

I am an applied microeconomist, with interests in economic history and labor. My research addresses the economic causes and consequences of long-term developments in education and health in the U.S., with a focus on racial inequality. This statement details three papers in progress in this realm.

“Black-White Differences in the Returns to School Quality and Adult Health in the U.S.”

Black-white differences in adult health have narrowed significantly in the U.S. over the past few decades (Harper, Lynch, and Buris, et al. 2007). This disparity is related to racial differences in education (Smith and Kington 1997). In fact, the greatest narrowing of the black-white gap in public school quality occurred during the early 20th century (Card and Krueger 1992; Greenbaum 2009). In this paper, I estimate the extent to which this racial convergence in school quality accounts for the narrowing of the black-white gap in adult health during the second half of the 20th century.

Education is linked to adult health through mechanisms such as wealth. Previous authors, however, have emphasized the impact of school attendance rather than school quality (Lleras-Muney 2005). Causal studies also restrict their attention to whites rather than comparing outcomes across races.¹ I emphasize school quality because it directly affects both school attendance and the returns to education (Card and Krueger 1992). Moreover, school quality can be improved by a wide range of policies, such as reducing class size, improving teacher training, and lengthening the school term.

I estimate racial differences in the later-life health returns to school quality by building off of Card and Krueger (1992)’s two-step procedure. Without access to long-term individual data, they estimate the extent to which racial differences in school quality account for racial differences in adult earnings. I apply this procedure to race and the effects of school quality on adult health. I augment it by using an instrumental variables strategy for school quality. This step is similar to Lleras-Muney (2005)’s instrument of compulsory schooling legislation to identify how school attendance affects adult health.

My instruments for school quality draw upon Greenbaum (2009): cotton prices and the Agricultural Adjustment Act (AAA) from the New Deal. In particular, the AAA indirectly discouraged sharecropping and tenancy, which Greenbaum (2009) shows caused the demand for child labor to decline. Particularly, these instruments explain why demand for child labor fell, and in turn, why relative investments in black public school quality rose. These instruments are thus ideal for policy because they underlie the incentives that affect investments in public schooling. In developing countries like India, demand for child labor remains one salient reason for under investing in public education (e.g. Weiner 1991).

I estimate the model by using archival schooling data from Greenbaum (2009) and health data on mortality from Lleras-Muney (2005). I link synthetic cohorts to average characteristics of the schools near which they were born during the early 20th century.

¹ Additionally, Oreopoulos (2007) provides comparative evidence between the U.S. and the U.K.

This period overlaps with that of compulsory schooling legislation. I thus use Lleras-Muney (2005)'s health sample on whites and augment it with black cohorts as Card and Krueger (1992) do.

This paper complements a large literature on the long-term effects of early-life shocks, such as those pertaining to air quality, the disease climate, and macroeconomic conditions. For example, Almond (2006) provides evidence for the long-term effects of being in utero during the 1918 Influenza Pandemic. In particular, for policy-making, economists are interested in understanding which child policies are most cost-effective for improving later-life well being. For example, Chay, Guryan, and Mazumder (2009) show that increased hospital access for blacks during the Civil Rights Movement helped improve black cognitive development, as reflected by the narrowing of the black-white test score gap.

References:

Almond, Douglas V. (2006). "Is the 1918 Influenza Pandemic Over? Long-term Effects of In Utero Influenza in the Post-1940 U.S. Population," *Journal of Political Economy* 114(4): 672-712.

Card, David and Alan B. Krueger (1992). "School Quality and Black-White Relative Earnings: A Direct Assessment," *Quarterly Journal of Economics*, 107(1), 151-200.

Chay, Kenneth Y., Jonathan Guryan, and Bhashkar Mazumder (2009). "Birth Cohort and the Black-White Achievement Gap: The Roles of Access and Health Soon After Birth," NBER Working Paper 15078.

Greenbaum, Jeffrey (2009). "Land Endowments, Child Labor, and the Rise of Public Schooling: Evidence from Racial Inequality in the U.S. South," University of California at Berkeley, mimeograph.

Harper Sam, John Lynch, Scott Buris, et al. (2007). "Trends in the Black-White Life Expectancy Gap in the United States, 1983-2003," *Journal of American Medical Association* 297(11): 1224-1232.

Lleras-Muney, Adriana (2005). "The Relationship between Education and Adult Mortality in the United States," *Review of Economic Studies* 72(1): 189-221.

Oreopoulos, Philip (2007). "Do dropouts drop out too soon? Wealth, health, and happiness from compulsory schooling," *Journal of Public Economics* 91(3): 2213-2229.

Smith, James P. and Raynard Kington (1997). "Demographic and Economic Correlates of Health in Old Age," *Demography* 34(1): 159-170.

Weiner, Myron (1991). *The Child and the State in India: Child Labor and Education Policy in Comparative Perspective*, Princeton University Press: Princeton, NJ.

“Agriculture and the U.S. Labor Market for Teachers, 1900-1950”

Public education expanded significantly in the U.S. during the early 20th century. Secondary schooling spread rapidly between 1910 and 1940 (Goldin and Katz 1999). Particularly in the South, black public schooling also rose dramatically (Card and Krueger 1992, Greenbaum 2009). This increase in pupils necessitated additional teachers. In this paper, I examine the effect of land endowments and demand for child and female labor in agriculture on the labor market for teachers during this period. I examine the entire U.S., including blacks in the rural South. Understanding the rise of the labor market for teachers not only has important implications for studying early 20th century labor markets, but it particularly sheds light on the rise of female labor force participation (Goldin 1990). Additionally, it can help understand when and why students began to receive a better quality education.

Particularly, I seek to document and explain two phenomena in teaching. First, when did adults pursue teaching as a long-term career? Greenbaum (2009) provides evidence that black teacher turnover was common in the South during this time. In fact, school terms were routinely fragmented during the academic year in many cases, and a given teacher did not routinely staff the same classroom for both semesters. Second, when did teaching become a more female-oriented profession? Perlmann and Margo (2001) document demographic transitions through the turn of the 20th century, emphasizing cities. However, the labor market for Southern, rural black teachers differed from the rest of the U.S., in part due to the demands that cotton placed on the labor of adults and children (Greenbaum 2009).

I examine the extent to which land endowments and the demand for manual labor can explain these changes in teaching. Lakdawalla (2001) shows that teacher quality declined and quantity increased as technological innovation raised the price of skilled workers in other sectors. The falling demand for child labor and the corresponding rise of public schooling, however, can also explain an increase in demand for teachers. Particularly, the demand for black teachers increased when school terms expanded and attendance increased, and thus there were more school days and classrooms to staff (Greenbaum 2009). These results suggest that opportunities for teaching increased as a result. I thus examine whether more adults pursued teaching as a career more regularly.

Additionally, women may have become teachers more regularly than men when the demand for their labor in agriculture decreased. Child labor also declined, and they were also no longer needed to stay with their children in the fields. Moreover, the decline in the demand for black child labor caused the school term length to increase into months during which growing cotton was most labor-intensive. These additional months of the school year thus competed with the time that men could allocate between farming and teaching to the extent that male teachers had pursued farming while school was not in session.

I use the school-district data I collected in Greenbaum (2009) to study racial differences in teaching. I am supplementing the data with data from additional states that I am in the

process of digitizing (e.g., *Biennial Report of the Superintendent of Public Instruction of North Carolina*). These sources provide data on teaching demographics, certification, and pay, annually and by race. I link the education data with census micro-data to understand more demographic characteristics. For instance, I study whether teachers were married, mothers, or former farmers (Ruggles et al. 2008). I thus assemble a richer data set on teachers than any used in the literature.

This paper studies empirically the generalizability of the relationship between the demand for child and female labor, and investments in public school quality throughout the historical U.S. I test the extent to which the same incentives I study in Greenbaum (2009) arose in other modes of economic production. For example, rural states in the Midwest, such as Iowa, were among the first to stop relying significantly on child labor as a result of the earlier mechanization of harvesting wheat and hay. Interestingly, Goldin and Katz (1999) also document that the high school movement diffused most rapidly in the rural Midwest and slowest in the Deep South. I thus seek to explain whether the timing and extent of the rise of teaching varied regionally in accordance with a region's land endowments and demand for child and female labor.

References:

- Biennial Report of the Superintendent of Public Instruction of North Carolina* (1888-1951).
- Card, David and Alan B. Krueger (1992). "School Quality and Black-White Relative Earnings: A Direct Assessment," *Quarterly Journal of Economics*, 107(1), 151–200.
- Goldin, Claudia (1990). *Understanding the Gender Gap*, Oxford University Press: New York, NY.
- Goldin, Claudia and Lawrence F. Katz (1999). "Human Capital and Social Capital: The Rise of Secondary Schooling in America, 1910 to 1940," *Journal of Interdisciplinary History* 29(4): 683-723.
- Greenbaum, Jeffrey (2009). "Land Endowments, Child Labor, and the Rise of Public Schooling: Evidence from Racial Inequality in the U.S. South," University of California at Berkeley, mimeograph.
- Lakdawalla, Darius (2001). "The Declining Quality of Teachers," NBER Working Paper 8263.
- Perlmann, Joel and Robert A. Margo (2001). *Women's Work? American Schoolteachers, 1650-1920*. University of Chicago Press: Chicago, IL.
- Ruggles, Stephen, et al. (2008). *Integrated Public Use Microdata Series: Version 4.0*. Minneapolis, MN: Minnesota Population Center.

“Prosperity, Labor Supply, and Fertility: Origins and Persistence of the U.S. Baby Boom”

This paper examines the relationship between prosperity and fertility: particularly, I analyze the causes of the U.S. Baby Boom. The number of children per woman declined secularly over U.S. history, but increased significantly during the 1940s and 50s (Easterlin 1961). In fact, the Baby Boom was pervasive throughout the U.S., which has proved difficult to account for economically (Bailey and Collins 2009). The extreme changes in the sex ratio of adult males as a result of WWII cannot explain the duration of the Baby Boom and cannot the fact that baby booms have not followed other wars. Additionally, Bailey and Collins (2009) shows that the diffusion of household technologies that reduced the cost of children cannot explain why the Baby Boom occurred because the Amish also experienced a Baby Boom. Explaining the Baby Boom thus remains an open question with important implications for fiscal policy. For example, the federal government will likely have to bear the consequences of the medical, retirement, and disability benefits it promised to a population that is expected to more than double within the next few decades (Lee and Skinner 1999).

Using a simple economic model, I show that the effect of income on fertility can be ambiguous. Provided that children are normal goods, they are similar to leisure in a household consumption-leisure model. An increase in wealth thus leads to an income effect in demand for children increases. However, it also produces a substitution effect in which the increased income decreases the demand for children because the opportunity cost of women’s time increases. Such a model thus suggests that the relationship between prosperity and fertility can vary over time based on the labor market participation of women and the demands of their chosen careers.

I analyze the implications of the 1940s and 50s being a unique period of prosperity, in which incomes from lower deciles rose and wage inequality narrowed (Goldin and Margo 1992). The rise of high schools and information technologies also led more married women to work. Particularly, they pursued white-collar positions such as office assistants, which were routinely part-time (Goldin 1990). The income effect could thus outweigh the substitution effect until women pursued careers that were less conducive to childbearing and raising children. I also analyze the effect of WWII-programs such as the G.I. Bill, which further increased wealth without changing the substitution effect (Turner and Bound 2003). This framework can also be applied to explain how the Great Depression and current recession affect fertility.

I use data I helped digitize as a research assistant for Professor Kenneth Chay. The data include a wide range of vital statistics on fertility and cause of death by age, race, and county, and is richer than what the literature uses. In future work, the data will help me document and explain declines in infant and adult mortality over the 20th century. For example, I will examine whether economic crises are bad for one’s health. Becker, Chay, and Swaminathan (2008) establish the importance of stress on later-life health. Specifically, bank panics have been conducive to an increase in heart attacks (Stuckler,

Meissner, and King 2008). I also seek to extend Greenbaum (2009) by studying whether black health improved with the decline in demand for black manual labor, particularly that of children.

References:

Bailey, Martha J. and William J. Collins (2009) "Did Improvements in Household Technology Cause the Baby Boom? Evidence from Electronification, Appliance Diffusion, and the Amish," NBER Working Paper No. 14641.

Becker, David J., Kenneth Y. Chay, and Shailender Swaminathan (2008). "Mortality and the Baseball Hall of Fame: An Investigation of Status and Life Expectancy," Brown University, mimeograph.

Easterlin, Richard A. (1961). "The American Baby Boom in Historical Perspective," *American Economic Review* 51(5): 869-911.

Goldin, Claudia (1990). *Understanding the Gender Gap*, Oxford University Press: New York, NY.

Goldin, Claudia and Robert A. Margo (1992). "The Great Compression: The Wage Structure in the United States at Mid-Century," *Quarterly Journal of Economics* 107(1): 1-34.

Greenbaum, Jeffrey (2009). "Land Endowments, Child Labor, and the Rise of Public Schooling: Evidence from Racial Inequality in the U.S. South," University of California at Berkeley, mimeograph.

Lee, Ronald and Jonathan Skinner (1999). "Will Aging Baby Boomers Bust the Federal Budget?," *Journal of Economic Perspectives* 13(1): 117-140.

Stuckler, David, Christopher M. Meissner, and Lawrence P. King (2008). "Can a Bank Crisis Break your Heart?" *Globalization and Health* 4(1): <http://www.globalizationandhealth.com/content/4/1/1>

Turner, Sarah and John Bound (2003). "Closing the Gap or Widening the Divide: The Effects of the G.I. Bill and World War II on the Educational Outcomes of Black Americans," *Journal of Economic History* 63(1): 145-177.