

research review



Issue No. 10, July 2008 – December 2008

Research Department

Jeffrey C. Fuhrer

Executive Vice President and
Director of Research

Geoffrey M. B. Tootell

Senior Vice President and
Deputy Director of Research

Economists

Giovanni P. Olivei, VP
Robert K. Triest, VP
Michelle L. Barnes
Katharine Bradbury
Mary A. Burke
Christopher L. Foote
Fabià Gumbau-Brisa
Yolanda K. Kodrzycki
Jane Sneddon Little
Scott Schuh
Joanna Stavins
J. Christina Wang
Paul S. Willen

Manager

Patricia Geagan, AVP

Editors

Suzanne Lorant
Elizabeth Murry

Graphic Designer

Heidi Furse

Research Review is a publication of the
Research Department of the Federal Reserve
Bank of Boston.

ISSN 1552-2814 (print)

ISSN 1552-2822 (online)

©Copyright 2009

Federal Reserve Bank of Boston

research review

Issue No. 10, July 2008 – December 2008

Research Review provides an overview of recent research by economists of the research department of the Federal Reserve Bank of Boston. Included are summaries of scholarly papers, staff briefings, and Bank-sponsored conferences.

Research Review is available without charge. To be placed on the mailing list, or for additional copies, please contact the Research Library:

Research Library—D
Federal Reserve Bank of Boston
600 Atlantic Avenue
Boston, MA 02210
Phone: 617.973.3397
Fax: 617.973.4221
E-mail: boston.library@bos.frb.org

Research Review is available on the web at
<http://www.bos.frb.org/economic/ResearchReview/index.htm>.

Views expressed in *Research Review* are those of the individual authors and do not necessarily reflect official positions of the Federal Reserve Bank of Boston or the Federal Reserve System. The authors appreciate receiving comments.

Research Department Papers Series of the Federal Reserve Bank of Boston

Public Policy Discussion Papers present research bearing on policy issues. They are generally written for policymakers, informed business people, and academics. Many of them present research intended for professional journals.

Working Papers present statistical or technical research. They are generally written for economists and others with strong technical backgrounds, and they are intended for publication in professional journals.

Public Policy Briefs present briefing materials prepared by Boston Fed research staff on topics of current interest concerning the economy.

Research department papers are available online only.
<http://www.bos.frb.org/economic/research.htm>



Executive Summaries in This Issue

Public Policy Discussion Papers

- p-08-5 Summary of the Workshop on Consumer Behavior and Payment Choice
Scott Schuh and Joanna Stavins 4
- p-08-6 Subprime Mortgages, Foreclosures, and Urban Neighborhoods
Kristopher S. Gerardi and Paul S. Willen 6

Working Papers

- w-08-5 Classroom Peer Effects and Student Achievement
Mary A. Burke and Tim R. Sass 12
- w-08-6 The Impact of Immigration on Occupational Wages: Evidence from Britain
Stephen Nickell and Jumana Saleheen 14
- w-08-7 The Responsiveness of Married Women's Labor Force Participation to
Income and Wages: Recent Changes and Possible Explanations
Katharine Bradbury and Jane Katz 18
- w-08-8 Race, Obesity, and the Puzzle of Gender Specificity
Mary A. Burke and Frank Heiland 20

Public Policy Briefs

- b-08-1 Inflation Targeting—Central Bank Practices Overseas
Jane Sneddon Little and Teresa Foy Romano 23

Interactive Graphics

- i-02 U.S. Family Income Mobility and Inequality, 1994 to 2004
Katharine Bradbury and Jane Katz 26

Contributing Authors

30



Public Policy Discussion Papers

p-08-5

Summary of the Workshop on Consumer Behavior and Payment Choice

By Scott Schuh and Joanna Stavins

complete text: <http://www.bos.frb.org/economic/ppdp/2008/ppdp0805.htm>
email: scott.schuh@bos.frb.org, joanna.stavins@bos.frb.org

Motivation for the Research

As a result of the technological revolution in information processing, we are in the midst of a historic migration from older, paper-based payment practices to electronic-based payment methods. The traditional practice of using cash, money orders, or, most commonly, written paper checks mailed to settle bills is being replaced by a host of other payment options, such as credit cards, debit cards, pre-paid cards, and online payment methods. While in hindsight this transformation has been underway for many years, the dramatic aggregate decline in U.S. paper check usage was not documented conclusively until a 2002 study by the Federal Reserve Board.

As part of its ongoing program to raise awareness of and encourage research about these sweeping changes in payment practices, the Federal Reserve Bank of Boston's Emerging Payments Research Group—renamed the Consumer Payments Research Center in December 2008—held a third conference titled “Consumer Behavior and Payment Choice” in July 2008. Designed to be “an unusual conference for unusual times,” the conference continued the inquiry begun with the 2005 and 2006 conferences, this time with a concentration on consumer adoption of new payment technologies, credit card debt management, payment card surcharges, and involuntary bank account closures.

Research Approach

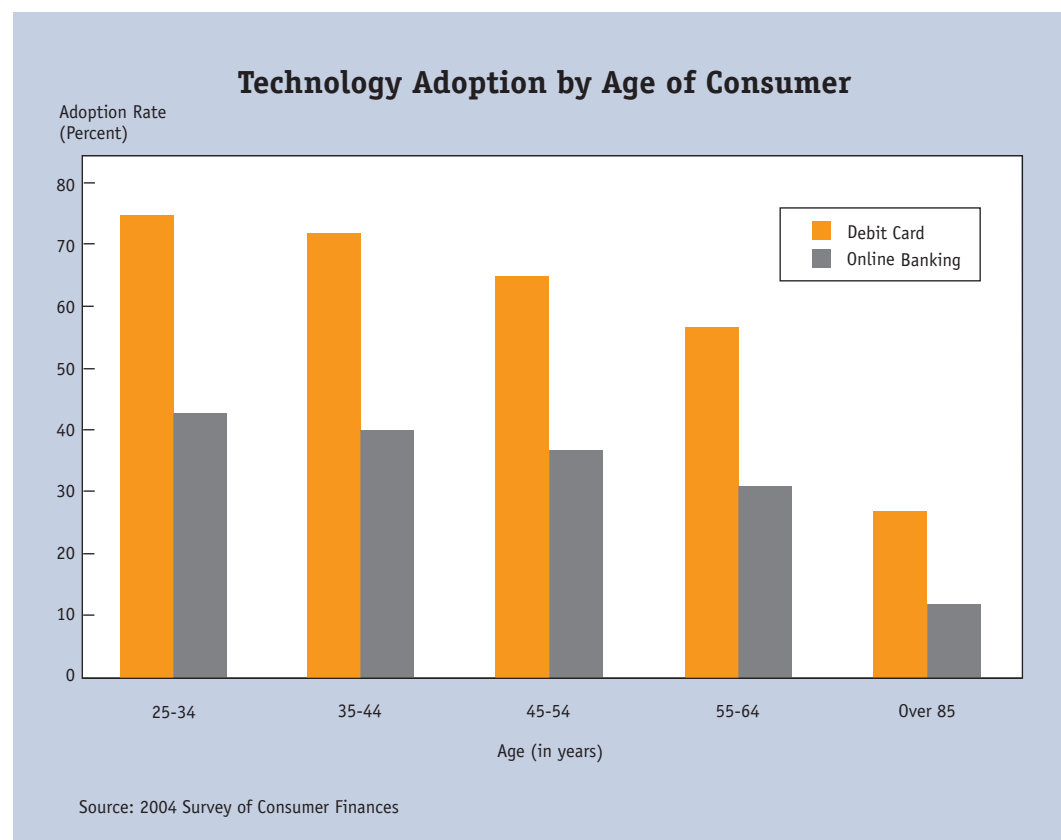
The goal of the conference was to foster a constructive environment for pooling information, forming productive research collaborations, and advancing the available collective knowledge to enable consumers, firms, financial institutions, and policymakers to make the best choices in a time of rapidly changing payment practices. In analyzing the four main issues, each behavior's economic implications were examined, along with whether a potential market failure was present and, if so, whether public policy intervention might be warranted to address the market failure. Any recommendations or resolutions are provisional in nature.

Key Findings

- While there is a common policy presumption that new technologies introduce cost savings and thus are better for individual consumers and society as a whole, in practice the adoption of new technologies is slow and uneven across consumer groups. In terms of the supply of new payment technologies, there may be a negative correlation between the banking industry's market structure and the quality of its branch services. For instance, in a highly concentrated market with little competition, banks may have an incentive to lower their service quality, thereby encouraging customers to switch to online payment and banking technologies; in contrast, banks in more competitive markets may not cut services for fear of antagonizing customers and losing them to banks that provide better services
- In terms of a demand-side explanation for the adoption of payment technologies, there is a strong connection between the individual consumer's age and the likelihood of her/his adopting a new

technology. Younger consumers are more likely to switch to debit cards and online banking, but it is not clear why older consumers are less likely to adopt new payment methods. There are two main possibilities that point to different policy outcomes. One explanation holds that older consumers may not understand the new technologies, which suggests that policy could help correct this gap. Another explanation holds that older consumers may not have a problem understanding the new technology, but elect not to adopt it because the benefits of doing so do not outweigh the costs associated with adopting the new method.

- In the United States, the average household has about four credit cards, almost half of all credit card holders carry revolving balances from month to month, and the rate of interest varies across different cards. While standard economic theory holds that consumers should prioritize paying off credit cards charging the highest interest rates, in practice consumers do not manage their credit card debt in such a manner, and they often incur higher debt servicing costs as a result. For instance, consumers often hold credit card debt while also maintaining high balances in their checking or savings accounts. This suggests that some consumers simply may not understand the true costs incurred by maintaining high credit card balances. For instance, monthly credit card statements usually emphasize the minimum amount due, not the total debt held and the amount of time it will take to pay it off if only the minimum required payment is paid. While in 2010 the Federal Reserve Board will enact changes to credit card rules that will help consumers pay down higher rate charges faster, it may be that further policy intervention would be useful, such as requiring credit card companies to fully disclose how payment strategies affect a consumer's borrowing costs.
- Retail establishments in the United States are prohibited from imposing surcharges on customers who pay with credit or debit cards. However, in the Netherlands merchants can impose a surcharge on customers using debit, though not all merchants choose to do so. Yet such surcharges appear to induce consumers to increase their use of cash as a payment method (credit cards are not generally



used by Dutch consumers). While such differential pricing is rare in the United States, it does survive at some gas stations that offer discounts to customers who pay in cash. Since interchange fees are calculated as a percentage of the retail price, some merchants have an incentive to differentiate among payment methods when the cost of accepting cards rises. Further work needs to be done in order to understand how interchange fees influence the payment method used, whether and how consumer behavior changes when customers are offered cash discounts, and the welfare and distributional consequences of enforcing equal pricing regardless of the payment method used, in the presence of interchange fees.

- Between 2000 and 2005, U.S. banks closed about 30 million consumer checking accounts as a result of excessive overdraft activity. While such involuntary account closings have been of interest to consumer advocates, little research has been conducted on the causes and consequences of such involuntary closures. One such study, presented at the conference, found that the root cause of such involuntary account closures is poor household financial management and that areas with high rates of single mothers, low educational levels, and high crime rates are particularly vulnerable. Such account closings are made at the discretion of the individual bank, and can have adverse consequences for consumers, who may be unable to open an account at another financial institution, thus severely limiting their options for conducting any financial transactions. Given rising income inequality in the United States, involuntary bank account closures raise policy concerns and suggest that some U.S. consumers may benefit from alternatives to traditional bank accounts.

Implications

While the conference papers treated different aspects of consumer payments behavior, a common thread was that each study utilized a unique data source that was largely unexplored. The 2008 conference confirmed the findings from the two previous conferences that developing high-quality data on consumer payment behavior would be immensely useful. To further such efforts, the Boston Fed's Consumer Payments Research Center (CPRC) has launched the Survey on Consumer Payment Choice (SCPC) to obtain a nationally representative and comprehensive sample of U.S. consumers' payment habits and preferences. The survey was developed by the CPRC and administered by the RAND Corporation in September 2008 as part of its American Life Panel program. By providing publicly available data on the adoption and use of payment instruments by U.S. consumers, as well as their payment characteristics and attitudes, the survey will equip researchers with better information with which to study and resolve some outstanding policy questions regarding contemporary consumer payment behavior and practices.

p-08-6

Subprime Mortgages, Foreclosures, and Urban Neighborhoods

by Kristopher S. Gerardi and Paul S. Willen

complete text: <http://www.bos.frb.org/economic/ppdp/2008/ppdp0806.htm>
email: kristopher.gerardi@atl.frb.org, paul.willen@bos.frb.org

Motivation for the Research

The wave of subprime mortgage foreclosures that started in 2006 has disproportionately affected urban neighborhoods, and the effects on already vulnerable inner-city communities have been profound.

Among minority households, homeownership rates have increased substantially over the past 60 years, with a good part of the increase having come over the past decade or so. Much of this recent increase in minority homeownership has been attributed to an expansion of credit to borrowers

who lacked the financial means and/or credit histories to obtain financing through traditional credit facilities. To a large extent, this expansion of credit has taken place through the subprime mortgage market, and much of the rapid growth in subprime mortgage lending has taken place in minority and low-income neighborhoods.

The existing literature reveals that there are both positive and negative aspects to the rapid rise in subprime mortgage lending. On the positive side, evidence suggests that the subprime market has provided opportunities for underprivileged households to become homeowners, and a vast literature has found substantial evidence of a wide variety of benefits from homeownership (although recently some of the methods and interpretations of these studies have come under fire). On the negative side, the subprime market has created many potentially unsustainable ownerships, since it has allowed borrowers with poor credit histories, little to no financial wealth, and unstable income streams to become homeowners. This, in turn, has resulted in widespread foreclosures nationwide. In this paper, the authors examine the causes and effects of the subprime crisis and its effects on urban communities, with particular focus on communities where a large share of homes are owned by minorities (blacks and Hispanics, for the purposes of this study).

Research Approach

The authors begin by examining the role of subprime lending in homeownership prior to the crisis, starting with a review of the literature. They examine the evidence, using a panel dataset they construct by merging data from two main sources: (1) property and mortgage transaction files obtained from Massachusetts county-level registry of deeds offices by the Warren Group, a private corporation specializing in collecting residential property records in the northeastern United States and (2) loan-level data collected under the Home Mortgage Disclosure Act (HMDA). The Warren Group data contain residential purchase/sale deeds, mortgage originations, and foreclosure documents for the entire state of Massachusetts, going back to 1990. The HMDA data contain some detail regarding loan and borrower characteristics. The merge, which creates a dataset covering the years 1990 to 2006, is based on the dollar amount of the mortgage, the Census tract where the borrower lives, the identity of the mortgage lender, whether the mortgage was a refinance or for a purchase, and the date of the mortgage.

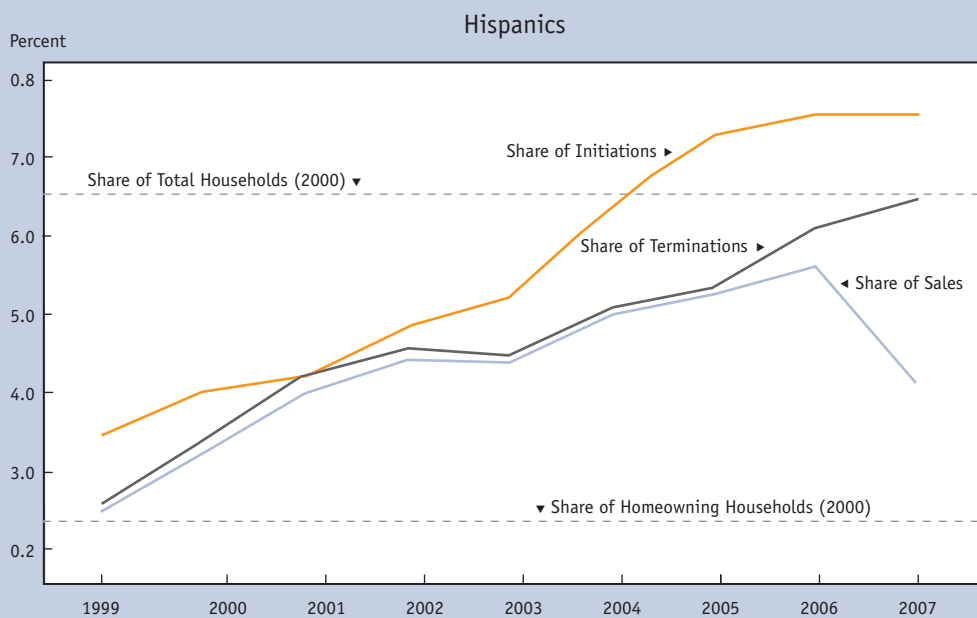
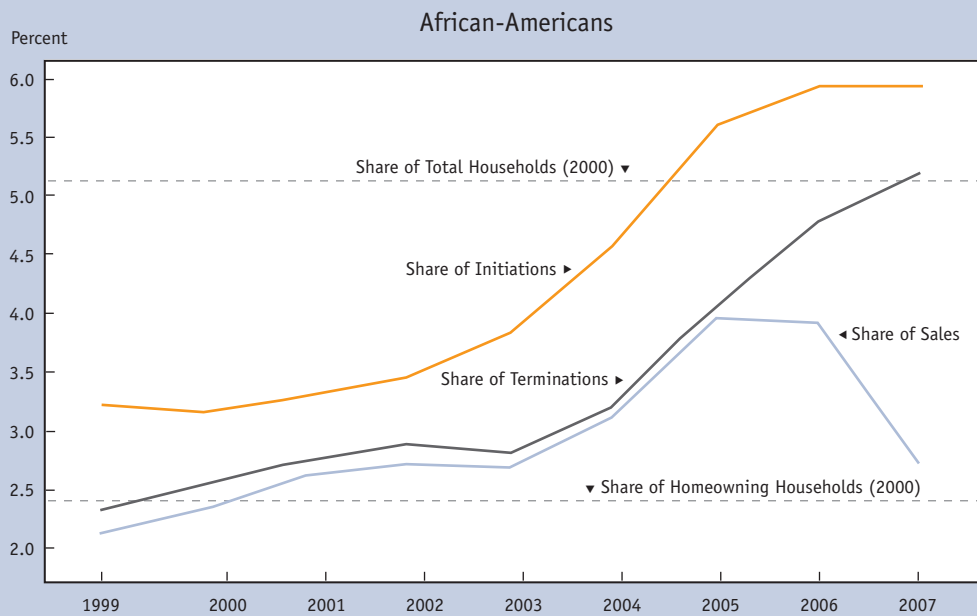
The authors evaluate inner-city homeownerships and the foreclosure crisis, focusing on 2- to 4-family (hereafter “multifamily”) dwellings because: (1) they are disproportionately located in urban areas, (2) they account for a disproportionate share of foreclosures in Massachusetts, and (3) they have an obvious externality in the evictions of tenants living in them. The analysis is conducted at the ownership level, meaning that relinquishing the deed (but not refinancing) terminates an instance of ownership.

To analyze the determinants of multifamily foreclosures, the authors use a competing risk, proportional hazard model that is fairly common in the literature. However, rather than model mortgage terminations, they model ownership terminations.

Equity is estimated as a linear spline to capture the idea that the relationship between equity and foreclosure is nonlinear: a borrower with positive home equity will always prefer to sell the home or refinance to extract that equity, rather than defaulting, while a borrower with negative equity will not have these options.

The list of explanatory variables includes both individual-level variables—including the homeowner’s race, the ratio of nominal mortgage debt to income at the time of purchase, homeowner’s occupancy status, an indicator of whether the home purchase was financed with a mortgage from a subprime lender, and the homeowner’s equity position—and more aggregated variables—

Gross Minority Homeownership Flows in Massachusetts, 1999-2007



Source: Authors' calculations based on HMDA and Warren Group data.

including the unemployment rate of the town where the home is located, the percentage of individuals in the Census block group with a high school diploma, the percentage of individuals in the Census block group with a college education, and the percentage of households with income below the poverty threshold.

Using the parameter estimates from the model, the authors perform counterfactual simulations to show exactly how important a role house price appreciation has played in the prevalence of Massachusetts foreclosures. First, the authors calculate predicted foreclosures for multifamily ownerships that began in 2005 (which they refer to as the “2005 vintage”) and compare this with the actual number of foreclosures for this vintage. Next, they compute predicted foreclosures for the 2005 vintage, assuming house price outcomes for two different vintages of multifamily homes—the 1990 and 2002 vintages.

Finally, the authors examine options for mitigating the crisis. To explore why lenders generally do not offer principal reduction to borrowers who are in a negative equity position—although foreclosure costs often exceed the amount forgone through such action—the authors consider four cases: a borrower who lives in a multifamily property who financed the purchase with a subprime mortgage, a borrower who lives in a multifamily property who initially obtained a prime mortgage, and each of these scenarios for a borrower who purchased a single-family property. Using estimated parameters from the model, the authors compute the size of the “Type I error”—failing to offer assistance to a borrower in distress when the increased probability and high costs of foreclosure make inaction more costly than assistance—and the “Type II error”—assisting a borrower who does not need help.

Key Findings

- The median cumulative loan-to-value ratio for all subprime borrowers in Massachusetts increased over the sample period by similar amounts for both minority and white borrowers, reaching 100 for each group in 2005. Thus, the median subprime borrower in 2005 was fully leveraged and had basically invested nothing in the property at the time of purchase.
- Homeowners who use a subprime mortgage to finance a home purchase are approximately five times as likely to lose the home to foreclosure, other things being equal, as homeowners who finance with a prime mortgage. The authors do not interpret this finding as establishing a causal connection but suggest that the causes include both omitted selection effects—borrowers who use the subprime market have poor credit histories relative to other borrowers—and treatment effects—interest rates in the subprime market are often significantly higher than rates in the prime market, resulting in higher payments, and, in turn, a higher likelihood of default.
- Prior to the subprime crisis, there was a large increase in the minority share of buyers in Massachusetts, coinciding with the peak of subprime activity. But there was also a large increase in the minority share of sales, implying much smaller gains in minority homeownership than a naïve analysis of the purchase data alone would suggest. Direct evidence on racial transitions, in fact, shows a significant increase in intraracial purchases, consistent with the idea that minority homeownership gains were positive during this period but smaller than one would observe if looking only at the inflows to homeownership.
- In the current housing crisis, foreclosures in Massachusetts are highly concentrated in minority neighborhoods, even relative to past foreclosure booms, such as the crisis of the early 1990s.
- For both black and Hispanic households, almost all the terminations through 2005 were sales, but this began to change in 2006, as the share of terminations accounted for by foreclosures increased

dramatically. By 2007, almost half of the terminations for black homeownerships came through foreclosure, although net inflows into homeownership remained positive for black households, even in 2007.

- Over the sample period, intraracial sales accounted for between 70 and 74 percent of transactions. However, between 1998 and 2002, 27 percent of multifamily intraracial sales were between minority households, while between 2003 and 2006 this percentage increased to 36 percent. Thus, the subprime market seems to have largely facilitated an increase in the proportion of intraracial transactions involving minorities.
- Altogether, the data seem to paint a somewhat bleak picture of the role of subprime lending in Massachusetts urban neighborhoods. Rather than increasing the share of homes owned by members of the community, it appears that subprime lending allowed one set of minority homeowners to replace another.
- The amount that lenders would lose by reducing principal for borrowers who otherwise would repay the full amount they owe exceeds dramatically the amount that lenders would gain by failing to reduce principal for borrowers who would default. Looking at four groups of borrowers with negative equity: owners of a multifamily home originally financed with a subprime mortgage, owners of a multi-family home originally financed with a prime mortgage, and owners of a single-family home under each of these financing scenarios, the only group for which principal reduction makes economic sense is owners of a multifamily home originally financed with a subprime loan.
- For multifamily homes purchased with subprime mortgages, the likelihood of foreclosure is so high—66 percent in the baseline specification in this paper—that principal reduction schemes have a sufficiently high probability of working that they should be considered.

Implications

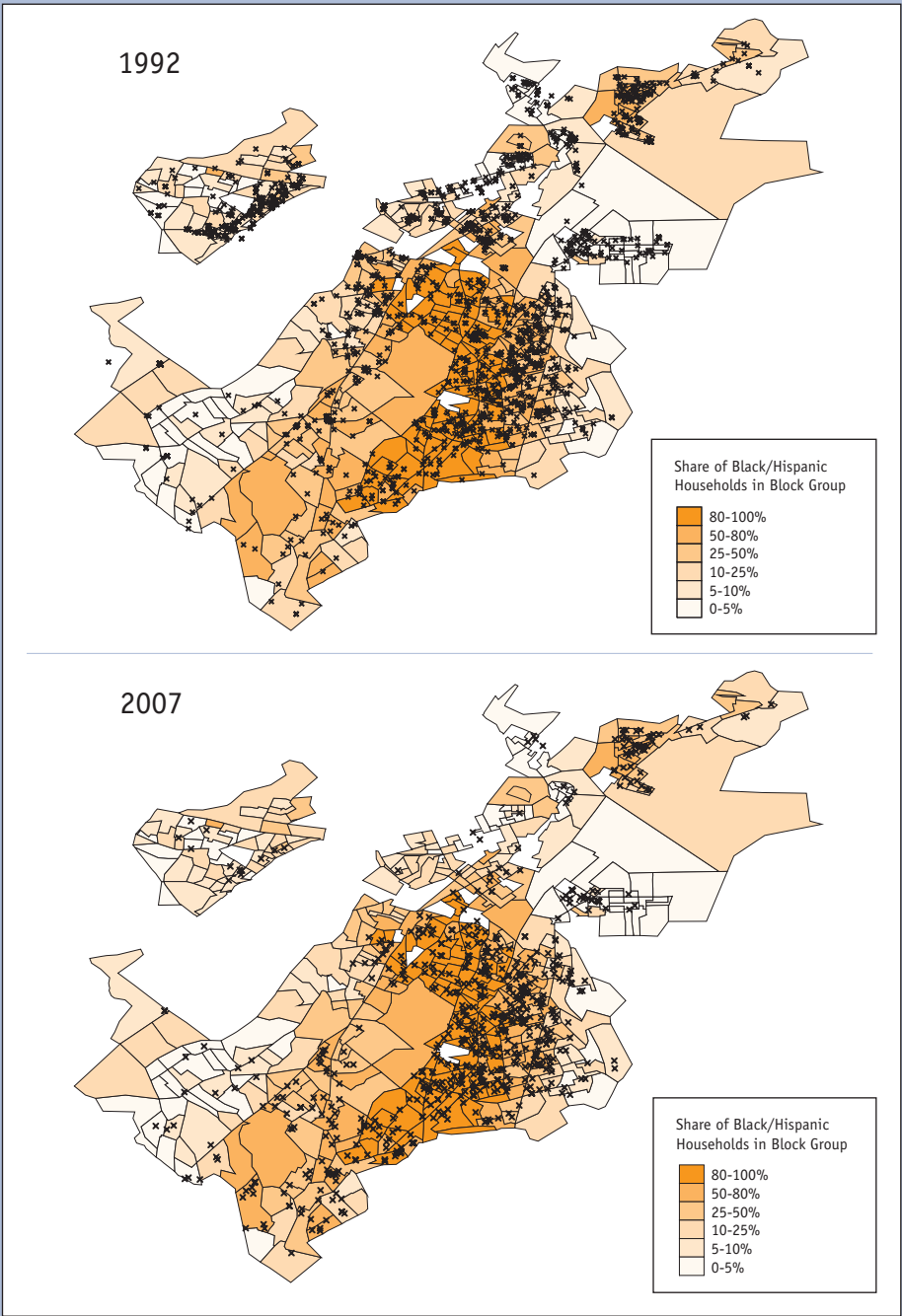
The outlook for inner-city neighborhoods is somewhat bleak. They face an environment of falling house prices with a set of homeowners particularly ill suited to handle them. However, the sheer depth of the problem actually allows for policy options, both related to the current crisis and going forward, that would likely be impossible to implement with better-situated borrowers.

One option that has been proposed is for lenders to eliminate negative equity for borrowers in such a position by writing down a portion of the principal balance on their respective loans. The argument runs that such a plan benefits the lender as well as the borrower because the new principal balance exceeds the yield from foreclosure once one takes into account the costs of foreclosure. Many commentators have argued that this solution seems so obvious that one wonders why lenders do not implement it on a large scale.

Some have suggested that principal reduction would benefit investors but does not occur because complex agreements between servicers and investors make such a policy infeasible. However, the evidence for this is severely lacking. For example, Freddie Mac, which retains credit risk when it securitizes a mortgage and thus has complete discretion over the disposition of troubled loans, rarely grants loan modification. Furthermore, for the instances in which it does offer assistance, few involve any concessions like principal or interest rate reduction.

The real reason that principal reduction is not adopted widely, as shown above, is that there is a serious flaw in the logic of principal reduction. One potential criticism of this argument is that one could minimize Type II error—assisting a borrower who does not need help—by requiring proof that a borrower is likely to default. However, as a practical matter, this would be extremely difficult

Foreclosures: Boston Minority Neighborhoods



Source: Authors' calculations based on HMDA and Warren Group data.

to enforce. Furthermore, the results from the policy experiment suggest that even if qualification requirements reduced Type II error by half, principal reduction would still not make sense for three of the four groups.

The only group for which principal reduction makes economic sense is the multifamily, subprime borrower. In this case, Type I error is high because the reduction in foreclosures from principal reduction is extremely large, while Type II error is small since the probability of foreclosure in the absence of assistance is so high.

What form such assistance should take is an open question. Simply reducing principal leaves marginal homeowners in place who still have a high likelihood of foreclosure. In the particular instance described here, the nonstructural estimation approach most likely overestimates the benefits of increasing equity in reducing foreclosures, meaning that the estimate of the post-treatment foreclosure probability is a lower bound. Thus, the appropriate policy may be to work with the lender to find a new buyer—perhaps a community organization—that will pay off the reduced principal, rather than to reduce principal for the current borrower.

Working Papers

w-08-5

Classroom Peer Effects and Student Achievement

by Mary A. Burke and Tim R. Sass

complete text: <http://www.bos.frb.org/economic/wp/wp2008/wp0805.htm>
email: mary.burke@bos.frb.org, tsass@coss.fsu.edu

Motivation for the Research

This paper analyzes the impact of classroom peers on individual performance. The potential for peers to affect individual achievement is central to many important policy issues in elementary and secondary education, including the effects of school choice programs, ability tracking within schools, “mainstreaming” of special education students and racial and economic desegregation. Vouchers, charter schools, and other school choice programs may benefit students who remain in traditional public schools, by engendering competition that leads to improvements in school quality, but such policies may also harm these same students, by diminishing the quality of their classmates. Grouping students in classrooms by ability can likewise have significant effects on student achievement, depending on the magnitude of peer influences. The effect of desegregation policies on achievement depends not only on potential spillovers from average ability but also on whether different peers exert different degrees of influence on individual outcomes.

This paper adds to a growing list of studies that use matched panel data in direct tests for peer effects in academic achievement. This is the first study to control simultaneously for unobserved heterogeneity in student ability and teacher effectiveness, among other unobserved effects, and the first to estimate classroom-level peer effects at the elementary, middle, and high school levels for the same school system and compare these to grade-level effects.

Research Approach

A unique longitudinal data set, covering all Florida public school students in grades 3–10 over a five-year period, identifies the classroom peers and the teacher associated with each individual student observation, along with other data relevant to student achievement. The measure of student achievement in a given year is the change in her score on the Florida Comprehensive Assessment Test, a standardized test administered to all students at the end of each school year.

Because students and teachers are not assigned to classrooms at random, it is important to control for unobserved student and teacher traits—so-called “fixed effects” such as innate intellectual ability or innate teaching effectiveness—that may give the spurious appearance of peer influence if, for example, students are placed in classrooms with others of like ability or if having a better teacher in a given year also means having better peers. To accomplish this, the authors adopt an innovative computational technique (due to Arcidiacono et al. 2007) that simplifies the estimation of fixed effects and simultaneously mitigates the problem of measuring peer ability in the presence of unobserved traits. In this method, peer ability is measured using the estimated values of the peers’ fixed effects, which capture the impact of both observed and unobserved traits. First, the authors estimate a linear-in-means specification that gauges the impact of average peer ability (measured as the average of the peers’ fixed effects) on individual student achievement. They then test whether the standard deviation of peer ability, in addition to average peer ability, influences individual achievement. In the second nonlinear specification, they allow peer effects to depend on the student’s own ability, defined by the ranking of the student’s fixed effect within the entire sample. In the most complex specification, the authors measure the influence of peers in different portions of the ability ranking and allow this influence to depend on the student’s own ability ranking. This last model allows them to compare, for example, the impact on a low-ability student of having a higher share of high-ranking peers to the impact on a high-ability student. In all of these models, identification of the peer effects relies on variation over time in the types of peers a given student encounters as well as on variation across the sections taught by a given teacher in the distribution of student ability.

The authors then conduct a series of three different classroom assignment simulations. In each case, the initial classroom ability distribution is assumed to be representative of the aggregate rankings, with 20 percent of students in the lowest-ability quintile, 60 percent in the middle three quintiles, and 20 percent in the highest quintile. In the first reassignment, the classroom becomes heavily weighted toward low-ability students, and the new respective shares are 60 percent, 30 percent, and 10 percent. In the second experiment, the classroom becomes dominated by high-ability students, with respective shares of 10 percent, 30 percent, and 60 percent. In the third experiment, the distribution is shifted toward the middle, with only 5 percent each in the lowest and highest ability groups. Finally, the authors simulate a school choice program that leads to the exit of 2.5 percent of the students from each classroom, with all the exiting students coming from the highest-ability quintile, and determine the impact on the remaining students.

Key Findings

- Peer effects are not “one-size-fits all” but exhibit striking differences across students of different abilities and across different segments of the peer ability distribution. For example, the weakest students appear to experience the biggest positive impact from having higher-quality peers, specifically from having peers in the highest quintile of the ability distribution. High-ability students appear to experience the weakest spillovers from mean peer ability but nonetheless may suffer sharp losses due to an increase in the share of peers of very low ability.
- Peer effects are small, but statistically significant, when measured with linear-in-means models. Peer effects are generally larger and both statistically and economically significant when measured with nonlinear models. Comparisons of effects between math and reading scores, and across different schooling levels, depend on whether linear or nonlinear models are employed.
- In most specifications, controlling for teacher fixed effects reduces the magnitude of the estimated peer effects, indicating that peer and teacher quality co-vary over time within a given student and therefore that student fixed effects do not fully control for correlated effects induced by teachers.

- In the nonlinear models, the magnitude of peer effects depends on an individual student's own ability and on the ability of the peer group under consideration. These results imply that there are opportunities for Pareto-improving redistributions of students across classrooms and/or schools.
- Peer effects tend to be much stronger at the classroom level than at the grade level; in most cases there appear to be significant peer effects at the grade-within-school level. This last finding agrees with recent findings by Carrell et al. (2008) that estimates of peer effects can differ greatly, depending on the accuracy with which the researcher identifies the set of relevant peers.
- Any negative peer effects from school choice programs are likely to be small. A choice program that attracted 2.5 percent of students, all of them from the top ability quintile, would have only very small negative effects on the learning gains of lower-ability students who remained behind.

Implications

The finding of significant peer effects at the classroom level but not at the general grade level emphasizes the importance of identifying the salient peer group. The finding that peer effects are generally weaker when teacher ability is controlled for indicates that teacher ability may vary systematically with peer ability, conditional on individual student ability. Such co-movement is plausible in the context of student-teacher matching policies that result in a positive but imperfect correlation between students' and teachers' fixed abilities. These findings suggest that accessing random variation in peer ability will not guarantee unbiased estimates of peer effects unless unobserved teacher effects are also taken into account.

The sizable peer effects observed in the nonlinear models are obscured in the linear-in-means models, a fact that stresses the importance of model specification. However, the policy implications of the nonlinear models are not clear cut. For example, while low-ability students benefit significantly from having top-quality peers, those peers will have smaller achievement gains as a result of mixing with low-ability students, and these losses may fully offset the weaker students' gains. On the other hand, policies that mix middle and high-ability students with one another are likely to dominate those that place the top students in a separate track. While parents may prefer strict tracking, the findings indicate that the highest-ability students actually benefit from mixing with students of middling ability.

w-08-6

The Impact of Immigration on Occupational Wages: Evidence from Britain

by Stephen Nickell and Jumana Saleheen

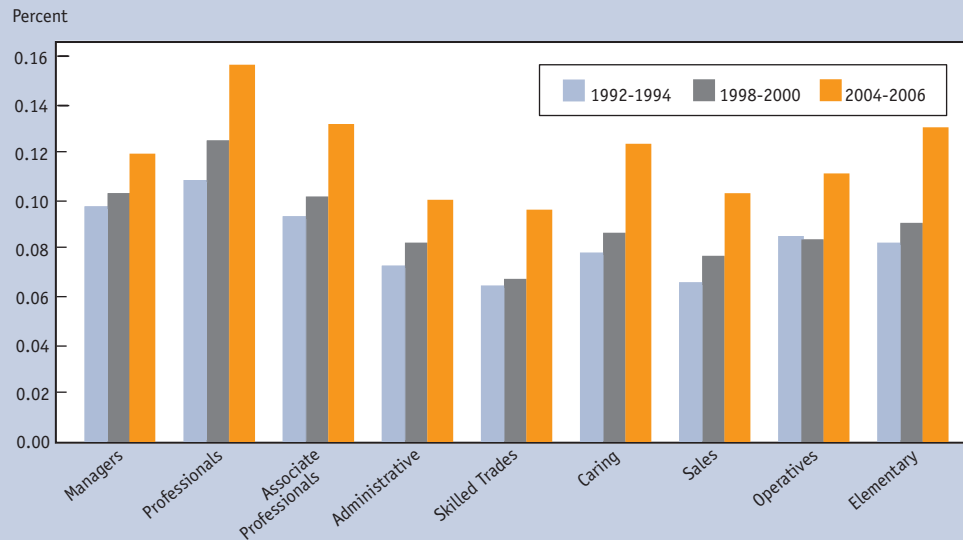
complete text: <http://www.bos.frb.org/economic/wp/wp2008/wp0806.htm>
email: jumana.saleheen@bankofengland.co.uk

Motivation for the Research

The rise in immigration experienced in the United Kingdom over the past 10 years is widely believed by the general public and policymakers to have had large effects on the labor markets in general and wages in particular. However, the balance of the research on this issue suggests that the share of immigrants in the workforce has had little or no impact on the pay rates of the indigenous population. Nevertheless, there is a continuing controversy over this issue.

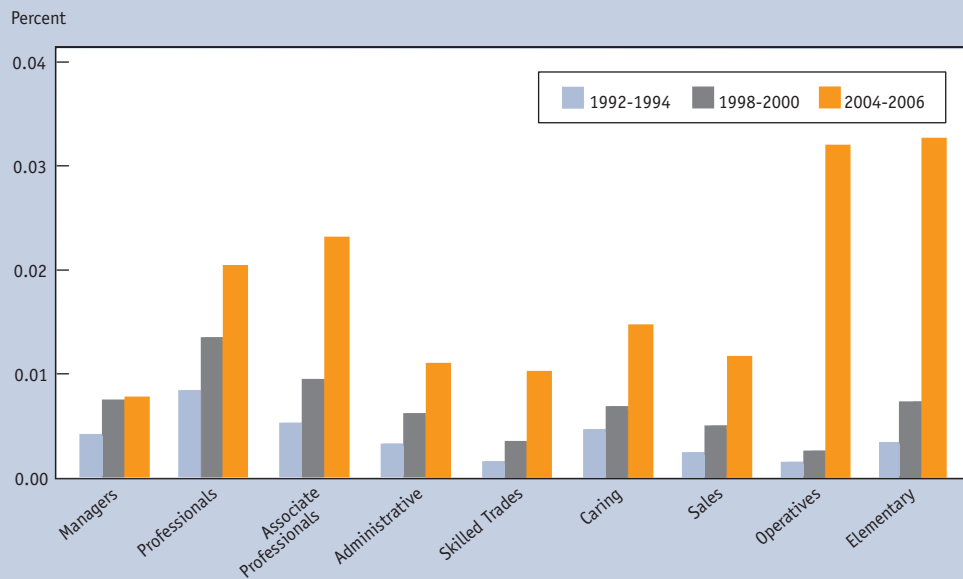
Much of the research in this area has concentrated on looking for wage effects of immigration among the low-skilled, where skill levels are defined in terms of education. Unfortunately, however, the measurement of the education levels of migrants is often very tricky because of the difficulty of comparing education qualifications across countries. Furthermore, for a variety of reasons,

Immigrant-Native Ratio Over Time



Notes: Based on all employed individuals aged 16–64. The number of all foreign-born workers in each occupation as a percentage of the total number of native-born people employed in that occupation.
Source: Labor Force Survey (LFS) and authors' calculations.

New Immigrant-Native Ratio Over Time



Notes: Based on all employed individuals aged 16–64.
“New” immigrants are those who entered the United Kingdom in the survey year or the (calendar) year before the survey was carried out. The number of “new” immigrants in each occupation as a percentage of the total number of native-born people employed in that occupation.
Source: Labor Force Survey (LFS) and authors' calculations.

many immigrants who come to the United Kingdom with high qualification levels work in low-skill occupations. This may tend to corrupt an analysis that depends on using education levels to partition the data.

Research Approach

This paper revisits the question of whether immigration to Britain has had any impact on average wages by taking a different approach: segmenting the labor market by occupation. One advantage of this approach is that it focuses the analysis on the various groups in the labor market, such as plumbers, agricultural workers, nurses, and waiters, who have been the subject of much of the public discussion. The authors examine the immigrant-native ratio by occupation at the 1-digit and 2-digit classification level, how this ratio has changed over time, and what has happened to pay in these occupations.

The primary sources of data are the British Labor Force Survey (LFS) and the Annual Survey of Hours and Earnings (ASHE) New Earnings Survey (NES). Since the standard occupational classifications (SOC) changed from SOC 1990 to SOC 2000 at the turn of the century, the authors develop a consistent classification over the study horizon (1992–2006) by transforming the SOC 1990 codes into SOC 2000 codes.

The analysis in this paper differs from previous research in this area in an additional way: because wage data by the breakdowns used in this paper are not available for immigrants and natives separately, it considers the impact of immigration on average *overall* occupational wages rather than on average *native* occupational wages, which is the focus in much of the existing literature on immigration. Of course, average overall wages are just a weighted average of native and immigrant wages, but as a result of the data limitations, this paper makes no inferences about the impact of immigration on native wages.

The authors estimate a regional-occupational wage equation that they derive by constructing and combining demand and supply equations for labor at the regional-occupational level. The demand equation incorporates the idea that immigrants differ from natives in their degree of productivity or at least are so perceived by employers. The supply equation captures the idea that labor is attracted into a region if wages are higher there than elsewhere, if relative unemployment is lower, and if high immigrant proportions tend to attract mobile workers. The initial estimation implicitly assumes that the impact of immigration on wages is identical across all occupations. Later, this is relaxed to allow the impact of immigration on wages to differ by occupation. The authors then investigate whether there is any difference between the inflow of new immigrants (arrived in the last two years) and old immigrants (the remainder). They test the robustness of their results by using a different estimation method.

Key Findings

- Immigration to the United Kingdom has risen dramatically over the past decade. Both the inflow and the outflow of migrants have grown each year, but the inflow has outpaced the outflow by an increasingly wide margin. As a result, foreign-born workers have become a larger share of the U.K. working age population. The share of “new” immigrants—those who arrived in the previous two years—has also increased since 1995.
- Viewed across broad (1-digit SOC) occupations, the immigrant-native ratio varies rather modestly across broad occupations. It is highest for professional workers (for example, engineers), associate professional workers (for example, science and IT technicians), and those in elementary occupations (for example, cleaners and laborers). It is lowest among skilled tradesmen (for example, plumbers and electricians) and administrative occupations. In other words, there is a

slight tendency for immigrants to be predominant in jobs at the top end of the occupational classification (high-skill jobs) and those at the bottom end (low-skill jobs), with fewer in the middle.

- At a more detailed, 2-digit level, the picture is one of greater variability, with no strong patterns. A very high proportion of U.K. health professionals are immigrants, and very few immigrants work in protective services (for example, as security guards).
- Looking at the immigrant-native ratio by occupation in three time periods, 1992–1994, 1998–2000, and 2004–2006, reveals a shallow, U-shaped pattern for all three periods. The ratio, which has risen for all occupations over time, is highest among professional and elementary (low-skill) workers and lowest among those in skilled trades, but the differences are not large. However, the rise has been greatest in elementary occupations.
- The new immigrant-native ratios were among the highest in the professional and associate professional occupations in 1992–1994, and although they have remained high in recent years, they are no longer among the highest, as a result of the rapid rise in new immigrants in low-skill occupations.
- The wages of health professionals and corporate managers relative to the average wage have risen over the 1992–2006 period, while the relative wages of workers in sales and customer services have fallen slightly and the relative wages of elementary trades and elementary service workers have experienced little change.
- The immigrant share of the working age population has a significant, but small, negative impact on pay: if the proportion of immigrants working in a particular occupation rises by 5 percentage points, the occupational wage falls by around 0.2 percent. The impact of immigration on wages is driven by the stock of total immigrants, not by the inflow of new ones.
- The effects of immigration on wages vary significantly across occupations. The skilled production sector and the semi/unskilled service sector are the areas of the economy where immigration has a serious negative impact on pay. In the latter case, a 10 percentage point rise in the proportion of immigrants working in semi/unskilled services—that is, in care homes, bars, shops, restaurants, and cleaning, for example—leads to a 5.2 percent reduction in pay.

Implications

The above examination into the facts about immigration reveals that low-skill occupations, such as semi/unskilled services, are the occupations that witnessed the largest increases in immigration in recent years. If immigrants in these occupations earn less than natives, then the 5.2 percent negative impact on wages reported above might simply reflect compositional changes within the occupation, toward a higher share of (lower paid) immigrants. The compositional effect is determined by the wage differential between immigrants and natives in specific occupations. A simple hourly wage equation suggests that, in semi/unskilled services, immigrants earn 6 percent less than natives. In other words, a 10 percent rise in immigration alone would lead to a 0.6 percent fall in wages—this is the size of the compositional effect. It is striking that this compositional effect is tiny when compared with the large impact of 5.2 percent reported above. From this, the authors conclude that the impact of immigration on wages in semi/unskilled services is much larger than can be accounted for by purely compositional effects, suggesting that the vast majority of this effect refers to the impact on the wages of native workers. These results accord well with intuition and anecdotal evidence, but do not seem to have been recorded previously in the literature.

The Responsiveness of Married Women's Labor Force Participation to Income and Wages: Recent Changes and Possible Explanations

by Katharine Bradbury and Jane Katz

complete text: <http://www.bos.frb.org/economic/wp/wp2008/wp0807.htm>
email: katharine.bradbury@bos.frb.org, jane.katz@ny.frb.org

Motivation for the Research

Previous research suggests that the responsiveness of married women's labor force participation to changes in family income decreased over the 20th century, while responsiveness to changes in their own wage first rose and then fell. Now that the half-century-long increase in married women's labor force participation has slowed, the authors ask whether the responsiveness of prime-age married women to their own wages (the own-wage elasticity) or to their husbands' wages (the cross-wage elasticity) has continued to decline. The authors also explore the various reasons for changes in cross-wage elasticities identified by theory and sort through some empirical evidence to consider possible explanations for the patterns they find.

Research Approach

Using the outgoing rotation group of the Current Population Survey (CPS), and estimating coefficients separately for each year from 1994 through 2006, the authors estimate the own- and cross-wage elasticities of prime-age married women (and men) over the period.

Following usual methods, they model labor force participation of each married civilian person between the ages of 25 and 54 as a function of his or her own potential wage rate, spouse's potential wage rate, a set of demographic variables—including own and spouse's age, age squared, race, and ethnicity—that may affect the relative value of time in and out of the labor force, and demand conditions, represented by the state unemployment rate and cost of living index. To allow for joint decisionmaking, both own and spouse wage rates are treated as endogenous in the participation equation. To impute wages for married individuals who lack them, such as the unemployed, those who are out of the labor force, and the self-employed, the model includes wage regressions by gender and year. Overall participation rates are computed as weighted means across individuals.

The authors note that a full model of labor supply for married individuals involves describing an interrelated set of decisions that determine how family members (1) allocate their time between market work and home production, (2) combine or reconcile their possibly diverging interests and preferences in both time allocation and consumption opportunities, and (3) are affected by the possibility that behavior in one period affects opportunities and constraints in the future. While employing such a model is beyond the scope of their research, the authors discuss the three components in order to identify and explore a number of possible social and economic phenomena that may help to explain why wives' cross-wage elasticities change over time.

Key Findings

- In marked contrast to earlier studies, the authors find that the decline in responsiveness to husband's wages has come to an end—at least for the time being; indeed, they find evidence of rising responsiveness to husbands' wages.

- This increase in the cross-wage elasticity of participation occurs largely between 1997 and 2002.
- While the trend reverses somewhat toward the end of the period, the responsiveness of married women's labor force participation to husbands' wages was still significantly more negative in 2006 than in 1997.
- The change was concentrated among younger women and women with children; in fact, the elasticities were virtually unchanged over the period for wives of the baby boom generation and those with no children at home.
- Possible reasons for the recent increase in wives' responsiveness to husbands' wages include declining divorce rates, declines in the intermittency penalty, rising child care costs, increased progressivity of the tax system, and the increasing association of high work hours with high pay—all of which were more pronounced at the high end of the income distribution. Rising income inequality may have played a role. In addition, there is evidence of some backsliding in attitudes supportive of gender equality in the market and at home, especially among younger women.
- It is also possible that some of the decline is an artifact of changes in the tax system and the way that income is measured.
- Married women's own-wage elasticity declined slightly between 1994 and 1997, after which it remained in a relatively stable band.

Implications

With so many potential contributing factors, each with uncertain paths and potential interactions, it is difficult to speculate about whether this change is likely to be sustained. To the degree that rising inequality, focused at the top of the income distribution, is responsible, the authors expect responsiveness to husbands' wages to continue to rise, unless the future brings some compression or redistribution of income. If the patterns reflect changes in the lifecycle timing of Gen X women's work rather than changes in lifetime labor market commitment, we may see small variations in overall responsiveness both upward and downward, depending on the cohort and age composition of the population, how women in ensuing cohorts approach these timing issues, and other factors that affect timing choices. Attitude changes, especially among younger cohorts, suggest continued high responsiveness as this cohort ages, although just as they changed after the 1980s, attitudes could shift again, or differ for subsequent cohorts. All told, considering these reasons as well as unknown future change in family sizes, childcare costs, the intermittency penalty, and divorce rates, it seems unlikely that the responsiveness of married women's participation to their husbands' wages will soon resume its long-term downward trend.

Race, Obesity, and the Puzzle of Gender Specificity

by Mary A. Burke and Frank Heiland

complete text: <http://www.bos.frb.org/economic/wp/wp2008/wp0808.htm>
email: mary.burke@bos.frb.org, fheiland@fsu.edu

Motivation for the Research

Since at least the early 1970s, obesity in the United States has been significantly more prevalent among black women than among white women. This difference in obesity rates has persisted without much alteration despite substantial increases in obesity among both groups. Over the same period, there has been little to no significant difference in the prevalence of obesity among black men and white men. This paper seeks to understand why obesity is more prevalent among black women than among white women but not among black men relative to white men.

Research Approach

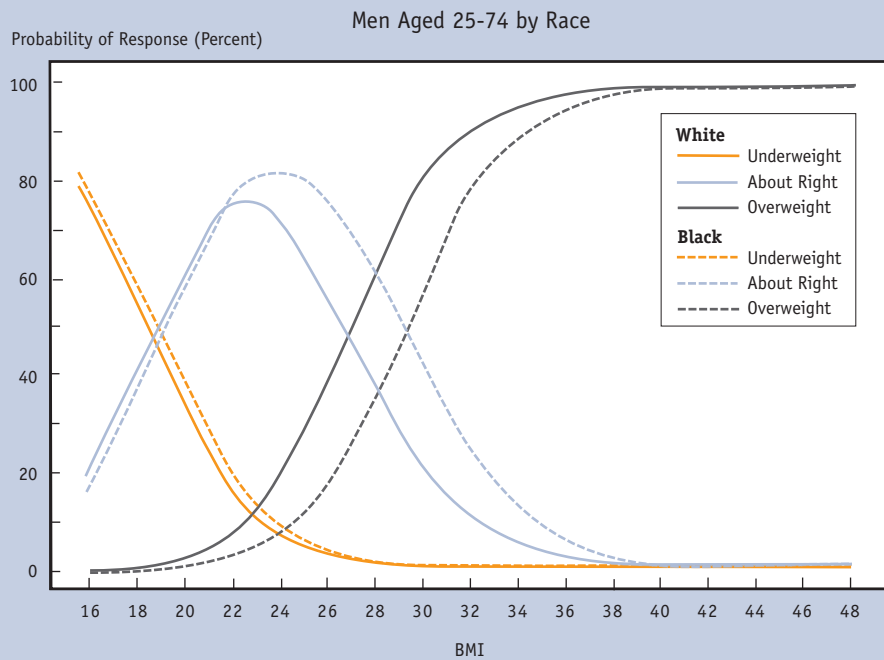
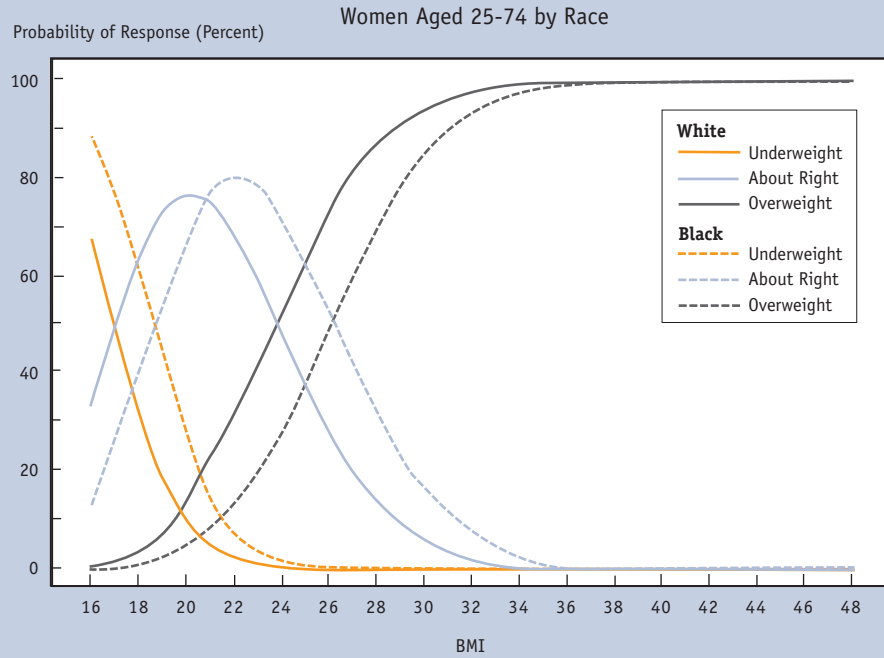
Using data from the National Health and Nutrition Examination Surveys (NHANES) and the Behavioral Risk Factor Surveillance System (BRFSS), the authors propose and evaluate an extensive list of potential explanations for these surprising patterns in obesity. The explanations can be grouped loosely into three broad categories: economic incentives, health incentives, and socio-cultural incentives. Economic incentives that might influence obesity include constraints such as household income, food prices, and the opportunity cost of time. Health incentives include the elevated morbidity and mortality risks associated with obesity. Socio-cultural incentives, in this context, are the rewards and punishments that individuals receive from social contacts for conforming to or deviating from a cultural standard of ideal size.

The authors undertake multivariate analysis of the determinants of obesity and body mass index (BMI)—a measure that adjusts weight to account for height—in order to assess the explanatory power of a set of socioeconomic variables, including household income, occupation, residential location, and marital status. They then consider whether there might be gender-specific differences between blacks and whites in either the health incentives or the socio-cultural incentives to avoid becoming obese. They focus on these types of incentives because previous research in such diverse literatures as public health, biology, and sociology has found evidence of black-white differences—in some cases gender-specific—in each of these dimensions. For example, there is evidence that differences in potentially exogenous physiological factors, such as body composition and fat distribution, result in gender-specific differences between blacks and whites in the health consequences of elevated body weight and, therefore, in the health-related incentives to avoid becoming overweight. In addition, the sociology and public health literatures have found evidence that aesthetic standards of ideal body size, as well as the severity of social punishments for being overweight, differ between black women and white women and between women and men across racial groups.

Key Findings

- The gaps in mean BMI and in obesity prevalence between black women and white women do not narrow substantially after controlling for socioeconomic variables such as household income, occupation, location, educational attainment, and marital status—nor does the addition of such controls eliminate the gender-specificity of racial differences in obesity.
- Adding further controls for endogenous behavioral choices (exercise, smoking, and dietary composition) reduces the gaps between black and white women by modest margins, and reduces the gender-specificity of the obesity gap in one set of the survey data and of the BMI gap in another set, but leaves the puzzle largely unsolved.

Predicted Self-Perception of Overweight by BMI in NHANES 1999-2004



- The data support two possible explanations, both of which are based on the idea that black women, but not black men, face weaker incentives than their white counterparts to avoid becoming obese. One explanation involves health-related incentives; the other involves socio-cultural incentives. While the data show qualified support for both explanations, the socio-cultural incentives hypothesis has the potential to reconcile a broader range of evidence.
- Concerning health incentives, the marginal effect of BMI on black women's risk of hypertension is smaller than the marginal effect of BMI on white women's hypertension risk. The evidence, although less robust, also suggests that similar racial differences apply to the association between elevated BMI and diabetes and between elevated BMI and heart failure among women. This difference in BMI-associated health risk accords with findings—from NHANES and other sources—that black women have a lower percentage of body fat than white women at the same BMI value, as fat has been found to be a stronger predictor of hypertension and diabetes than BMI.
- Complicating the health incentives explanation, it appears that while black men also have a lower percentage of body fat than their white counterparts at the same BMI, the NHANES data exhibit ambiguity as to whether black men's health is less negatively affected than white men's health as a result of being overweight or obese.
- Concerning socio-cultural incentives, the BRFSS data reveal that black women state significantly higher values for “desired” BMI than white women do, and NHANES data show that they are less likely to consider themselves overweight, and more likely to feel underweight, than white women at the same level of BMI.
- Black men, too, state higher desired BMI values than their white counterparts and are less likely to consider themselves overweight, but the differences between the races in these indicators are smaller for men than for women.
- The race and gender differences in self-classification are directionally robust even after controlling for percentage of body fat. These findings agree with the hypothesis that there exist race-and-gender-specific social norms governing body size. Furthermore, there is evidence that marriage-market and labor-market penalties for obesity follow race-and-gender-specific patterns consistent with such norms.

Implications

Both the differential health incentives explanation and the differential social incentives explanation may hold unorthodox policy implications. For example, the health-risk story implies that official concern and focus on reducing obesity among black women may be excessive. Official BMI recommendations may need to be tailored to different demographic groups or replaced with body fat recommendations and greater access to fat measurement. If the outcomes are driven by social incentives, the policy implications are less straightforward. The disconnect between individual perceptions of weight status and official standards suggests that public health institutions have a limited influence over body weight goals. To the extent that governments and other institutions attempt to influence outcomes by promoting particular size norms, they should take heed of an apparent tradeoff between strict norms, which may contribute to white women's lower obesity levels, and psychological well-being. For example, white women who become obese despite strict social standards appear to suffer more than obese women in other ethnic groups in terms of low self-esteem and depression. In addition, the prevalence of eating disorders such as anorexia and bulimia appears significantly greater among white women than among black women.

This inquiry is the first to evaluate a broad set of explanations drawn from diverse literatures and using large representative surveys. Although the paper does not fully resolve the empirical puzzle, it does suggest that the socio-cultural factors reconcile the evidence more consistently than the alternative hypotheses considered. The paper highlights the complexity of the relationships between BMI, fat, and health, a complexity that may call for reforms in the criteria for obesity.

Public Policy Briefs

b-08-1

Inflation Targeting—Central Bank Practices Overseas

by Jane Sneddon Little and Teresa Foy Romano

complete text: <http://www.bos.frb.org/economic/ppb/2008/ppb081.htm>

email: jane.little@bos.frb.org

Motivation for the Research

Chairman Bernanke's widely discussed interest in inflation targeting has spurred considerable curiosity about how inflation targeting (IT) actually works in countries that have adopted this approach to monetary policy. Over what period, for example, do IT central banks attempt to meet their inflation target? And what happens when the target measure moves outside the target range? How often does it tend to do so? Intended as background material for discussions concerning the desirability and efficacy of IT, this policy brief, which is based on an internal memo, summarizes the institutional and operational features observed in the 27 countries that have gained experience with IT. The aim of this review of IT practices in other countries is to provide some useful perspectives to those considering the adoption of such a regime.

Research Approach

Looking at 30 countries that practice full inflation targeting or something similar, the authors identify the hallmarks of IT and describe the choices involved in adopting and working within an IT framework. These choices include selecting a target inflation measure, defining a target outcome for that measure, selecting a time horizon for meeting the chosen target, and determining how to respond when inflation deviates from its target. The authors discuss the considerations involved in making these choices, analyze how the countries addressed these choices over the past 15 to 20 years, and draw some general conclusions concerning the adoption and ongoing implementation of an IT regime.

Key Findings

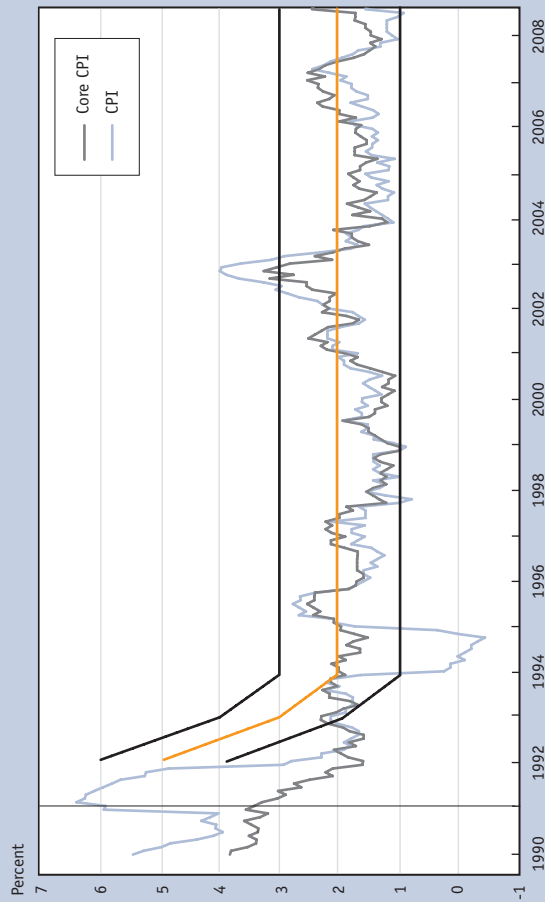
- There has been considerable convergence in many IT practices across countries over the past 10 to 15 years—a finding that is not surprising, given the constraints facing central bankers and the requirements of an IT regime.
- But there is also evidence of variation across countries in policymakers' choices concerning key issues, such as the need to keep actual inflation near the target midpoint or within the target range.
- On the whole, as the record of frequent and persistent off-target outcomes suggests, most IT banks have chosen to practice inflation targeting in a more flexible, and, thus, resilient fashion than many analysts had once feared—seemingly without much loss of credibility.
- Currently, all IT countries are targeting a measure of inflation based on the consumer price index (CPI). Most use the headline inflation rate, sometimes defined to exclude interest costs, reportedly because central banks have found it hard to define a core measure that is readily understood

and accepted by the general public. Although the number of countries that use the more stable core measure as their target is dwindling, the core CPI continues to play a key and publicly discussed role in the forecasting and policymaking decisions of most IT banks.

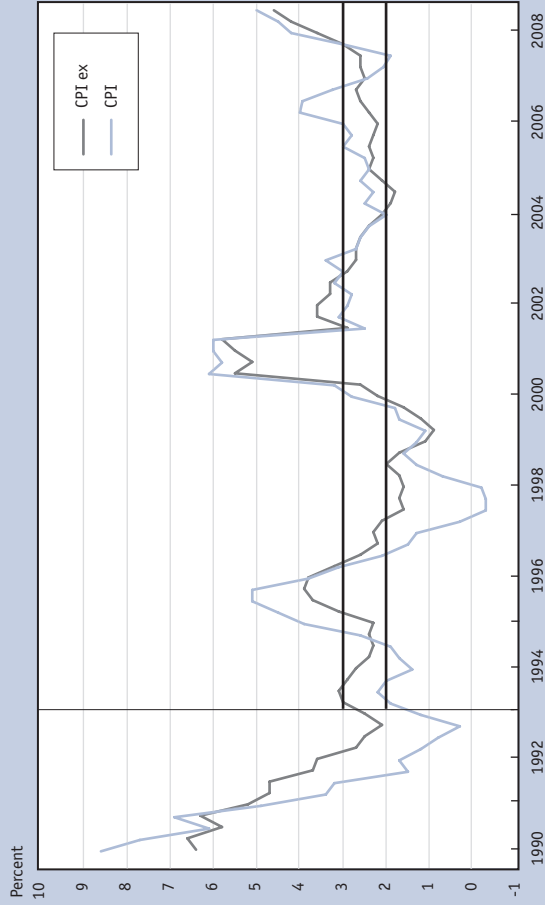
- Most IT banks have adopted a point target within a symmetric range, while a few have chosen a range with no point, a point with no range, or an upper bound without a lower bound. Most banks with a stable inflation target are currently aiming for 12-month inflation of between 1 percent and 3 percent, plus or minus 1 percentage point, with the size of the range varying with country attributes such as exposure to external shocks and policymakers' tastes.
- To be workable, the period over which the central bank is accountable for meeting its inflation target must take into account the lags between policy action and its effect on inflation outcomes. Time horizons that are too short would make IT impossible, while longer horizons could undermine the bank's credibility. Most IT banks are accountable for attaining the targeted inflation rate within an ever-receding six to eight quarters or over the course of the business cycle.
- The long lags between policy action and inflation outcomes make it important that the operations and intentions of IT central banks be clear to the public. Thus, the International Monetary Fund has found IT central banks to be somewhat more transparent than banks with other policy regimes, as measured by adherence to its Code of Monetary and Financial Policy Transparency.
- Most IT central banks operate under central bank laws that define price stability (or low, stable inflation) as the primary or sole objective of monetary policy. In many cases, the government and the central bank jointly set and announce the inflation target. Such an arrangement may enhance the credibility of the central bank's commitment by implying that the government's fiscal policy will be supportive.
- To implement policy, all IT central banks use a readily visible short-term interest rate on a market-based instrument as their operating target, and all take pains to explain how policy works and why policy actions were taken. But no IT bank has disclosed how it weights price versus output or financial stability, although all IT banks do, in fact appear to pursue more than one policy objective, despite their primary focus on their long-term inflation target.
- According to a study by Roger and Stone (2005) of 22 IT countries between the date they adopted IT and mid-2004, deviations of 12-month inflation outcomes from the target have been notable and persistent. According to the mean for all 22 countries, the IT central banks missed the target range about 45 percent of the time, with undershooting and overshooting about equally represented. Industrial countries and countries with stable inflation deviated from the target about one-third of the time. Nevertheless, on average, the 22 IT countries achieved inflation outcome very close to—just 0.1 percentage point above—the center of the target range. The persistence of the deviations from target, measured by the average length of time between changes in the sign of the deviations, was typically 16 to 20 months—a time span that corresponds well with the six to eight quarters it generally takes for monetary policy to influence inflation.
- Some of the IT banks appear to have achieved better inflation outcomes under IT than in the years before adopting this regime. In fact, these banks may have made greater relative gains against inflation than the low-inflation United States made under a dual mandate. For IT countries after adoption, inflation levels and volatility, as well as interest rates, appear to have declined, output volatility did not worsen and may have improved, and exchange rate pass-through (the transmission of changes in the value of a currency to import prices and on to overall consumer prices) appears to have fallen.

Central Bank Inflation Target Bands

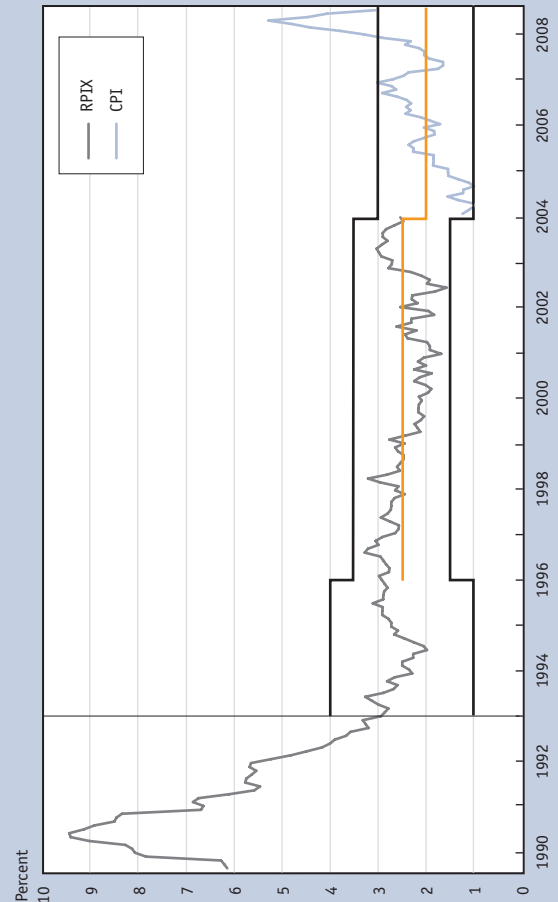
Bank of Canada



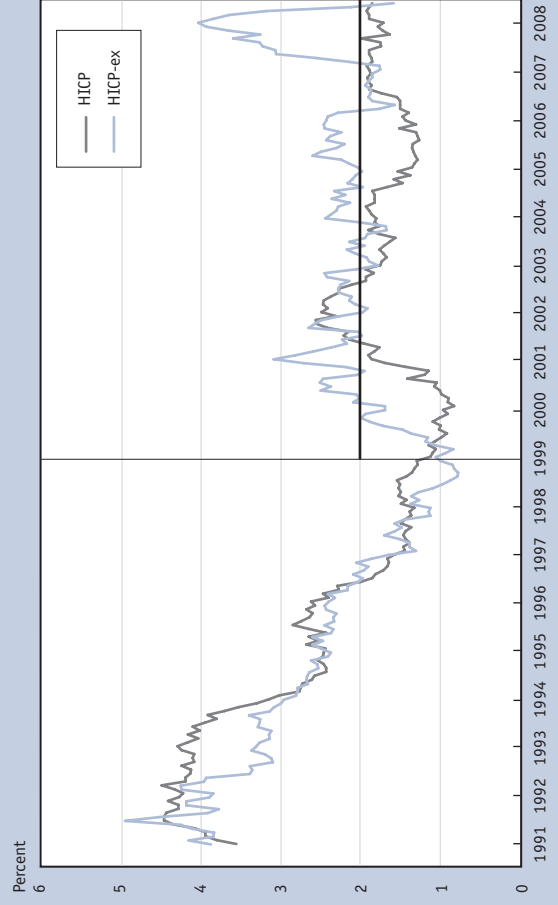
Reserve Bank of Australia



Bank of England



European Central Bank



Sources: Bank of Canada, Office of National Statistics, Statistical Office of European Communities, Reserve Bank of Australia.

Note: All percentage changes are year-over-year. The thin black vertical lines denote the IT adoption; thick black lines denote the edges of the target band, except in the case of the Euro Area where they represent the IT ceiling; orange lines denote the point target.

- Deviations from target do not appear to have unhinged inflation expectations. Levin, Natalucci, and Piger (2004) found that for the seven industrialized countries in their study without an inflation target, private sector inflation forecasts at horizons up to 10 years are significantly correlated with a three-year moving average of lagged inflation. This correlation is largely absent from the five industrialized IT countries in the study, indicating that the IT central banks were largely successful in breaking the link between expectations and previous realized inflation. A study by Gürkaynak, Levin, and Swanson (2006) suggests that in IT countries the inflation target may serve to anchor expectations whereas in non-IT countries lagged inflation may serve that role.

Implications

When inflation targeting was first introduced in the early 1990s, economists and policymakers worried that IT would prove too restrictive, encouraging central banks to keep inflation within range at the expense of other objectives. But in practice, IT has proved fairly flexible and resilient. Apparently sufficiently long time horizons, sufficiently wide target ranges, and adequate transparency have allowed most IT central banks to miss their targets frequently, by large margins, and for several months, without notable damage to their credibility. To date, no country has been forced to abandon IT, probably because flexible and evolving practices and, until recently, a benign economic environment have reduced the conflict between adhering to IT and meeting other objectives (such as output, employment, and financial stability).

It remains to be seen how well IT regimes will weather the recent volatile commodity price swings, which clearly pose the most significant threat to inflation targeting since its widespread adoption over the past two decades.

A key lesson that emerges from the experience to date is that much of the ability of inflation targeting to help moor inflation expectations likely stems from the premium it places on improving transparency standards. And these standards are available to all central banks, whether they choose to practice inflation targeting or not.

Interactive Graphics

i-02

U.S. Family Income Mobility and Inequality, 1994 to 2004

Based on research by Katharine Bradbury and Jane Katz

interactive graphic: <http://www.bos.frb.org/economic/dynamicdata/module2/index.htm>
email: katharine.bradbury@bos.frb.org, jane.katz@ny.frb.org

Description

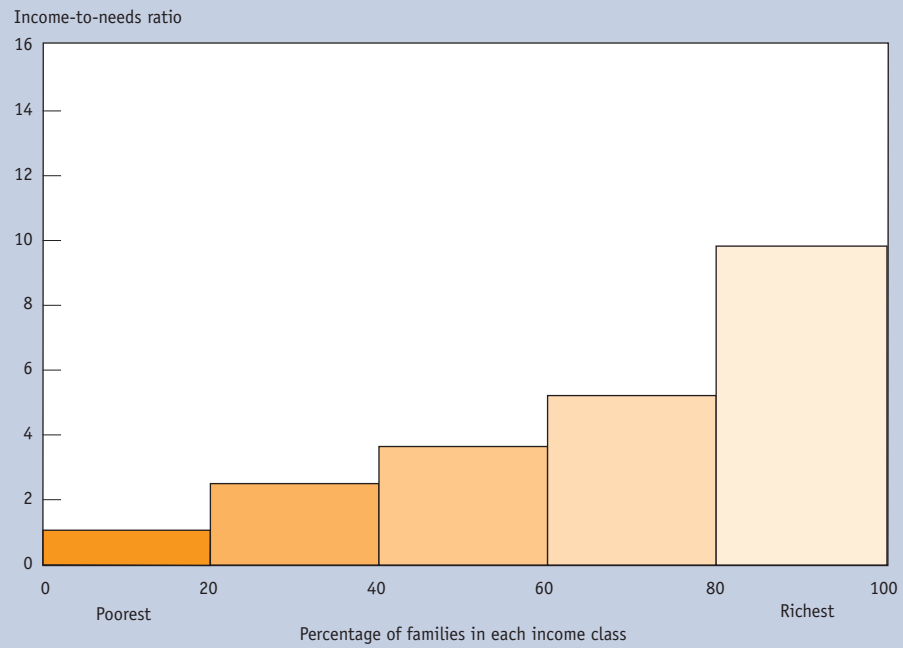
“U.S. Family Income Mobility and Inequality, 1994 to 2004” is the second in a series of interactive graphics modules designed to enable users to interact with charts and analysis based on research conducted by economists in the research department of the Federal Reserve Bank of Boston.

The module comprises dynamic charts and analysis that enable users to view:

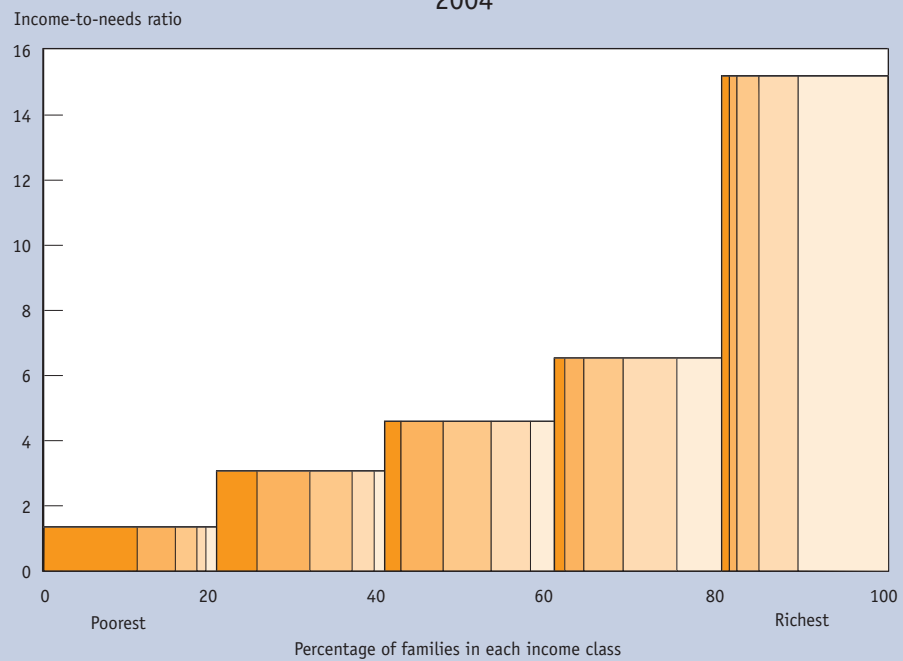
- The distribution across income classes of U.S. families in 1994 and 2004,
- The average income of families in each income class relative to the federal poverty threshold,

All Families

1994



2004



Source: Authors' calculations, based on PSID and U.S. Census data.

Note: The charts show how all families in each color-coded income class in 1994 were distributed across income classes in 2004.

- How families moved across income classes (income mobility) during the decade,
- How incomes of families in each income class in 1994 changed during the decade,
- A breakdown and comparison by race of family income mobility and income change,
- How the authors assigned families to income classes,
- Links to the data sources and related research, both by the authors and by others.

Key Points

- Family income inequality was pronounced and increasing during the decade: in 1994, the income relative to the federal poverty threshold (a measure of family well-being) of the average family in the richest income class was 9 times as high as the income of the average family in the poorest class, while in 2004 the richest family had income 11 times that of the poorest family, on average.
- Average incomes were higher in 2004 than in 1994 in all income relative to needs classes, partly because all families in the sample were 10 years older in 2004.
- Family income mobility was limited: 40 percent of U.S. families were in the same income class in 2004 as in 1994 and only 22 percent moved up or down by more than one class. Those who started in the poorest or richest classes were least likely to move.
- Over half (54 percent) of families who started in the poorest income class in 1994 were in the poorest income class in 2004; only 5 percent of these families made it to the richest income class.
- Although families who started in the middle three income classes were more likely to move than those who began at the top or bottom—partly because only families in the middle three income classes are able to move both up and down—they were still more likely to end in the income class where they started than in any other income class.
- Over half (53 percent) of families who started in the richest income class were at the top in 2004; about 10 percent of these families fell to the poorest two classes.
- These mobility patterns are similar if we define income classes on the basis of total family income rather than relative to the federal property threshold.
- Families who began in poorer income classes saw their incomes rise by larger percentages but still ended the decade poorer on average than those who started in the richer income classes.
- Families who began the decade in the richest income class made larger absolute gains than families who began in any other income class.
- Black families were poorer, on average, than white families: In 1994, 44.5 percent of black families were in the poorest income class, while only 6 percent of black families were in the richest income class; these percentages were virtually unchanged in 2004.
- In 1994, 44.5 percent of black families were in the poorest income class, while only 6 percent of black families were in the richest income class; these percentages were virtually unchanged in 2004.

- The percentage of families in each income class who are white increases as one goes up the income ladder; white families represent about 66 percent of families in the poorest income class, but almost 93 percent in the richest. White families constitute over 80 percent of all families in this sample.
- Black families' income mobility was more limited than that of white families, and from any starting class the movement that occurred was more likely to be downward: Half of black families ended the decade in the income class where they started and only 17 percent of black families moved up or down by more than one income class.
- Of black families who began in the poorest class, almost three quarters were in the poorest income class 10 years later. This is a higher share than for white families. Only 1 percent of black families moved from the poorest to the richest income class during the decade.
- Of black families who began in the richest income class, only 40 percent ended in that class and 9 percent fell to the poorest income class.
- Downward mobility dominates among black families: 42 percent of black families who could move down (those not already in the poorest income class) did move down.
- White families' incomes and mobility are similar to those of all families, because white families represent 83 percent of all families in this data set.
- Thirty-nine percent of white families ended the decade in the income class where they began, and 22 percent moved up or down by more than one income class.
- Of white families who began in the poorest income class, 44 percent were in the poorest income class in 2004; by contrast, 54 percent of white families who began in the richest income class were in the richest class in 2004.
- In every starting income class, white families experienced larger percentage gains, on average, than black families.
- Black families who began in the top income class experienced decreases in family income over the decade on average, reflecting their higher probability of moving down the income ladder.

Contributing Authors

Katharine Bradbury is a senior economist and policy advisor in the research department of the Federal Reserve Bank of Boston.

Mary A. Burke is a senior economist in the research department of the Federal Reserve Bank of Boston.

Kristopher S. Gerardi is a research economist and assistant policy advisor in the research department at the Federal Reserve Bank of Atlanta and a visiting scholar at the Federal Reserve Bank of Boston.

Frank Heiland is an assistant professor of economics at Florida State University.

Jane Katz is the director of education programs and an officer at the Federal Reserve Bank of New York and a visiting scholar at the Federal Reserve Bank of Boston.

Jane Sneddon Little is a senior economist and policy advisor in the research department of the Federal Reserve Bank of Boston.

Stephen Nickell is a professor of economics and warden of Nuffield College at the University of Oxford.

Teresa Foy Romano is a graduate student at Duke University. At the time the brief summarized here was written, she was a policy analyst in the research department of the Federal Reserve Bank of Boston.

Jumana Saleheen is a senior economist at the Bank of England. At the time the paper summarized here was written, she was a visiting scholar at the Federal Reserve Bank of Boston.

Tim R. Sass is a professor of economics at Florida State University.

Scott Schuh is the director of the Consumer Payments Research Center and a senior economist in the research department of the Federal Reserve Bank of Boston.

Joanna Stavins is a senior economist and policy advisor in the research department of the Federal Reserve Bank of Boston.

Paul S. Willen is a senior economist and policy advisor in the research department of the Federal Reserve Bank of Boston.



Research Department
Federal Reserve Bank of Boston
600 Atlantic Avenue
Boston, MA 02210

www.bos.frb.org/economic/index.htm
change service requested

PRESORTED
STANDARD
US POSTAGE PAID
NEW BEDFORD, MA
PERMIT NO. 450