whose parents are of the same race, and this is particularly so if both parents are black. Consistent with previous studies, I find a strong positive correlation between income inequality and social mobility, in that, U.S. states with higher levels of income inequality also tended to have higher intergenerational earnings elasticities, and thus lower social mobility. In the final analysis, I find new evidence of a strong negative relationship between intermarriage and inequality, in that, U.S. states with higher levels of inequality also tend to have lower incidence of interracial marriages.

The findings in this dissertation strongly suggest that history matters, and it is important to learn as much as possible about the long-run consequences of historical events.

Appendix A. 1830 Slavery and 2000 GDP

Table A.1: Relationship between Slavery in 1830 and GDP in 2000

Dependent Variable: Ln (GDP) per capita, 2000	(1)	(2)	(3)
Fraction slaves, 1830	-1.649** (0.790)	-1.546*** (0.553)	-1.220* (0.629)
Population density, 1830	0.329 (0.208)	0.102 (0.148)	0.063 (0.190)
Fraction European, 1830		-0.749 (0.679)	-0.685 (0.706)
Latitude		1.773 (1.168)	1.550 (1.279)
Ethnolinguistic fractionalization		-0.801** (0.376)	-0.630* (0.355)
Infant mortality rate, 2000		-0.034** (0.015)	-0.037** (0.013)
Life expectancy at birth, 2000		0.024 (0.045)	-0.001 (0.038)
Secondary enrolment, 2000			-0.094 (0.645)
Tertiary enrolment, 2000			0.733 (0.573)
Colonizer fixed effects	YES	YES	YES
Observations	30	30	28
R-squared	0.16	0.82	0.84

*Slavery intensity is the fraction of slaves in the total population, measured in the year 1830. Population density is the total population in 1830 divided by land area. Colonizer fixed effects are for England, France, Spain, Portugal and the Netherlands. Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.*

Table A.2: Slavery in 1750 and Income in 2000- Using Ethnic fractionalization as a control

Dependent variable: Ln GDP per capita, 2000	(1)	(2)	(3)	(4)	(5)
Slavery intensity, 1750	-2.239*** (0.535)	-2.587*** (0.509)	-1.898*** (0.563)	-1.561** (0.554)	-1.327** (0.614)
Population density, 1750		0.609** (0.253)	0.558** (0.211)	0.577*** (0.191)	0.412* (0.219)
Ethnic fractionalization				0.294 (0.420)	0.121 (0.438)
Fraction European, 1750			-0.736 (0.885)	-0.388 (0.691)	-0.511 (0.690)
Latitude			3.938** (1.661)	3.199** (1.373)	2.568* (1.425)
Infant Mortality rate, 2000				-0.013 (0.015)	-0.016 (0.016)
Life expectancy at birth, 2000				-0.022 (0.045)	-0.035 (0.046)
Secondary school enrolment, 2000					0.177 (0.571)
Tertiary enrolment, 2000					0.950 (0.662)
Observations	30	30	30	29	28
R-squared	0.44	0.56	0.72	0.85	0.87

Slavery intensity is the fraction of slaves in the total population, measured in the year 1750. Population density is the total population in 1750 divided by land area. Colonizer fixed effects are for England, France, Spain, Portugal and the Netherlands. Standard errors are in parentheses.

****, **, and * indicate significance at the 1, 5, and 10 percent levels.*

Table A.3: Additional Controls – Past Slavery and Income today (Country Level Data)

Dependent variable: Ln GDP per capita, 2000	(1)	(2)	(3)
Slavery intensity, 1750	-1.518** (0.408)	-1.518** (0.462)	-0.854* (0.249)
Population density, 1750	0.443* (0.185)	0.436 (0.210)	0.726** (0.111)
Ethnic fractionalization	0.426 (0.460)	0.374 (0.541)	1.693** (0.393)
Fraction European, 1750	-0.809 (0.439)	-0.749 (0.526)	-0.655* (0.214)
Latitude	4.511** (1.072)	4.396** (1.256)	5.187** (0.545)
Infant Mortality Rate, 2000	-0.033* (0.015)	-0.032 (0.017)	-0.059** (0.010)
Life expectancy at birth, 2000	0.028 (0.048)	0.043 (0.069)	-0.079 (0.041)
Secondary School Enrolment, 2000	-0.984 (0.594)	-0.921 (0.695)	-1.664** (0.336)
Tertiary enrolment, 2000	0.265 (0.650)	0.176 (0.777)	0.756 (0.346)

(continued)

Dependent variable:	(1)	(2)	(3)
Ln GDP per capita, 2000			
% Urban population	-0.020** (0.005)	-0.020** (0.005)	-0.014** (0.003)
% Employment in agriculture	-0.032** (0.007)	-0.034** (0.010)	-0.021* (0.005)
Control of corruption		-0.051 (0.144)	-0.271* (0.080)
Rule of Law			0.433* (0.107)
Number of observations	18	18	18
R-squared	0.988	0.988	0.999

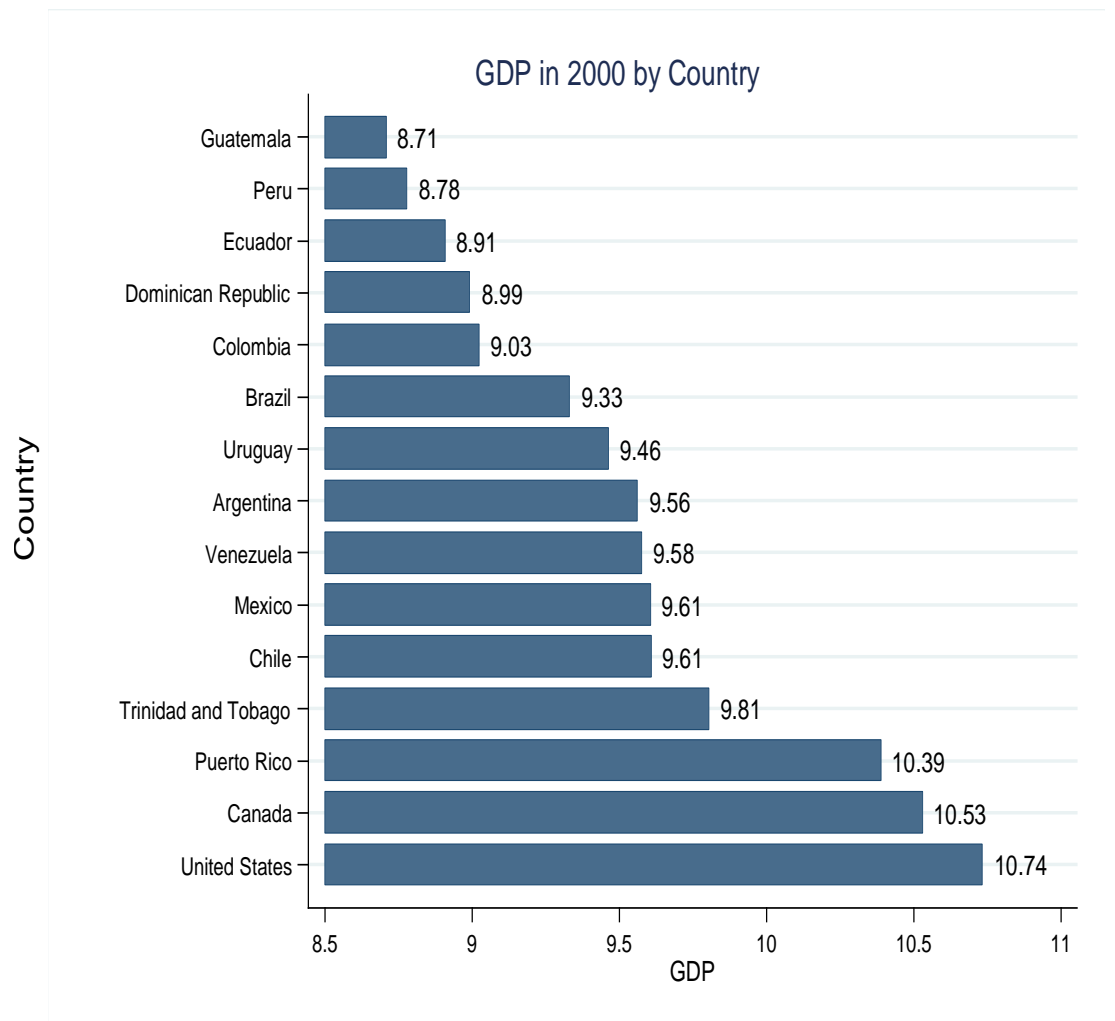
*Slavery intensity is the fraction of slaves in the total population, measured in the year 1750. Population density is the total population in 1750 divided by land area. Colonizer fixed effects are for England, France, Spain, Portugal and the Netherlands. Standard errors are in parentheses and are corrected for heteroskedasticity. ***, **, and * indicate significance at the 1, 5, and 10 percent levels. The data on % urban population, % employment in agriculture, control of corruption and rule of law are measured in the year 2000, and the data are from <http://www.theglobaleconomy.com/>.*

Table A.4: U.S. Regressions including only States as at 1860

Dependent Variable:						
Ln Income per capita, 2000	(1)	(2)	(3)	(4)	(5)	(6)
Slavery intensity, 1860	-0.457*** (0.102)	-0.347*** (0.099)	-0.262** (0.124)	-0.366** (0.149)	-0.326** (0.134)	-0.355* (0.146)
Population density, 1860		0.145** (0.069)	0.016 (0.049)	-0.014 (0.043)	-0.092 (0.084)	-0.106 (0.083)
Percent of workforce in mining, 1880			-0.004 (0.006)	-0.005 (0.005)	0.001 (0.007)	-0.009 (0.009)
Number employed in Agriculture, 1850						-0.000 (0.000)
Number employed in manufacturing, 2000						0.000 (0.000)
Fraction high school graduate or higher, 2000			-0.188 (0.522)	-0.148 (0.544)	-0.484 (0.694)	-0.620 (0.730)
Fraction enrolled in college or graduate school, 2000			-0.508 (0.443)	-0.652 (0.387)	-0.625 (0.381)	-0.496 (0.391)
Fraction Bachelor's degree or higher, 2000			2.476*** (0.541)	2.170*** (0.486)	2.260*** (0.556)	2.499*** (0.570)
Fraction that speaks English less than very well, 2000			-0.007 (0.429)	0.126 (0.453)	-0.188 (0.744)	-0.861 (0.833)
Fraction urban, 2000			0.293*** (0.100)	0.241** (0.090)	0.432* (0.210)	0.463* (0.209)
Average number of cooling degree days (100s)			0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Settler Origin dummies	NO	NO	NO	YES	YES	YES
Region dummies	NO	NO	NO	NO	YES	YES
Number of observations	33	33	32	32	32	32
R-squared	0.35	0.48	0.92	0.94	0.96	0.96

*Slavery intensity is the fraction of slaves in the total population, measured in the year 1860. Population density is the total population in 1860 divided by land area. Settler origin dummies are for England, France, Spain, and the Netherlands. Standard errors are in parentheses and are corrected for heteroskedasticity. ***, **, and * indicate significance at the 1, 5, and 10 percent levels. Includes additional controls for dominant kinds of economic activity in the past and current. For data on historical employment in agriculture in the U.S. see: <http://eh.net/database/u-s-agricultural-workforce1800-1900/>. Manufacturing employment data come from the Census of Manufactures.*

Figure A.1: GDP Per Capita in 2000, by Country



Notes: The data on GDP per capita come from the World Development Indicators (WDI), for 2000. GDP is measured in natural logarithms and is adjusted for Purchasing Power Parity (PPP).

Appendix B. Demographic Data

Table B.1: Demographic Samples of the World Values Survey- Aggregated Country Data

Country	N	% White	% Black	% Asian	% Native American	% Mixed [†]
Argentina	980	92.96%	0.31%	0.00%	0.00%	6.73%
Brazil	3,254	67.09%	12.11%	0.86%	0.34%	19.61%
Canada	4,085	90.89%	2.23%	5.53%	0.44%	0.91%
Chile	5,658	87.27%	0.34%	7.78%	0.44%	4.17%
Colombia	1,510	28.81%	9.40%	0.00%	3.18%	58.61%
Dominican Republic	413	25.42%	12.11%	1.21%	0.00%	61.26%
Ecuador	1,202	2.33%	6.49%	0.00%	0.83%	90.35%
Mexico	8,953	19.39%	0.31%	6.11%	0.55%	73.64%
Peru	5,306	11.80%	0.72%	1.17%	61.55%	24.76%
Puerto Rico	1,113	37.92%	7.37%	7.91%	0.00%	46.81%
Trinidad and Tobago	2,000	0.20%	38.50%	42.80%	0.00%	18.50%
United States	8,520	72.42%	14.64%	0.56%	0.00%	12.38%
Uruguay	2,978	94.09%	2.99%	2.08%	0.00%	0.84%
Venezuela	2,400	38.42%	5.08%	0.13%	0.25%	56.13%

Notes: [†] Mixed populations comprise persons of mixed European, African and Native American Ancestries (that is; mulattoes and mestizos). Empirical strategy groups mulattoes with blacks.

Table B.2: Demographic Samples of the World Values Survey- Disaggregated Country Data

Country		Ethnic Groups																	
		White	Black	South Asian	East Asian	Central Asian	Asian	Cross-breed	Mulatto	Mestizo	Coloured	Indigenous	Cross-breed Amazonas	Cross-breed Andinos	Quechua	Aymara	Hispanic	Mixed races	Other
Argentina	980	92.96%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.73%
Brazil	3,254	67.09%	12.11%	0.34%	0.43%	0.09%	0.00%	0.00%	17.27%	0.00%	0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.34%
Canada	4,085	90.89%	2.23%	1.81%	2.77%	0.95%	0.00%	0.00%	0.00%	0.00%	0.00%	0.44%	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.81%
Chile	5,658	87.27%	0.34%	0.94%	0.12%	1.80%	4.91%	0.00%	0.00%	0.00%	0.00%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.17%
Colombia	1,510	28.81%	9.40%	0.00%	0.00%	0.00%	0.00%	0.00%	58.61%	0.00%	0.00%	3.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Dominican Republic	413	25.42%	12.11%	0.00%	0.48%	0.73%	0.00%	0.00%	59.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.69%
Ecuador	1,202	2.33%	6.49%	0.00%	0.00%	0.00%	0.00%	0.00%	30.78%	34.44%	0.00%	0.83%	0.00%	0.00%	0.00%	0.00%	25.12%	0.00%	0.00%
Mexico	8,953	19.39%	0.31%	0.94%	0.15%	4.07%	0.00%	0.00%	0.00%	0.00%	56.26%	1.51%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	17.38%
Peru	5,306	11.80%	0.72%	1.15%	0.00%	0.02%	0.00%	5.20%	15.64%	0.00%	0.00%	0.00%	21.03%	32.94%	6.95%	0.62%	0.00%	0.00%	3.92%
Puerto Rico	1,113	37.92%	7.37%	2.79%	0.00%	5.12%	0.00%	0.00%	45.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.08%
Trinidad & Tobago	2,000	0.20%	38.50%	42.10%	0.50%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.90%	6.60%
United States	8,520	72.42%	14.64%	0.14%	0.38%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.66%	1.09%	2.63%
Uruguay	2,978	94.09%	2.99%	1.07%	0.13%	0.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.84%
Venezuela	2,400	38.42%	5.08%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	55.96%	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.17%

Notes: Mulatto – mixed European and African ancestries; Mestizo – mixed European and Native American ancestries; Crossbreed /Coloured/Mixed races – respondents of mixed ethnic origins (i.e. mixed European/African/Native); Hispanic- generally respondents from Latin America, a large proportion of whom are of mixed ancestries; and Amazonas, Andinos, Quechua, Aymara – Indigenous/native.

Table B.3: Demographic Samples of the General Social Survey- U.S. Data

Country of origin	N	% White	% Black	% Asian	% Mixed [†]
Africa	4,606	0.89%	99.11%	0.00%	0.00%
Austria	233	98.28%	1.72%	0.00%	0.00%
Belgium	78	100.00%	0.00%	0.00%	0.00%
Canada	752	97.74%	2.26%	0.00%	0.00%
Czech Rep.	525	99.81%	0.19%	0.00%	0.00%
Denmark	276	100.00%	0.00%	0.00%	0.00%
England	5,158	99.34%	0.66%	0.00%	0.00%
Finland	203	100.00%	0.00%	0.00%	0.00%
France	825	97.21%	2.79%	0.00%	0.00%
Germany	6,999	99.63%	0.37%	0.00%	0.00%
Hungary	256	100.00%	0.00%	0.00%	0.00%
India	239	12.97%	14.23%	72.80%	0.00%
Ireland	4,860	99.55%	0.45%	0.00%	0.00%
Italy	2,291	99.83%	0.17%	0.00%	0.00%
Japan	140	17.14%	3.57%	79.29%	0.00%
Lithuania	124	100.00%	0.00%	0.00%	0.00%
Mexico	1,798	55.39%	0.39%	0.00%	44.22%
Netherlands	634	99.84%	0.16%	0.00%	0.00%
Norway	720	99.44%	0.56%	0.00%	0.00%
Poland	1,211	99.67%	0.91%	0.00%	0.00%
Portugal	132	96.21%	3.79%	0.00%	0.00%
Puerto Rico	486	52.06%	10.08%	0.00%	37.86%
Rumania	77	98.70%	1.30%	0.00%	0.00%
Russia	598	99.83%	0.17%	0.00%	0.00%
Scotland	1,297	99.46%	0.54%	0.00%	0.00%
Spain	325	97.85%	2.15%	0.00%	0.00%
Sweden	619	99.19%	0.81%	0.00%	0.00%
Switzerland	170	100.00%	0.00%	0.00%	0.00%
West Indies	73	4.11%	95.89%	0.00%	0.00%
Yugoslavia	155	100.00%	0.00%	0.00%	0.00%

Notes: † Mixed populations comprise persons of mixed European, African and Native American ancestries (that is; mulattoes and mestizos). GSS sample also includes 1,804 Native Americans. Empirical strategy groups mulattoes with blacks.

Table B.4: Historical Slave Populations in the United States

State	1790			1830			1860		
	Total Population	Slaves	Slave intensity	Total Population	Slaves	Slave intensity	Total Population	Slaves	Slave intensity
Slave States	1,926,677	654,121	0.34	5,773,529	1,983,860	0.34	12,240,293	3,950,511	0.32
Alabama	-	-	-	309,527	117,549	0.38	964,201	435,080	0.45
Arkansas	-	-	-	30,388	4,576	0.15	435,450	111,115	0.26
Delaware	59,096	8,887	0.15	76,748	3,292	0.04	112,216	1,798	0.02
Florida	-	-	-	-	-	-	140,424	61,745	0.44
Georgia	82,548	29,264	0.35	516,823	217,531	0.42	1,057,286	462,198	0.44
Kentucky	73,677	12,430	0.17	687,917	165,213	0.24	1,155,684	225,483	0.20
Louisiana	-	-	-	215,529	109,588	0.51	708,002	331,726	0.47
Maryland	319,728	103,036	0.32	447,040	102,994	0.23	687,049	87,189	0.13
Mississippi	-	-	-	136,621	65,659	0.48	791,305	436,631	0.55
Missouri	-	-	-	140,455	25,096	0.18	1,182,012	114,931	0.10
North Carolina	395,005	100,783	0.26	737,987	245,601	0.33	992,622	331,059	0.33
South Carolina	249,073	107,094	0.43	581,185	315,401	0.54	703,708	402,406	0.57
Tennessee	-	-	-	681,904	141,603	0.21	1,109,801	275,719	0.25
Texas	-	-	-	-	-	-	604,215	182,566	0.30
Virginia	747,550	292,627	0.39	1,211,405	469,757	0.39	1,596,318	490,865	0.31
Free States	1,812,744	39,128	0.02	6,634,548	3,521	0.00	17,534,948	18	0.00
California	-	-	-	-	-	-	379,994	-	0.00
Connecticut	237,655	2,648	0.01	297,675	25	0.00	460,147	-	0.00
Illinois	-	-	-	157,445	747	0.00	1,711,951	-	0.00
Indiana	-	-	-	343,031	3	0.00	1,350,428	-	0.00
Iowa	-	-	-	-	-	-	674,913	-	0.00
Maine	96,643	-	0.00	399,455	2	0.00	628,279	-	0.00
Massachusetts	378,556	-	0.00	610,408	1	0.00	1,231,066	-	0.00
Michigan	-	-	-	31,639	2	0.00	749,113	-	0.00
Minnesota	-	-	-	-	-	-	172,023	-	0.00
New Hampshire	141,899	157	0.00	269,328	3	0.00	326,073	-	0.00
New Jersey	184,139	11,423	0.06	320,823	2,254	0.00	672,035	18	0.00
New York	340,241	21,193	0.06	1,918,608	75	0.00	3,880,735	-	0.00
Ohio	-	-	-	937,903	6	0.00	2,339,511	-	0.00
Oregon	-	-	-	-	-	-	52,465	-	0.00
Pennsylvania	433,611	3,707	0.00	1,348,233	403	0.00	2,906,215	-	0.00
Rhode Island	69,112	958	0.01	97,199	17	0.00	174,620	-	0.00
Vermont	85,341	-	0.00	280,652	-	0.00	315,098	-	0.00
Wisconsin	-	-	-	-	-	-	775,881	-	0.00
TOTAL	3,893,874	694,207	0.18	12,785,928	1,987,398	0.16	31,040,840	3,950,529	0.13

Appendix C. Distribution of Trust survey responses

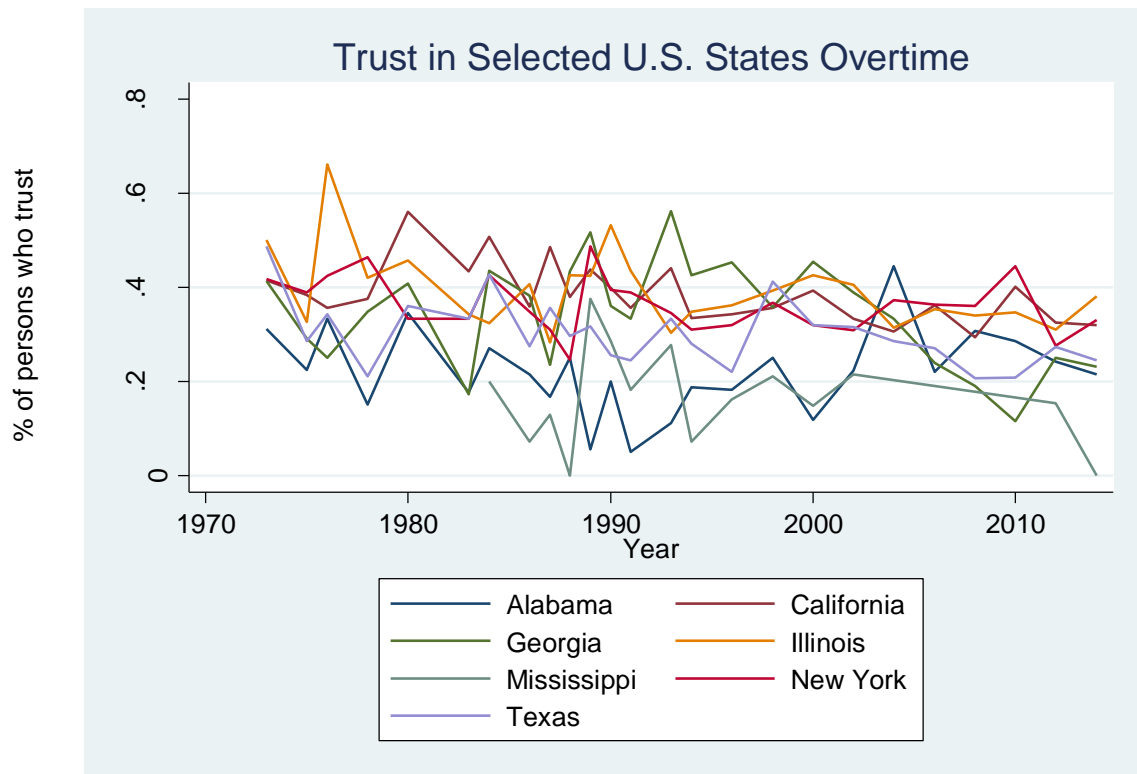
Table C.1: Overview of the Responses to the World Values Survey Question on Trust, By Ethnicity/Race

	Total	Most People can be trusted					Can't be too careful				
		White	Black	Asian	Mixed	Native	White	Black	Asian	Mixed	Native
Argentina	961	14.78%	0.10%	-	1.87%	-	78.25%	0.21%	-	4.79%	-
Brazil	3,218	5.13%	0.93%	0.06%	1.58%	0.03%	62.06%	11.09%	0.81%	17.99%	0.31%
Canada	4,007	36.81%	0.62%	1.92%	0.20%	0.15%	54.18%	1.60%	3.52%	0.70%	0.30%
Chile	5,517	16.78%	0.09%	1.23%	0.73%	0.15%	70.51%	0.25%	6.60%	3.37%	0.29%
Colombia	1,499	1.33%	0.33%	-	2.40%	0.07%	27.62%	9.01%	-	56.10%	3.14%
Dom. Rep.	393	8.65%	2.54%	0.51%	14.76%	-	16.54%	9.92%	0.51%	46.56%	-
Ecuador	1,200	0.25%	0.83%	-	6.00%	0.08%	2.08%	5.67%	-	84.33%	0.75%
Mexico	8,619	4.57%	0.09%	1.02%	16.90%	0.23%	15.01%	0.20%	4.87%	56.76%	0.34%
Peru	5,227	1.40%	0.44%	0.02%	5.45%	0.40%	10.35%	4.61%	1.13%	68.97%	7.23%
Puerto Rico	1,094	3.02%	0.37%	0.64%	2.10%	-	34.83%	6.95%	7.31%	44.79%	-
Trinidad	1,993	0.10%	1.91%	1.20%	16.90%	-	0.10%	48.52%	4.87%	6.32%	-
U.S.	8,382	32.03%	2.66%	0.23%	3.38%	-	40.43%	11.98%	0.32%	8.97%	-
Uruguay	2,725	20.73%	0.48%	1.02%	0.07%	-	73.54%	2.53%	1.54%	0.73%	-
Venezuela	2,357	6.07%	0.64%	0.13%	8.15%	0.25%	32.33%	4.41%	-	48.03%	-
(N)	47,192	14.11%	0.86%	0.64%	5.36%	0.12%	37.48%	6.69%	4.22%	29.44%	1.07%

Table C.2: Overview of the Responses to the GSS Question on Trust, By Ethnicity/Race – Selected States

	Most people can be trusted						Can't be too careful/Depends				
	Total	%					%				
		Whites	Blacks	Asians	Mixed	Native	Whites	Blacks	Asians	Mixed	Native
California	2,777	33.96%	1.55%	1.66%	1.26%	1.12%	44.62%	5.83%	1.94%	5.22%	2.20%
Florida	1,226	33.03%	1.63%	0.08%	0.33%	0.73%	47.31%	11.34%	0.24%	1.47%	3.10%
Georgia	846	24.70%	4.73%	0.24%	0.12%	0.95%	34.63%	25.53%	0.71%	1.06%	7.09%
Illinois	1,158	34.02%	2.59%	0.43%	0.86%	0.86%	39.21%	15.72%	0.95%	2.85%	2.07%
Michigan	1,361	41.44%	1.54%	0.22%	0.22%	0.96%	40.48%	11.17%	0.51%	0.59%	2.57%
Missouri	742	34.37%	2.70%	0.40%	0.13%	2.83%	41.78%	11.59%	0.27%	0.54%	5.39%
New Jersey	886	32.17%	2.60%	0.68%	0.68%	1.24%	44.02%	14.90%	1.02%	2.14%	-
New York	1,979	33.55%	2.22%	0.86%	0.51%	0.40%	44.57%	12.43%	1.26%	2.53%	1.11%
North Carolina	905	24.42%	2.87%	0.22%	0.22%	2.21%	45.08%	12.27%	0.44%	1.66%	10.17%
Ohio	1,395	34.77%	0.22%	0.2%	0.14%	0.93%	51.04%	6.59%	0.65%	0.43%	3.66%
Pennsylvania	1,364	38.34%	1.91%	0.37%	0.95%	0.44%	49.56%	7.11%	0.51%	-	0.73%
Texas	1,620	26.42%	1.42%	0.37%	1.17%	1.79%	46.79%	8.77%	0.56%	7.78%	4.26%
Virginia	858	33.22%	3.50%	0.58%	0.12%	1.52%	40.33%	15.15%	0.35%	-	5.01%
(N)	17,117	33.07%	2.04%	0.61%	0.62%	1.12%	44.40%	11.02%	0.87%	2.53%	3.18%

Figure C.1: Trust in the United States Overtime



Notes: Data on the percentage of persons who trust others is taken from the General Social Survey (1973-2014).

Appendix D. Additional Robustness Checks – Slavery and Trust

TABLE D.1: Determinants of Individual Trust

Group Depends with Most People Can be Trusted (OLS Regressions)

Dependent Variable: Trust Others	(1)	(2)	(3)	(4)	(5)	(6)
Slavery intensity	-0.907*** (0.080)	-0.894*** (0.078)	-0.878*** (0.076)	-0.874*** (0.080)	-0.844*** (0.063)	-0.743*** (0.080)
Age	0.010*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.014*** (0.002)
Age Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Female	-0.037*** (0.004)	-0.034*** (0.004)	-0.034*** (0.004)	-0.034*** (0.004)	-0.034*** (0.004)	-0.029** (0.008)
Years of education	0.040*** (0.005)	0.040*** (0.004)	0.040*** (0.004)	0.040*** (0.004)	0.039*** (0.004)	0.039*** (0.004)
Children	0.001 (0.003)	0.001 (0.003)	0.001 (0.003)	0.001 (0.002)	0.000 (0.002)	-0.004* (0.002)
Working part-time	0.051*** (0.006)	0.050*** (0.006)	0.049*** (0.006)	0.050*** (0.006)	0.045*** (0.006)	0.073*** (0.006)
3.wrkstat	-0.016 (0.017)	-0.017 (0.017)	-0.017 (0.017)	-0.017 (0.016)	-0.018 (0.018)	-0.019** (0.006)
Unemployed/laid-off	-0.022 (0.018)	-0.020 (0.018)	-0.020 (0.018)	-0.020 (0.018)	-0.022 (0.019)	-0.022 (0.033)
Retired	-0.016** (0.006)	-0.017** (0.006)	-0.017** (0.006)	-0.018** (0.006)	-0.018** (0.006)	0.034** (0.012)
Protestant	-0.021** (0.006)	-0.023** (0.006)	-0.023** (0.006)	-0.021** (0.006)	-0.010 (0.006)	-0.024 (0.019)
Catholic	-0.007 (0.006)	-0.009 (0.006)	-0.010 (0.007)	-0.009 (0.007)	-0.011 (0.006)	-0.034** (0.009)

(continued)

Dependent Variable: Trust Others	(1)	(2)	(3)	(4)	(5)	(6)
Jew	-0.029** (0.008)	-0.031** (0.008)	-0.029** (0.008)	-0.029** (0.008)	-0.019** (0.006)	-0.005 (0.010)
Muslim	-0.124*** (0.021)	-0.123*** (0.020)	-0.118*** (0.021)	-0.118*** (0.020)	-0.119*** (0.021)	-0.153 (0.104)
Buddhist	0.110** (0.024)	0.111** (0.024)	0.116*** (0.023)	0.118*** (0.024)	0.105** (0.026)	0.062* (0.027)
Hindu	0.043 (0.063)	0.042 (0.063)	0.043 (0.062)	0.038 (0.061)	0.041 (0.054)	0.038 (0.083)
Divorced/separated		-0.033*** (0.003)	-0.033*** (0.003)	-0.033*** (0.003)	-0.032*** (0.002)	-0.042*** (0.007)
Racial fragmentation (county)			-0.083*** (0.014)	-0.086*** (0.014)	-0.048*** (0.008)	-0.068** (0.019)
Same state at age 16				-0.025** (0.006)	-0.027*** (0.005)	-0.022** (0.007)
Real income (ln)						0.015* (0.006)
Country of origin fixed effects	YES	YES	YES	YES	YES	YES
State fixed effects	NO	NO	NO	NO	NO	YES
Observations	24,428	24,426	24,426	24,426	24,426	11,125
R-squared	0.12	0.12	0.12	0.12	0.13	0.14

Notes: Slavery intensity is the average slavery intensity for years 1750-1860. Trust data and data on other individual characteristics are from the General Social Survey (1973-2014). Standard errors are adjusted for clustering of the residuals at the race level. All regressions include dummies for survey year. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

TABLE D.2: Determinants of Individual Trust
 Drop Responses “Depends” (OLS Regressions)

Dependent Variable: Trust Others	(1)	(2)	(3)	(4)	(5)	(6)
Slavery Intensity	-0.871*** (0.036)	-0.855*** (0.032)	-0.836*** (0.030)	-0.833*** (0.032)	-0.795*** (0.015)	-0.745*** (0.035)
Age	0.010*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.013*** (0.002)
Age Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000** (0.000)
Female	-0.036*** (0.003)	-0.034*** (0.003)	-0.034*** (0.003)	-0.034*** (0.004)	-0.033*** (0.004)	-0.028** (0.008)
Years of education	0.042*** (0.004)	0.042*** (0.004)	0.042*** (0.004)	0.041*** (0.004)	0.041*** (0.004)	0.040*** (0.004)
Children	0.001 (0.003)	0.002 (0.003)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	-0.002 (0.001)
Working part-time	0.051*** (0.009)	0.049*** (0.009)	0.049*** (0.009)	0.049*** (0.009)	0.045*** (0.009)	0.074*** (0.008)
Unemployed/laid-off	-0.027* (0.012)	-0.025 (0.012)	-0.025 (0.012)	-0.024 (0.012)	-0.027 (0.013)	-0.020 (0.027)
Retired	-0.018** (0.004)	-0.019** (0.004)	-0.019** (0.004)	-0.020** (0.004)	-0.020*** (0.004)	0.030* (0.014)
Protestant	-0.010* (0.004)	-0.012** (0.004)	-0.011** (0.004)	-0.010* (0.004)	0.001 (0.004)	-0.012 (0.014)
Catholic	0.005 (0.006)	0.003 (0.006)	0.001 (0.007)	0.002 (0.007)	0.000 (0.007)	-0.025* (0.010)
Jew	-0.028** (0.008)	-0.031** (0.009)	-0.029** (0.009)	-0.029** (0.009)	-0.017* (0.007)	-0.012 (0.009)
Muslim	-0.093* (0.036)	-0.091* (0.033)	-0.086* (0.033)	-0.086* (0.032)	-0.089* (0.036)	-0.120 (0.105)
Buddhist	0.109** (0.034)	0.109** (0.034)	0.115** (0.033)	0.116** (0.033)	0.099** (0.034)	0.040 (0.036)
Hindu	0.022 (0.067)	0.020 (0.066)	0.020 (0.064)	0.016 (0.064)	0.020 (0.057)	0.047 (0.055)

(continued)

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)
Trust Others						
Divorced/separated		-0.039*** (0.002)	-0.039*** (0.002)	-0.039*** (0.002)	-0.038*** (0.002)	-0.042*** (0.008)
Racial fragmentation (county)			-0.098*** (0.015)	-0.100*** (0.016)	-0.060*** (0.006)	-0.076*** (0.016)
Same state at age 16				-0.018** (0.005)	-0.020** (0.006)	-0.013* (0.006)
Real income (ln)						0.016* (0.006)
Country of origin fixed effects	YES	YES	YES	YES	YES	YES
State fixed effects	NO	NO	NO	NO	NO	YES
Observations	23,409	23,407	23,407	23,407	23,407	10,697
R-squared	0.131	0.131	0.132	0.133	0.140	0.142

Notes: Slavery intensity is the average slavery intensity for years 1750-1860. Trust data and data on other individual characteristics are from the General Social Survey (1973-2014). Standard errors are adjusted for clustering of the residuals at the race level. All regressions include dummies for survey year. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

Table D.3: Additional Controls: Slavery and Individual Trust – Country Data (OLS)

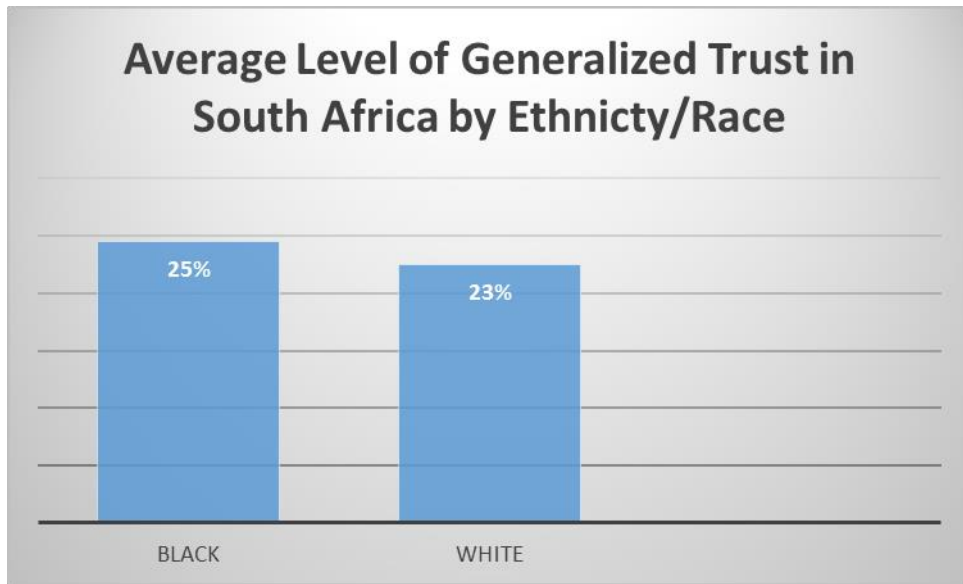
Dependent variable: Trust Others	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Slavery intensity	-0.314*** (0.010)	-0.308*** (0.012)	-0.255*** (0.012)	-0.174*** (0.013)	-0.145*** (0.018)	-0.152*** (0.022)	0.006 (0.032)	-0.059* (0.034)
Female		0.004 (0.004)	0.003 (0.004)	-0.001 (0.004)	-0.003 (0.004)	-0.003 (0.004)	-0.003 (0.004)	-0.003 (0.004)
Age		0.001** (0.001)	0.001** (0.001)	0.001* (0.001)	0.001 (0.001)	0.001* (0.001)	0.001* (0.001)	0.001 (0.001)
Education		0.025*** (0.001)	0.025*** (0.001)	0.024*** (0.001)	0.019*** (0.001)	0.019*** (0.001)	0.020*** (0.001)	0.019*** (0.001)
Income Level		0.026*** (0.002)	0.022*** (0.002)	0.019*** (0.002)	0.013*** (0.002)	0.012*** (0.002)	0.012*** (0.002)	0.014*** (0.002)
Catholic		-0.046*** (0.005)	-0.036*** (0.005)	-0.026*** (0.005)	0.008 (0.005)	0.007 (0.005)	0.007 (0.005)	0.007 (0.005)
Protestant		0.031*** (0.007)	0.038*** (0.007)	0.040*** (0.007)	0.036*** (0.007)	0.036*** (0.007)	0.036*** (0.007)	0.036*** (0.007)
Muslim		-0.081*** (0.023)	-0.071*** (0.022)	-0.024 (0.023)	-0.052** (0.023)	-0.026 (0.023)	-0.026 (0.023)	-0.028 (0.023)
Hindu		-0.169*** (0.010)	-0.142*** (0.010)	-0.084*** (0.013)	-0.058*** (0.014)	-0.030** (0.014)	-0.031** (0.014)	-0.032** (0.014)
Jew		0.075** (0.037)	0.078** (0.037)	0.067* (0.037)	0.020 (0.037)	0.017 (0.037)	0.016 (0.037)	0.017 (0.037)
Buddhist		0.045 (0.037)	0.039 (0.037)	0.040 (0.038)	0.028 (0.037)	0.035 (0.037)	0.036 (0.037)	0.035 (0.037)
Racial fragmentation (region)			-0.154*** (0.012)	-0.097*** (0.012)	0.043** (0.019)	0.053*** (0.019)	0.054*** (0.019)	0.053*** (0.019)
Population (ln) in region			0.023*** (0.002)	0.019*** (0.002)	-0.000 (0.002)	-0.000 (0.002)	-0.000 (0.002)	-0.000 (0.002)
SI*Education							-0.044*** (0.007)	
SI*Income Level								-0.036*** (0.010)

(continued)

Dependent variable: Trust Others	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black				-0.077*** (0.005)		-0.024*** (0.006)	-0.020*** (0.006)	-0.024*** (0.006)
Native				-0.099*** (0.013)		-0.006 (0.014)	-0.003 (0.014)	-0.006 (0.014)
Asian				-0.103*** (0.009)		-0.068*** (0.011)	-0.068*** (0.011)	-0.069*** (0.011)
Country fixed effects	NO	NO	NO	NO	YES	YES	YES	YES
Observations	47,192	37,230	37,230	37,230	37,230	37,230	37,230	37,230
R-squared	0.01	0.05	0.06	0.07	0.11	0.11	0.11	0.11

Notes: Slavery intensity is the average slavery intensity for years 1750-1830. Trust data and data on other individual characteristics are from the World Values Surveys 1981-2014. Sample includes 14 countries; Argentina, Brazil, Canada, Chile, Colombia, Dominican Republic, Ecuador, Mexico, Peru, Puerto Rico, Trinidad and Tobago, United States, Uruguay, and Venezuela. I use information from the WVS on social class to proxy for individual income. Social class categories in the WVS include; upper class, upper middle class, lower middle class, lower class and working class. All regressions include survey wave/year dummies. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

Figure D.1: Comparing Trust in South Africa to American Countries, by Race



Notes:

Data on the fraction of persons who trust others is taken from the General Social Survey (1973-2014). The trust measure is calculated as the state average from the responses to the question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” Trust equals 1 if the respondent answers “Most people can be trusted” and 0 otherwise. South Africa’s racial mix comprise; 80%-Black, 8%-White, 9%-Coloured (mixed) and 3%-Asian (www.statssa.gov.za). South Africa was not a principal area for buying and shipping of slaves to the Americas during the period of the Atlantic Slave Trade. The primary purpose of this comparison is to show trust statistics for a country with similar racial mixes to some American countries but with a historically low participation in the slave trade.

Appendix E. Miscegenation and mobility

Table E.1: U.S. States by date of Permanent Repeal of Anti-miscegenation Laws

State	Year First law passed	Year law permanently repealed	Races whites were banned from marrying
Alabama	1822	1967	Blacks
Arkansas	1838	1967	Blacks
Arizona	1865	1962	Blacks, Asians [†]
California	1850	1948	Blacks, Asians [†]
Colorado	1864	1957	Blacks
Delaware	1721	1967	Blacks
Florida	1832	1967	Blacks
Georgia	1750	1967	All non-whites
Idaho	1864	1959	Blacks, Asians, Native Americans
Illinois	1829	1874	Blacks
Indiana	1818	1965	Blacks
Iowa	1839	1851	Blacks
Kansas	1855	1859	Blacks
Kentucky	1792	1967	Blacks
Louisiana	1724	1967	Blacks
Maine	1821	1883	Blacks, Native Americans
Maryland	1692	1967	Blacks, Asians ^{††}
Massachusetts	1705	1843	Blacks, Native Americans
Michigan	1838	1883	Blacks
Mississippi	1822	1967	Blacks
Missouri	1835	1967	Blacks, Asians
Montana	1909	1953	Blacks, Asians
Nebraska	1855	1963	Blacks, Asians
Nevada	1861	1959	Blacks, Asians [†] , Native Americans
New Mexico	1857	1866	Blacks
North Carolina	1715	1967	Blacks, Native Americans

North Dakota	1909	1955	Blacks
Ohio	1861	1887	Blacks
Oklahoma	1897	1967	Blacks
Oregon	1862	1951	Blacks, Asians, Native Americans ^{†††}
Pennsylvania	1725	1780	Blacks
Rhode Island	1798	1881	Blacks, Native Americans
South Carolina	1717	1967	All non-whites
South Dakota	1909	1957	Blacks, Asians [†]
Tennessee	1741	1967	Blacks, Native Americans
Texas	1837	1967	All non-whites
Utah	1852	1963	Blacks, Asians [†]
Virginia	1691	1967	All non-whites
Washington	1855	1868	Blacks, Native Americans
West Virginia	1863	1967	Blacks
Wyoming	1869	1965	Blacks, Asians [†]

Notes: [†]Includes Filipinos, ^{††}Only Filipinos, ^{†††}Includes Native Hawaiians. States which never had laws; include; Alaska, Connecticut, Hawaii, Kansas, Minnesota, New Hampshire, New Mexico, New Jersey, New York, Vermont, Washington, and Wisconsin. Sources: Browning; 1951, Fryer; 2007.

Table E.2: Ten Highest Occupational Income Scores and Ten Most Common- Racial Minority Groups

Occupation	Frequency	Occ- score
Ten Highest Scores		
Physicians and Surgeons	305	80
Dentists	347	63
Lawyers and Judges	238	62
Architects, Chemical Engineers, Engineers(nec)	335	49
Aeronautical-Engineers, Chemical-Engineers, Mining-Engineers, Engineers (nec)	710	48
Civil-Engineers, Electrical-Engineers, Mechanical-Engineers, Locomotive engineers	1,305	46
University Professors and Instructors	1,586	41
Managers, officials, and proprietors	7,462	42
Chemists, Pharmacists, Biological scientists, Agricultural scientists	565	40
Accountants and Auditors	732	38
Ten most common Scores		
Laborers (nec), Janitors and sextons, Shoemakers and repairers	60,959	20
Operative and kindred workers (nec), Painters, construction and maintenance	60,391	23
Truck and tractor drivers, Clerical and kindred workers (n.e.c.), Guards, watchmen	50,546	25
Stenographers, typists, and secretaries, Taxicab drivers and chauffeurs	39,192	22
Salesmen and sales clerks (nec), Carpenters	34,328	24
Teachers (n.e.c.), Automobile-mechanics and repairmen, Shipping and receiving clerks	26,714	26
Waiters and waitresses, Service workers, Practical nurses, members of armed forces	23,760	11
Housekeepers, Private household workers (nec)	23,613	6
Farmers (owners and tenants), Attendants, Cleaners	22,260	14
Social and welfare workers, Teachers (n.e.c.), Stationary firemen, Meat cutters	20,867	27

Notes: Data are from the 1% sample of the 1940-2000 censuses. Data are for racial minority groups (Blacks, Asians, Native Americans and Pacific Islanders). Occupational Income Score is the median income for the occupation in 1950 expressed in hundreds of 1950 dollars annually. Due to space limitations not all occupations are listed for each score.

Distributions of Occupational Income Score by Race and Gender

Figure E.1: Occupational Score for males- 1940 census data

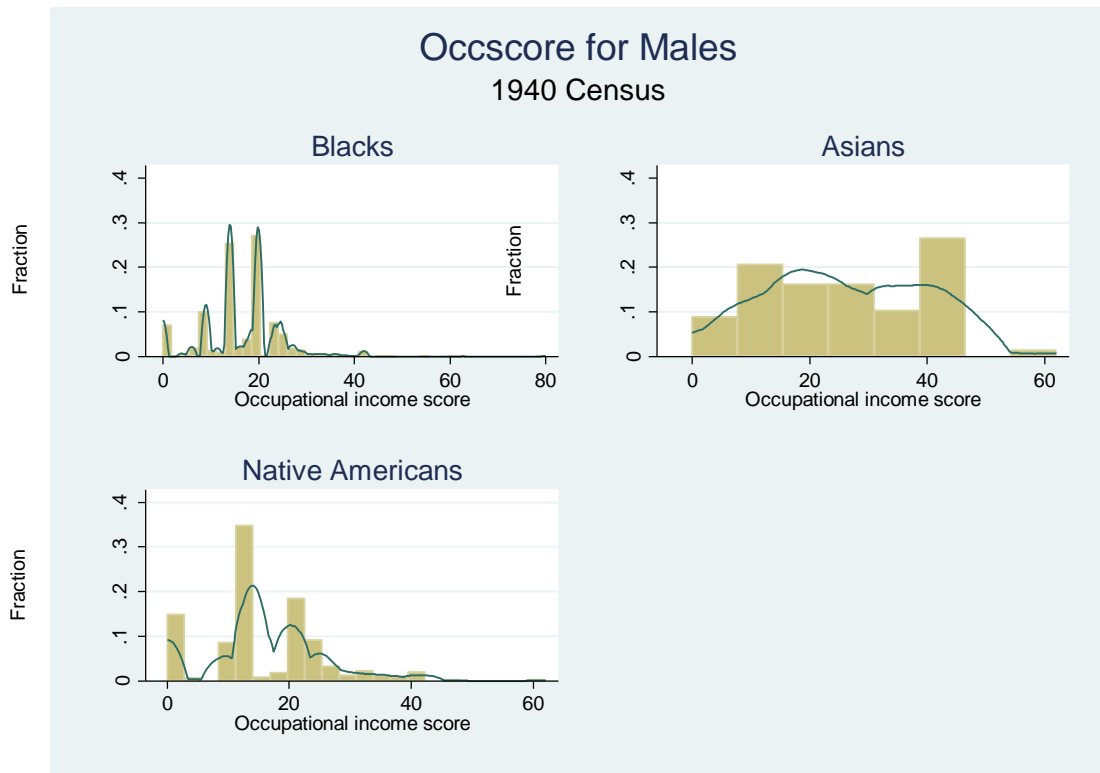


Figure E.2: Occupational score for females- 1940 census data

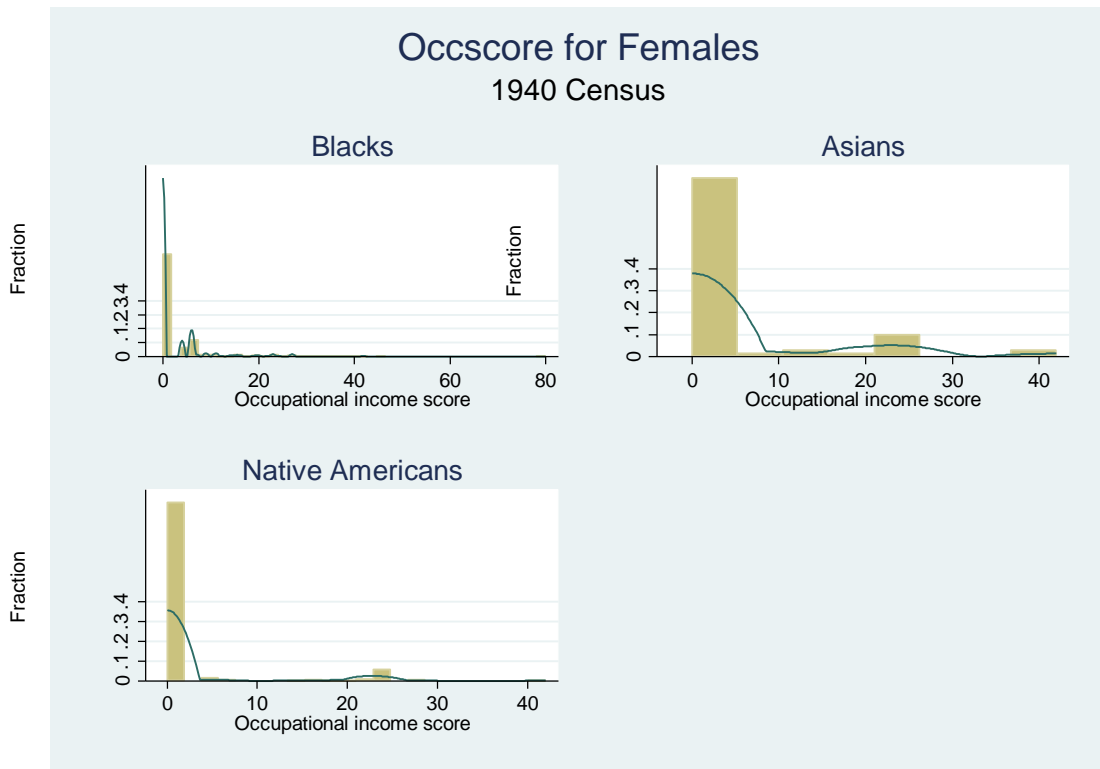


Figure E.3: Occupational score for males- 1970 census data

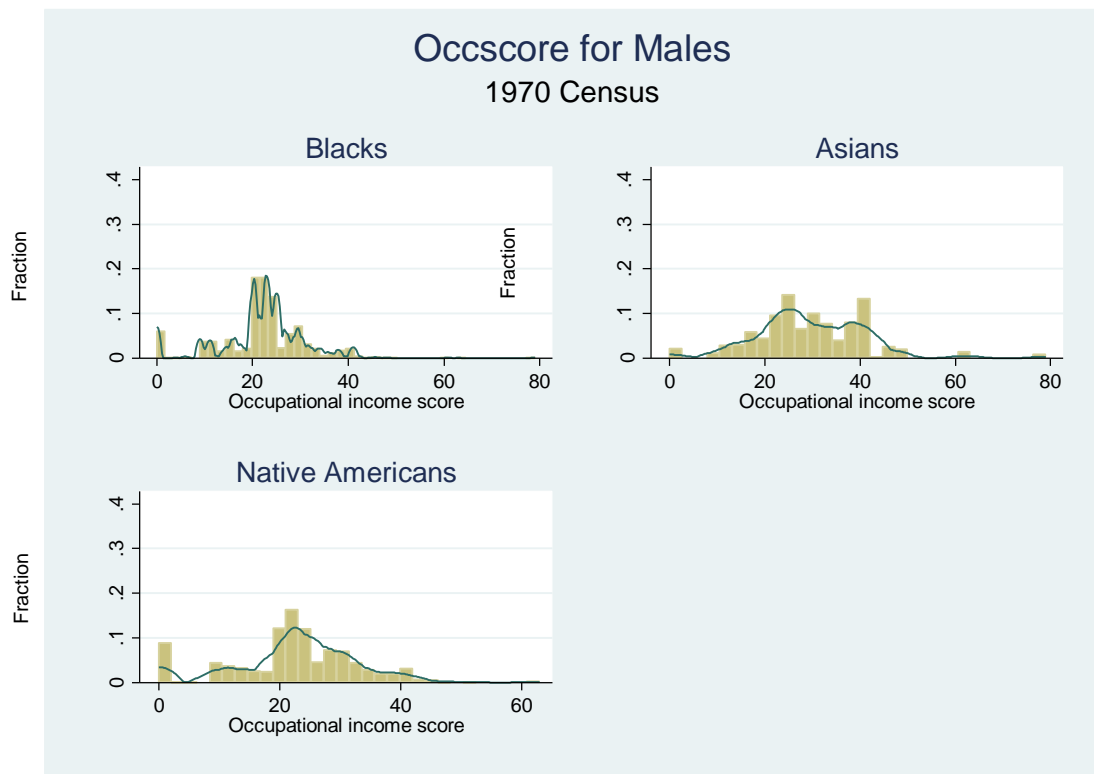


Figure E.4: Occupational score for females- 1970 census data

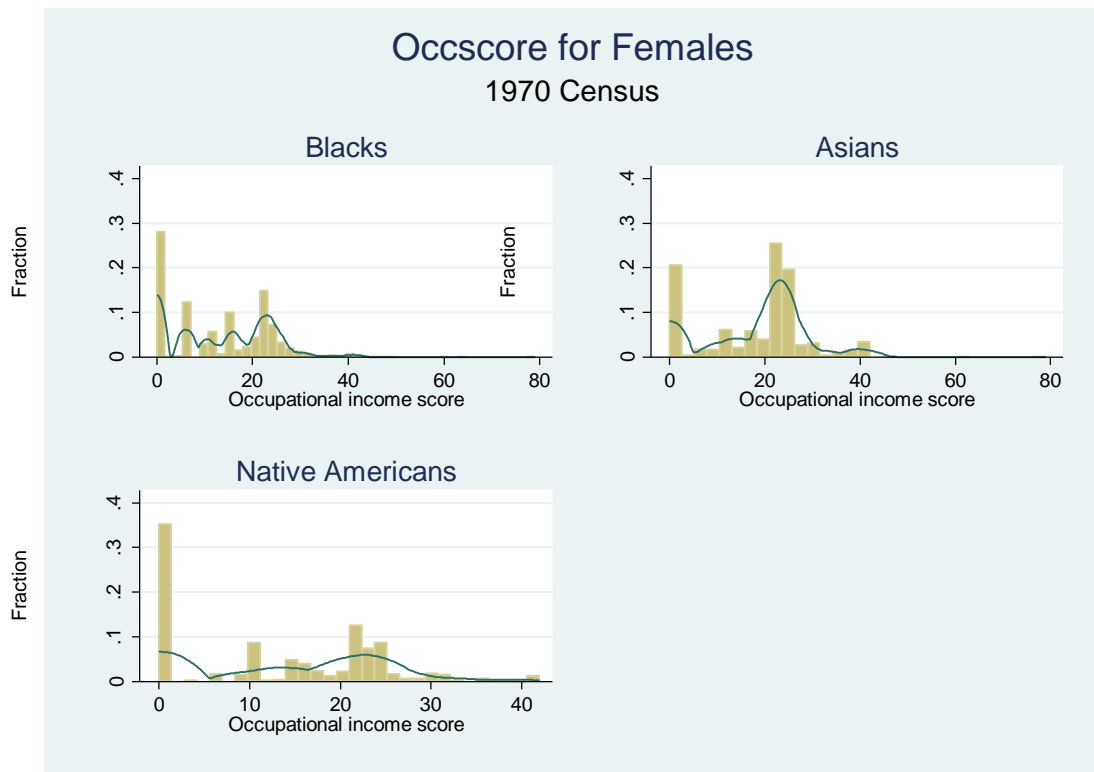


Figure E.5: Occupational score for males- 2000 census data

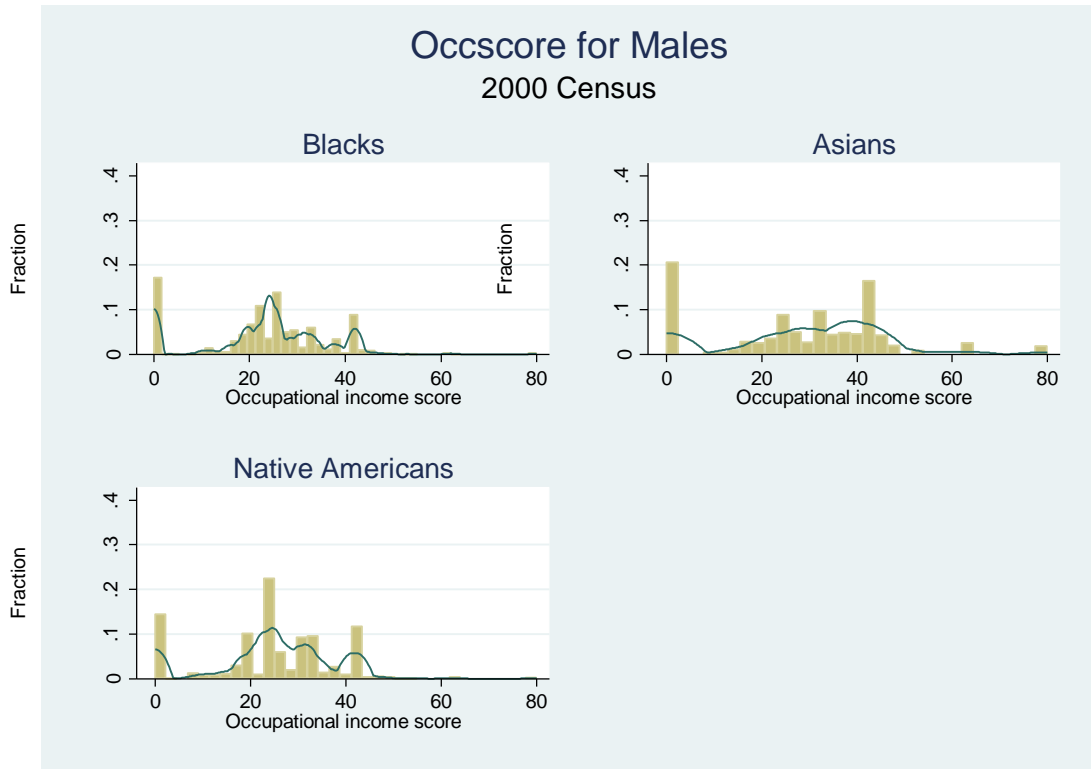
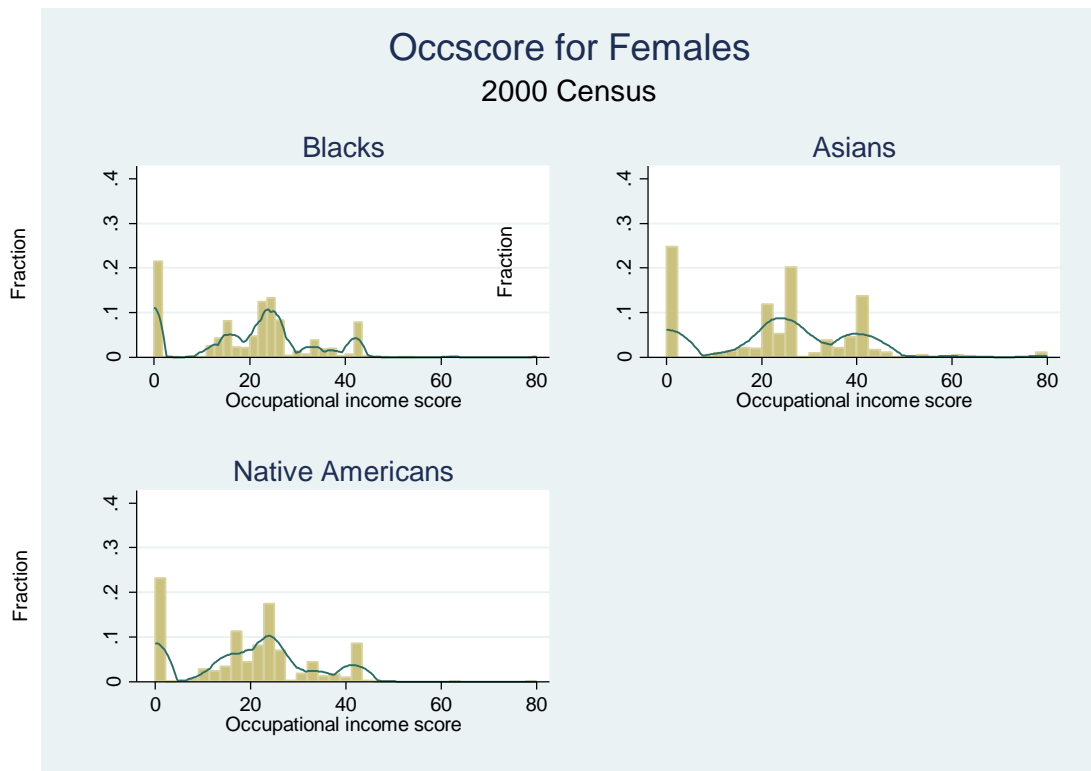


Figure E.6: Occupational score for females- 2000 census data



Appendix F. Data Sources and Description

Table F.1: Data Sources and Description

Variable	Description	Source
Ln GDP per capita, 2000	Natural Logarithm of GDP per capita, on Purchasing Power Parity Basis.	World Bank, <i>World Development Indicators</i> , downloaded from http://www.worldbank.org/ and Penn World Tables, downloaded from http://cid.econ.ucdavis.edu/pwt.html .
Ln per capita income, 2000	Natural Logarithm of per capita personal income.	Bureau of Economic Analysis (BEA), downloaded from http://www.bea.gov/iTable/index_regional.cfm .
Slavery intensity	Proportion of slaves in the total population.	Engerman and Higman, 1997; Andrews, 2004; Nunn, 2008; Jones, 1980; Sater, 1974; Rout Jr., 1976; Mcfarlane, 1993; Williams, 1987; Bergad, 2006; Toplin, 1974; McEvedy and Jones, 1978; and Higman, 1995.
Population density	Number of people per unit of area. Measured in hundreds of persons per square kilometre in cross-country regressions, and hundreds of persons per square mile in the county and state level regressions.	Population density for 1750 in cross-country regressions is from Nunn, 2008. Population density for U.S. States and counties is from Nunn, 2008. Land area for U.S. states and counties are from the U.S. Census Bureau, downloaded from, factfinder.census.gov .
Latitude	Absolute value of latitude of the country (that is, a measure of distance from the equator), scaled to take values between 0 and 1, where 0 is the equator.	La Porta et al., 1999.
Percent European Settlers, 1750, 1830	Percent of the population that was of European descent in 1750 and 1830.	Engerman and Higman, 1997, and McEvedy and Jones, 1978.

(continued)

Variable	Description	Source
Ethnolinguistic fractionalization	Average of five different indices of ethnolinguistic fragmentation. Its value ranges from 0 to 1. The five component indices are; (1) index of ethnolinguistic fractionalization in 1960 which measures the probability that two randomly selected individuals from a given country will not belong to the same ethnolinguistic group; (2) probability of two randomly selected individuals speaking different languages; (3) probability of two randomly selected individuals do not speak the same language; (4) percent of the population not speaking the official language; and (5) percent of the population not speaking the most widely used language.	Easterly and Levine, 1997, as used in La Porta et al., 1999.
Ethnic fractionalization	This measure of ethnic fragmentation is based on a broader classification of groups, taking into account not only language but also other cleavages such as racial characteristics.	Alesina et al., 2003.
Life expectancy at birth	Life expectancy at birth in 2000.	World Bank, <i>Health Nutrition and Population Statistics</i> , downloaded from http://www.worldbank.org/ .
Infant mortality	Infant mortality rate (deaths per 1,000 live births).	World Bank, <i>Health Nutrition and Population Statistics</i> , downloaded from http://www.worldbank.org/ .
Mean temperature	Mean annual temperature in degrees Celsius.	Parker, 1997.
Percent Secondary School Enrolment	Total enrolment in secondary education, regardless of age, expressed as a percentage of the population of official secondary education age.	World Bank, <i>Education Statistics</i> , downloaded from http://www.worldbank.org/ .

(continued)

Variable	Description	Source
Percent Tertiary Enrolment	Total enrolment in tertiary education (ISCED 5 to 8), regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school leaving.	World Bank, <i>Education Statistics</i> , downloaded from http://www.worldbank.org .
Fraction urban	Proportion of the population residing in urban areas.	U.S. Census Bureau, 2010 Census, downloaded from factfinder.census.gov .
Fraction 25 or older with degree or higher.	Proportion of the population with a Bachelor's degree or higher.	Source: U.S. Census Bureau, Census 2000 Summary File 3, downloaded from factfinder.census.gov .
Fraction enrolled in college or graduate school	Proportion of the population enrolled in college or graduate school.	Source: U.S. Census Bureau, Census 2000 Summary File 3, downloaded from factfinder.census.gov .
Fraction speaks English poorly	Proportion of the population 5 years and over who speaks a language other than English at home, and speaks English less than very well.	Source: U.S. Census Bureau, Census 2000 Summary File 3, downloaded from factfinder.census.gov .
Percent workforce in mining in 1880	Data on mining employment by state in 1880.	Mitchener and Mclean, 2003.

(continued)

Variable	Description	Source
Average number of cooling degree days	The average number of cooling degree days is computed as the number of days in which the average air temperature rose above 65 ⁰ F times the number of degrees on those days which the average daily air temperature exceeded 65 over the year.	Mitchener and Mclean, 2003.
Settler origin – U.S. data	A set of indicator variables which take on positive values if a state, prior to statehood, had ties with England, France, Spain and Dutch colonial powers.	Mitchener and Mclean, 2003.
Exogamy	Indicator variable equal to 1 if an individual is in an interracial/exogamous marriage, and 0 otherwise.	U.S. Census Data from the Integrated Public Use Micro data series, downloaded from https://usa.ipums.org/usa/ .
Occupational income score	Median income by occupation in hundreds of 1950 dollars. This variable is created by IPUMS researchers to allocate an occupational income score to each occupation.	U.S. Census Data from the Integrated Public Use Micro data series, downloaded from https://usa.ipums.org/usa/ .

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