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The Effect of Bank Account Ownership on Credit, Consumption, and Savings: Evidence from the United Kingdom

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ABSTRACT

I use an electronic transfer mandate in the UK Child Benefit program, a transfer received by virtually all families with children, to estimate the effect of bank account ownership on the financial behavior of less educated families with children. With the mandate increasing account ownership by as much as 29 percent for less educated families with children, it provides an exogenous increase in account ownership to examine the causal effect of bank account ownership on access to credit, purchase of household durable goods, vehicle ownership, vehicle purchase, and accumulation of financial assets. When a less educated family becomes an owner of a bank account, I find a 71 percentage point increase in the probability of owning a credit card, an increase of 1.4 household durable goods, and no change in vehicle ownership or purchase. Although I find that bank account ownership does not affect the mean level of financial assets, I do find evidence suggestive of an increase in the top half of the financial asset distribution which indicates that there may be heterogeneity in the savings response to owning a bank account. Overall, my findings suggest that the most important benefit of owning a bank account is access to credit and requiring lower income families to own a bank account will not reverse their low average savings levels in the short run.

Introduction

Before technological advancements, governments throughout the world distributed public transfers via coupon book or check. Now, however, governments can pay benefits electronically into a recipient's bank account or onto a stored value card, eliminating coupons and checks. Despite a trend towards electronic administration, we do not have a clear understanding of how it may affect the unbanked, that is, families that own neither a transaction nor a savings account. In particular, for unbanked families, a requirement that public transfers be paid electronically is an inducement to own an account and may alter other aspects of their financial behavior, as well.

The related normative question is whether governments *should* encourage bank account ownership. Some in government suggest that account ownership is below the socially optimal level and have implemented policies to encourage account ownership, in part, because bank accounts are assumed to reduce reliance on alternative financial services and help the poor to save. There is, however, little evidence to support these claims. If account ownership does assist in access to credit or aids in asset accumulation, bank accounts may improve the economic well-being of their owners by helping to smooth income shocks, invest in human and physical capital, and finance retirement. Knowing how bank accounts affect other financial behavior will help to answer this normative question and evaluate the welfare effects of these policies.

In this chapter, I examine an electronic transfer mandate in a large, nearly-universal public benefit program, the UK Child Benefit. Specifically, I use the modified administration of the Child Benefit – changing electronic transfer from a payment *option* to a payment *requirement* – as a natural experiment to determine the effect bank account ownership has on the financial behavior of less educated families with children.

I first compare Child Benefit recipients across time to estimate the magnitude of the mandate's effects on ownership of accounts eligible to receive an electronic transfer of Child Benefits. I consider three, non-exclusive categories: accounts capable of accepting an electronic transfer; transaction accounts, which are meant to meet daily financial needs by providing easy access to funds for current expenditures, as well as a secure place to receive and store money; and, bank accounts, which include both transaction accounts and savings accounts. Employing a quasi-

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experimental design, which compares the behavioral response of less educated families with children to less educated families without children, I find that the mandate substantially boosted all categories of account ownership. Families with children increased their ownership of accounts capable of receiving an electronic transfer by 4 to 15 percentage points (5 to 24 percent); for transaction accounts, ownership increased 5 to 15 percentage points (6 to 29 percent); and, for bank accounts, ownership increased 4 to 13 percentage points (5 to 22 percent).

The increase in bank account ownership created by the mandate provides a new approach to investigate the causal relationship between bank accounts and financial behavior. Research examining this relationship relies almost exclusively on studying voluntary participants in asset building programs and suffers from sample selection bias. The implementation of electronic transfer for recipients of the nearly-universal Child Benefit ensures that unobserved preferences for savings are uncorrelated with program participation. With an instrumental variable approach, I measure the effect owning a bank account has on credit card ownership, commercial loan use, the presence of durable goods in the household, vehicle ownership, vehicle purchase, and level of financial assets. After the first year in which the mandate was fully implemented, I find that bank account ownership has large effects on the ownership of credit cards and the presence of household durable goods but no effect on vehicle ownership, vehicle purchase, or commercial loan use. Although there is no effect at the mean level of financial assets, I do find evidence suggestive of an increase in financial assets above the median which suggests heterogeneity in the savings response to bank account ownership.

The chapter proceeds as follows: Section II provides institutional details on the UK Child Benefit, the electronic transfer mandate, and account options for Child Benefit recipients; Section III provides a conceptual background for the implementation of the mandate, policies to increase account ownership, and previous work examining the relationship between bank account ownership and other financial behavior. Section IV provides the methodology for the instrumental variable approach. Section V presents the data and measures used in the analysis. Section VI presents the results for each stage of the model. Section VII concludes.

Institutional Details
The UK Child Benefit
The Child Benefit is a tax-free, universal benefit received by virtually every family with children (Brewer, 2000). The mother receives benefits monthly on behalf of each eligible child, although single parent and lower income families can opt to receive weekly payments. A child is eligible if either under the age of 16 or under the age of 19 and enrolled full-time in non-advanced education or an approved training program.[1]

Child Benefits depend only on the number of children in a family. Benefits, set as weekly rates, are determined each fiscal year (April to March) with the release of the government's budget. One rate applies to the family's first child and a lower rate applies to each additional child. Measured in constant (2005) pounds, the first child rate increased during the 1990s and remained stable thereafter, while additional child rates have remained stable since 1990. By April 2007, parents received £18.10 a week for their first child and £12.10 a week for each additional child.

For many families, Child Benefits are a significant income source. Using the Family Resources Survey (FRS), a nationally representative survey of households, I compare Child Benefit receipts to family income in the 1999 to 2003 period. Child Benefits average six percent of income for median income families. For those at the lowest income decile, Child Benefits average 19 percent of income. With the importance of Child Benefits to the family budgets of lower income families, a mandate in the Child Benefit program is a substantial inducement to change behavior.

Electronic Transfer Mandate
The government announced the electronic transfer mandate for all public benefits, including the Child Benefit, in May of 1999.[2] The stated goal of the requirement was not only to prevent benefit fraud and reduce administrative costs, but also to promote the "financial inclusion" of all its citizens (Select Committee on Trade and Industry, 2003). The government considered the financially excluded to be families that lack access to financial services, particularly banking services, but also affordable credit, savings opportunities, insurance, and financial advice.

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[1] Technically, a child remains eligible until August 31st after their 16th birthday if s/he does not continue into an education or training program.
[2] All government cash transfers were affected, including public pensions, means-tested benefits, unemployment benefits, veteran's benefits, disability benefits, and benefits for those with children. I focus on the Child Benefit because it has no income limitations and nearly full take-up.

The government phased in the mandate for Child Benefits between April 2003 and March 2005, ending the widely used order book (coupon book).[3] With an order book, recipients received a book of coupons that they used to obtain their benefits in cash at the Post Office each payment period. The mandate also effectively ended the less often used giro cheque (check) form of receipt where beneficiaries received checks that could be cashed at either the Post Office or a bank. The mandate placed no new requirements on those already receiving an electronic transfer directly into a bank account.

By April 2005, the government required all Child Benefit recipients to designate a conventional bank account, a new Basic Bank Account, or a new Post Office Card Account (POCA), to receive their payments.[4] Without providing information on their designated account to the Benefits Agency, claimants would not receive their benefits.[5] In effect, the mandate used the leverage of the public benefit system to transition recipients out of the cash-only economy and into the modern financial system.

Available Accounts
Each of the types of accounts (conventional bank accounts, Basic Bank Accounts and POCAs) eligible to receive Child Benefits differs in the features it offers consumers. A conventional bank account, defined as an account that earns interest and/or allows for additional deposits, provides the most functionality for owners. Commercial banks offer many different types of conventional bank accounts, including both transaction accounts and savings accounts, with varying levels of services and fees. Transaction accounts are meant for daily use, providing ready access to funds, deposit of additional monies, and bill payment via check or direct debit. Savings accounts have less functionality for daily activities and are meant primarily to store funds for later use.

Commercial banks also offer Basic Bank Accounts, which are low-cost accounts with limited functionality. Basic Bank Accounts became available in 2003 to satisfy government interest in

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[3] Recipients were not subject to the mandate until they received a letter from the Department of Work and Pensions (DPW) explaining their new account options. DPW staggered these letters over the phase-in period ("New Benefits System 'Poorly Promoted'", BBC News, March 13, 2003). Recipients could also adapt to the new regime before they received a notification letter.
[4] The government allows payment into any bank, building society, or National Savings & Investments (NS&I) account that accepts Direct Payment (http://www.hmrc.gov.uk/childbenefit/introduction.htm).
[5] Rare exceptions to this rule exist. For example, if a parent is ill or disabled, a legal appointee can collect their Child Benefits. Additionally, extreme hardship allows the electronic transfer requirement to be temporarily waived.

the private provision of low-cost accounts to complement the electronic transfer mandate. Basic Bank Accounts allow deposits; electronic transfers; cash withdrawal at Post Offices, bank branch locations, and Automated Teller Machines (ATMs); no charges for routine banking activities; and, direct debit services. Some banks offer Basic Bank Accounts that earn interest on deposits. The distinguishing feature of Basic Bank Accounts is that they do not provide owners the ability to write checks.

Compared to conventional bank accounts and Basic Bank Accounts, POCAs have the least functionality. Only available at the Post Office and intended for benefit recipients unable or unwilling to open a bank account, POCAs function much like the order books previously available. POCAs only allow benefit receipt over-the-counter at a Post Office and the balance in a POCA does not earn interest. Therefore, POCAs are not transaction accounts because they do not provide the ability to pay bills or allow deposit of additional funds. POCAs may, however, assist in acquiring familiarity with modern financial transactions and, eventually, transition owners into a bank account. For example, POCA owners can choose to withdraw only a portion of a benefit payment, rather than the entire sum, as was required with coupons and checks.

Holding a conventional bank account does not prohibit ownership of a Basic Bank Account or a POCA, just as bank account owners before the mandate could (and did) opt to receive benefits via a coupon or check.[6] I tabulate how families received their Child Benefits using FRS data in Table 1. Panel A displays the payment receipt methods in the pre-mandate period between 1999 and 2003. In this period, 56 percent of all recipients received their benefit via a coupon book. Additionally, more than half (52 percent) of bank account owners chose a coupon book rather than a direct deposit into their account.

Table 1 also compares subsamples of families at different education levels, with these levels defined either by age at school leaving or attainment of recognized qualifications. Panel A shows that 70 percent of families with adults who left full-time education at or before the age of 16 (less

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[6] Conventional bank account owners may open a Basic Bank Account because they want lower cost banking services and do not value the additional services that conventional bank accounts provide. Conventional bank account owners may open a POCA because they want to receive benefits at a Post Office or, as anecdotal reports suggest, they want to separate Child Benefit income from other sources of income (BMRB Social Research, 2006).

educated) versus 31 percent of families with adults who left full-time education at or after the age of 19 (more educated) chose the coupon payment method. Even starker contrasts exist when I define these levels by attainment of recognized qualifications. More than 83 percent of families with adults that lack any recognized educational or vocational qualification (less educated) chose the coupon payment method whereas only 27 percent of families with adults possessing at least degree-level qualifications (equivalent to a college degree) chose the coupon payment method.

Panel B of Table 1 shows the dramatic change in Child Benefit administration after the mandate was fully phased in. The data do not distinguish between electronic payment into a conventional bank account, Basic Bank Account, or POCA, but, as Table 1 shows, after the mandate's implementation nearly all families (97 percent) report electronic receipt.[7] Differences in payment method by education level also virtually disappeared after the mandate.

Conceptual Background
Prior to the mandate, at least 10 percent of UK families were unbanked, that is, without a transaction or savings account (Treasury Committee House of Commons, 2006). Tabulations of banked and unbanked families from the FRS in the pre-mandate period suggest that families that chose to forgo bank account ownership tend to experience financial hardship. Unbanked families are much less likely to work and, conditional on working, earn substantially less. The unbanked also have far lower levels of mean and median financial assets than banked families. The unbanked are more likely to be single, nonwhite, and lower educated. Finally, unbanked families tend to have slightly younger adults than those in banked families. These characteristics are consistent with studies of the unbanked in both the US and the UK (Barr, 2004; Carbo et al., 2007; Dunham, 2001; GAO, 2002; Hogarth and O'Donnell 1997; Hogarth, et al., 2004; Klawitter and Fletschner, 2006; Treasury Committee, 2006; Vermilyea and Wilcox, 2002).

The government justified its intervention by pointing to market failures for bank accounts, as well as concerns over equity in access to the financial system (HM Treasury, 2004). A potential source of market failure arises from asymmetric information between banks and consumers.

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[7] Those that do not report receiving an electronic transfer may arise from misreporting or extreme hardship. Additionally, some recipients could still use an order book because the last order books issued contained coupons valid until July 2005.

Banks may expect that applicants with low current income, poor credit history, or previous problems managing a bank account pose more risk because they are more likely to overdraw their account. As a result of the uncertainty that applicants with these characteristics produce, banks charge more for these accounts, pricing these families out of the market, if accounts are available at all.

Families may not have bank accounts for reasons unrelated to adverse selection. The high fixed costs of designing, marketing, and offering services specifically to low- and moderate-income individuals may prevent banks from offering these services (Barr, 2004). Some consumers may not apply for an account because they assume they will not qualify for one or they may not know about the availability of appropriate accounts. Minimum balance requirements and high fees, including the costs associated with overwithdrawal, may make accounts more expensive than some consumers are willing to pay. Banks may locate in commercial or upper income areas, providing less access to non-urban or lower income residents. Finally, the unbanked may lack the financial education to fully understand the benefits of account ownership.

Bank account ownership may be less than socially optimal because accounts could produce positive externalities. Ownership allows electronic transfer of benefits, which reduces administrative costs and benefit fraud (Barr, 2004; HM Treasury, 2004).[8] Bank accounts may serve as a gateway to affordable credit, that is, mainstream credit sources that are collectively termed the alternative credit market and include such providers as payday lenders, check cashers, and pawn brokers. Access to lower cost credit allows families an improved ability to smooth consumption and invest in both human and physical capital (Barr 2004; HM Treasury, 2004). By reducing dependence on these alternative financial providers, ownership may also further policy goals if the costs associated with converting benefit and wage payments into cash diminish the value of incentives embodied in public transfers and take-home pay (Barr 2004; HM Treasury, 2004). And, if ownership has a causal effect on asset accumulation, account ownership could reduce dependence on the social safety net by providing resources to cope with unforeseen hardships and fund retirement.

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[8] The estimated cost of transmitting benefits via an order book is £0.68, while the estimated cost of an electronic transfer is £0.01 (Herbert and Hopwood Road, 2006).

To capture these perceived externalities and meet its equity objectives, the UK enacted two related policies. First, to stimulate demand of bank accounts, they implemented an electronic transfer requirement for all public benefits. They also increased the supply of low-cost accounts by working with the banking industry to develop Basic Bank Accounts that should appeal to families that were unbanked because available accounts were too expensive or had undesirable features. These policies addressed both the supply and demand for bank accounts to transition unbanked recipients into the financial system.

In general, policies to increase bank account ownership are not adequately studied to determine their effectiveness, either in transitioning families into account ownership or determining the effect ownership has on other economic behavior. For instance, research examining the response of electronic transfer policies on account ownership consists primarily of evaluations of volunteers in small-scale projects, such as local voluntary tax assistance programs. While this work provides some evidence of a positive effect of electronic transfer on account ownership, the highly selected samples used limit their generalizability (Beverly, et al., 2004; Linnenbrink, et al., 2006; Schreiner, et al., 2002).

To my knowledge, Washington (2006) provides the only use of a large, cross-sectional sample to examine a policy to increase account ownership. Washington studies laws requiring banks to offer low-cost accounts and concludes that these laws increase account ownership rates among minority households after a two to three year lag. If this long lag does not indicate that omitted factors better explain the behavioral response, her work suggests that demand responds slowly, as consumers adapt to new account offerings. In the context of the UK, these findings indicate that the creation of Basic Bank Accounts should not have large effects on the banking behavior of unbanked consumers, particularly in the short term.

Although the mandate should have large effects on transitioning the unbanked into account ownership, reducing the number of unbanked families was not the sole objective of the government. Rather, by raising bank account ownership levels, the mandate was also intended to increase access to affordable credit options and encourage asset accumulation. The government tried to tackle the high costs of accessing credit in the alternative credit market and the upward

trend in the portion of the population without financial assets – nearly 10 percent of the population in 1999 – with several other policies (Banks and Tanner, 1999). For example, the government implemented and then expanded the Social Fund, which provides small loans and grants for those on low-incomes to meet one-time expenses. The government also encouraged asset accumulation through the Child Trust Fund, as well as expanded tax-advantaged savings programs.[9] Still, particularly among those with lower incomes, many families have very little savings and face high costs in accessing credit (Treasury, 2004).

Despite little empirical work on the subject, fairly consistent correlations exist between bank account ownership and other financial behavior, including savings and accessing affordable credit. Although there are conjectures that bank accounts directly affect these behaviors, account ownership may actually only provide access to the financial system or represent unobservable preferences for either savings or financial literacy (Carney and Gale, 2001). Research examining the link between bank accounts and savings largely consists of evaluating volunteers in small scale pilot programs, and, even amongst these likely motivated "savers", no consensus emerges about the effect of account ownership on savings (Beverly, et al., 2004; Barr, 2004; Grinstein-Weiss, et al., 2006; Linnenbrink, et al., 2006; Schreiner, et al., 2002).

One exception to these evaluations and the focus on behavior within the formal financial system is work by Aportela (1999) that examines a natural experiment in Mexico where bank branches opened in the post offices of several towns and offered new low-cost savings options. Comparing towns affected by the expansion and towns that were not, he concludes that these new savings options increased the average household saving rate by as much as 8 percent. However, he cannot rule out that increased savings in the formal financial system was not a substitute for informal savings instruments, such as the purchase of durable goods.

The lack of a clear relationship between account ownership and other financial behavior may result from either the lack of a causal link or the focus on the formal financial system to the

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[9] Launched in 2005, the CTF is a publicly funded asset for children born after August 31, 2002. The CTF provides an initial public endowment of £250 or £500, depending on family income. This endowment, additional contributions, and interest grow tax-free. The CTF, however, is neither owned nor accessible by the parent. Withdrawals occur only when the child turns 18 and the balance is used for any purpose.

exclusion of informal savings instruments and other financial behavior. For instance, most work examines savings levels in the formal financial system and does not consider that families may choose higher consumption levels of durable goods rather than the accumulation of financial assets when they transition into account ownership. In some contexts, including the stock of durable goods is useful for measuring household savings (Browning and Lusardi, 1996). Particularly for lower income populations, the purchase of durable goods represents the optimal asset choice because durable goods increase future consumption possibilities by providing a stream of services. Evidence from the US, for instance, suggests low- and middle-income families save by choosing the lump sum Earned Income Tax Credit (EITC) payment (rather than the advanced EITC[10]) and, when they receive their income tax refund, purchase a durable good (Edwards, 2004; Goodman-Bacon and McLanahan, 2008; Romich and Weisner, 2000; Smeeding, et al., 2000; Smeeding, 2002).

Methodology
In principle, the decision to own a bank account is likely related to other financial decisions, including unobservable preferences for credit and savings. Therefore, studying these decisions without correcting for the endogeneity of the ownership decision may lead to estimates that are biased by these unobservable preferences. My estimation strategy involves using the exogenous increase in account ownership created by the electronic transfer mandate in the Child Benefit program to estimate the causal effect of account ownership on other financial decisions. This strategy disentangles unobservable preferences for savings from unobservable preferences for program participation.

I adopt an instrumental variable approach and estimate a two-stage least squares (2SLS) specification. The first stage of this estimation is a difference-in-differences specification that compares the change in account ownership for an affected group (less educated families with children) relative to an unaffected group (less educated families without children) after the implementation of the electronic transfer mandate in the Child Benefit program. Although all families had access to the newly available Basic Bank Accounts, the exposure of families with

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[10] The advanced EITC adjusts withholding for potentially eligible EITC recipients so that the worker receives a portion of their credit in each paycheck rather than waiting to receive the credit when the taxpayer files his or her income taxes.

children to the mandate in the Child Benefit program results in isolating the effect of the mandate on account ownership.[11] Focusing on less educated families creates a sample that should be significantly affected by the mandate due to the correlation between education and account ownership, as well as the importance of Child Benefits to family income for lower income families. Measuring the response of less educated families with children to those without children allows comparisons of groups that face similar labor market and financial environments.

Identification of the first stage requires that no contemporaneous shock differentially affected the account ownership choices of families with and without children. The major threat to identification arises from the reform of the Family Credit, a wage subsidy to lower income parents working at least 16 hours a week. In 1999, the Working Families Tax Credit (WFTC) replaced the Family Credit. Subsequent reforms in 2003 split the WFTC into the Working Tax Credit (WTC) and Child Tax Credit (CTC). This series of reforms increased wage subsidies, expanded eligibility to higher income levels, and, eventually, in 2003, provided wage subsidies to those without children.

Although the creation of the WFTC occurred in the first year of my analysis, if responses occur after a lag, it could differentially affect the response of those with children through two mechanisms. First, increased employment could spur demand for bank accounts because many employers in the UK require direct deposit of wages (Collard, 2007). Additionally, supplementary credit income could increase consumption of many goods and services, including bank accounts. The WTC in 2003 could have similar effects for those without children. As a result, specifications that do not include these policies leads to bias, with the direction of the bias depending on the relative magnitudes of the response from the 1999 and 2003 reforms.[12] To

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[11] Families without children could be exposed to the mandate if they received other public benefit programs. I do not control for participation in these programs because the participation decision is endogenous. Therefore, if the mandate also affected families in my comparison group, my first stage estimates are biased downwards. Approximately 30 percent of my sample of childless families with no qualifications receive at least one the three largest benefit programs (Disability Living Allowances, Incapacity Benefit, and Income Support) also subject to the mandate. The figure is 15 percent for the sample of childless families with minimum schooling.
[12] Brewer et al. (2006) estimate that the WFTC increased employment of single mothers by 5.1 percentage points. Mulheirn and Pisani (2008) conclude that the WTC increased the labor force participation of lower income childless workers by 2 to 3 percentage points.

control for these reforms, I include a covariate for the maximum value of Family Credit, WFTC, or WTC that a family is eligible for based solely on demographic characteristics.

The second stage of the 2SLS approach uses the increase in account ownership caused by the mandate to identify the effect of bank account ownership on financial behavior. The mandate meets the two tests of a suitable instrument: the mandate was orthogonal to a family's preferences for savings and credit and it increased bank account ownership for less educated families with children. In using variation arising from the mandate, I identify the effect of bank account ownership on the financial behavior of families with children who, absent the mandate, would have not owned a bank account. This is the local average treatment effect (LATE) described by Imbens and Angrist (1994).

My approach is summarized by the following set of equations:

(1) $Account_{it} = \alpha_i + \beta_1 KIDS_i + \beta_2 POST_t + \beta_3 KIDS * POST_{it} + \beta_4 X_{it} + \varepsilon_{it}$

(2) $Outcome_{it} = \phi_i + \delta_1 KIDS_i + \delta_2 POST_t + \delta_3 BankAccount_{it} + \delta_4 X_{it} + \eta_{it}$

where *KIDS* is a dichotomous variable indicating the presence of children and, therefore, eligibility for the Child Benefit program; *POST* designates observations after March 2005 (rather than before April 2003); *X* are observable characteristics; and ε and η are error terms. I include the same covariates in both equations so, to meet the exclusion restriction required for identification, I exclude the difference-in-differences variable, *KIDS*POST*, from the second stage equation. Estimates for credit access and durable good consumption require the further complication of adopting a two-sample IV approach, first suggested by Angrist and Krueger (1992), and adjusting the standard errors with a bootstrap approach to account for the error in the first stage prediction. Appendix I describes my estimation procedure.

Data
I use two complementary datasets, the FRS and the Expenditure and Food Survey (EFS), each of which are cross-sectional, nationally representative surveys of the UK population.[13] The FRS provides detailed demographic, income, account, and financial asset information. The EFS is an

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[13] In 2001, the Family Expenditure Survey was renamed the Expenditure and Food Survey.

expenditure survey with a smaller sample size that provides information on access to credit markets and an inventory of household durable goods. I limit my samples to pre-mandate (1999-2003) and post-mandate (2005-2006) survey years, excluding observations from the phase-in period of the mandate (2003-2005). I drop all families where the oldest adult is older than 55 years old because these families could be subject to the electronic transfer mandate in the state pension program. I also drop families from Northern Ireland because data was not collected there until the 2002-2003 survey year. I adjust all income, benefit, and asset values to constant 2005 pounds using the Retail Price Index (RPI).

For both datasets, I select only less educated families. I create a common definition of less educated families, available in both surveys: "Minimum Schooling". The definition "Minimum Schooling" designates families where all adults report leaving full-time education at (or before) the current minimum schooling age 16.[14] The detailed demographic information in the FRS allows for the creation of a second definition of less educated families, "No Qualifications", for estimates that rely exclusively on FRS data. The definition "No Qualifications" designates those that lack any educational or vocational credentials. Therefore, "No Qualifications" is a smaller sample of families that includes only those with the lowest level of job market skills.

I measure changes in account ownership with three dichotomous variables derived from questions asked of each adult in the FRS about accounts he or she owns currently or owned in the previous 12 months. These variables classify the accounts eligible to receive Child Benefits into three non-exclusive categories: *Any Account*, *Transaction Account*, and *Bank Account*. The first variable, *Any Account,* indicates at least one adult reports owning an account capable of receiving an electronic transfer. *Any Account* includes POCAs, Basic Bank Accounts, and other conventional bank accounts. *Transaction Account* indicates at least one adult reports owning an account where money can be deposited, easily withdrawn, and access to funds is (nearly) immediate by an ATM or checkbook. Basic Bank Accounts are transaction accounts but POCAs are not because access to funds in a POCA is restricted to the Post Office and POCAs are not capable of receiving additional deposits. The category *Bank Account* includes ownership of

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[14] Prior to 1972, the legal school leaving age was 15. Adults may report leaving school before age 16 because they are immigrants, dropped out of school, or misreport their education.

either a transaction account or a savings account. Savings accounts are not meant for daily transactions but still provide ready access to funds. Savings accounts do not include any type of savings bond, stock, or other account that requires a maturation period.

Because the lack of a bank account is thought to force the unbanked to rely on the alternative credit market to smooth consumption over time, I consider two measures of access to affordable credit: ownership of a credit card and receipt of commercial loans. Credit card ownership includes any credit card or store card account on which interest can be charged. Commercial loans include any loan received from a bank, finance house, or credit union. I include two measures of commercial loan use: receipt of a commercial loan in the last year and total number of commercial loans held. Credit cards and commercial loans may be difficult for those without a bank account to obtain and are thought to provide lower cost credit than sources in the alternative credit market. Alternative credit market options are not considered to be "affordable credit" because the interest rates charged by these providers can be well over 100 percent (HM Treasury, 2004).

To consider consumption of durable goods, I examine vehicle ownership, vehicle purchase, and household durable goods. Vehicles can overcome any spatial mismatch between jobs and housing, while still providing some liquidity through the market for used cars. Research examining the working poor in the US find increased propensities to own vehicles rather than financial assets (Hurst and Ziliak, 2006; Sullivan, 2006). I use two measures of vehicle ownership: whether the family owns at least one vehicle and whether the family purchased a vehicle in the past 12 months.

I also create a measure of household durable goods by counting the number of the following appliances in the household: a freezer, a washing machine, a drier, a dishwasher, a microwave, and a central heating unit. Household durable goods is a useful measure because each of these goods represent large purchases for lower income households and are likely to require the accumulation of funds, purchase on credit, or receipt of a loan requiring collateral to purchase.[15]

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[15] With the exception of a microwave, these items tend to cost at least £100 for the lowest priced model at UK retail outlets I found on the internet. The cost, however, varies substantially by the item and quality of the durable good.

Additionally, household durable goods reduce time spent performing household tasks, thereby, increase opportunities for both work and leisure.

Finally, I measure changes in financial assets with the valuation of a family's total financial assets, created by the Department for Work and Pensions (DPW). For families that initially estimate their savings and investments at more than £1,500, the total financial assets equals the total actual value of their assets.[16] For those that initially estimate their savings and investments at less than £1,500 or refuse to provide an estimate, DPW assigns a value based on the interest earned in the family's accounts. Because asset levels are so low amongst my less educated samples, in addition to creating a dichotomous variable *Estimate1500* that represents whether or not a family initially estimates their savings and investments at more than £1,500, I create two indicator variables: *Asset10* and *Asset100* which represent families with at least £10 and at least £100 (equivalent to $19USD and $192USD) of financial assets, respectively. I also use the continuous measure of financial assets with the variable *Assets*. Finally, I also create *LogAssets*, which is the natural logarithm of *Assets*. To ensure that the natural logarithm exists and it is non-negative, I assign families with financial assets of less than £1, a value of £1 before taking the natural logarithm. Appendix II provides the underlying survey questions for each measure.

I present pre-period observable characteristics for my samples in Table 2. The FRS sample with "No Qualifications" is reported in Columns 1 and 2 of Table 2. Although observable characteristics significantly differ between families with and without children, the presence of children could explain many of these differences. For example, families with children are less likely to be employed than those without (42 percent versus 52 percent) and, conditional on working, the main earner works fewer hours. The necessities of caring for children or the realization of greater productivity from home production are possible explanations for these differences. Similarly, families with children are less likely to be single than families without children (61 percent versus 85 percent), either because families with children are married (82

For instance, washing machines ranged from £150 to £1,000. Additionally, central heating can be quite costly with installation at least £1,300 and the components ranging from £50 to £400. Unfortunately, the EFS does not provide information on the estimated value of the household's durable goods, nor does it provide detailed information on the price paid for specific durable goods.

[16] Only families that estimate the value of their financial assets at between £1,500 and £20,000 have detailed data collected on their assets. The top censoring at £20,000 is less of a concern among the less educated population I focus because these groups are considerably less likely than the general population to own assets of this value.

percent of non-single parents) or cohabitating. Higher cohabitation and marriage rates explain the larger earned income of working families with children, but the difference is economically small – only £20 more per week. Owing to demographic trends in fertility, parents are 7 percentage points more likely to be nonwhite, as well as either younger (under 25) or older (age 50 to 55) than those without children. Finally, families with children have much lower rates of homeownership than families without children (28 percent versus 47 percent) but this is primarily driven by the very low rates (6 percent) for parents under age 25.

Columns 3 and 4 of Table 2 reports similar characteristics of the sample with "Minimum Schooling". Similar to differences in observables between types of families without qualifications, families with and without children with minimum levels of schooling are statistically different in observable ways that are explained by the presence of children. The differences are, however, less extreme.

Columns 3 through 6 of Table 2 compare families with "Minimum Schooling" in the FRS and EFS. There are significant differences for the labor market characteristics of families in the FRS and the EFS. The EFS measures higher employment levels and lower earned income levels. For example, the EFS estimates that 78 percent of families with children work, whereas the FRS estimates that only 72 percent of these families work. Conditional upon working, however, FRS families with children earn more: £392 a week rather than the £367 earned in the EFS. The same pattern in labor market characteristics exists for families without children.

Many other observable characteristics are not statistically significantly different between EFS and FRS families and those that do differ are small in economic terms. For example, the FRS records a higher portion of single adult families among families with children (37 versus 35 percent) and a slightly smaller portion of nonwhite families without children. Differences in observable characteristics between FRS and EFS families are likely due to the type and level of detail of questions in each survey.

I show the pre-period outcomes for each sample in Table 3. The first three rows of Columns 1 through 4 show the low rates of account ownership for less educated families and suggest there is

substantial potential for a behavioral response. Ownership rates for *Any Account* and *Bank Account* categories are identical because POCAs are not yet available. Ownership of transaction accounts is eight points lower than ownership of bank accounts indicating that some of these families own only a savings account rather than an account to manage daily expenses. Comparing across types of families, those without children own accounts at about 4 percentage point greater rates.

Pre-period financial asset values are also given in Columns 1 through 4 of Table 3. As shown in Table 3, these families have low levels of financial assets. Few families have detailed asset information collected because they do not estimate their savings and investments are worth more than £1,500. Among families without qualifications (Columns 1 and 2), those with children have less financial assets than those with children: only 20 percent of families with children have at least £10 of financial assets, while 31 percent of families without children have at least £10 of financial assets The figures are 15 percent and 25 percent for at least £100 of financial assets amongst families with and without children, respectively. Finally, those without children have £559 higher mean assets and 0.9 logarithmic points more *LogAssets*.

Although families with minimum levels of schooling have more financial assets, similar differences between families with and without children appear in Columns 3 and 4 of Table 3. Less than half of families with children have at least £10 in financial assets and only slightly more than half (52 percent) of families without children have at least £10 in financial assets. Families without children have higher average assets and *LogAssets* than those with children but the difference is smaller than for families without qualifications.

Pre-period outcome variables for credit market access are provided in Columns 5 and 6 of Table 3. Families without children report higher rates credit card ownership than families with children (58 percent to 51 percent). Although commercial loan use is low for both types of families, families without children are more likely to report receiving a commercial loan than families without children (30 percent to 16 percent). However, conditional upon having at least one loan, families with children have nearly an identical average number of commercial loans (1.26 to 1.23).

Finally, durable good consumption is provided in Columns 5 and 6 of Table 3. Families with children have nearly identical rates of vehicle ownership (0.73) and vehicle purchase in the last year (0.25) as families without children. Household durable good ownership is only slightly greater for families with children (4.70 versus 4.45).

Results
First Stage Estimates: Account Ownership
I first estimate how the mandate affected ownership of accounts by estimating equation 1. The dependent variable *Account$_{it}$* is a dichotomous variable for each of the three account categories: *Any Account*, *Transaction Account*, and *Bank Account*. The coefficient of interest is the difference-in-difference estimator, β_3, which measures the relative differences in account ownership of families with and without children after the electronic transfer mandate. The vector X_{it} controls for other characteristics that may be associated with financial behavior. These include: a cubic in the family's weekly earned income (net of taxes and deductions) in hundreds of pounds; the Family Credit, WFTC, or WTC that a family could receive based on demographic characteristics; categorical variables for an employed adult in the family, single adult families, nonwhite families, and age (in five year age groupings) of the oldest adult in the family. I include a linear time trend to control for secular trends that may affect account ownership, particularly the diffusion of automated technology. Finally, government region effects control for geographic differences in banking and financial services. All regressions are weighted and robust standard errors are clustered by the number of children and time.

I begin with raw difference-in-differences, reported in Table 4, for families without any qualifications. Ownership of any account capable of receiving an electronic transfer shows a 15 percentage point differential increase among families with children, compared to families without children. Moreover, this relative increase was not simply families with children choosing a POCA: ownership of transaction accounts also increased by 15 percentage points while ownership of the more general bank account category increased by 13 percentage points. With pre-period ownership rates of 62 percent, 54 percent, and 62 percent for accounts capable of electronic transfer, transaction accounts, and bank accounts, respectively, these raw differences indicate increases of approximately 20 percent for each measure of account ownership.

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I control for observable characteristics with a linear probability model.[17] These results, shown in Table 5, differ slightly from the raw estimates, indicating that observable characteristics have some explanatory power. The probability of owning an account capable of receiving an electronic transfer increases 15 percentage points (24 percent) for these families with children compared to those without children. There is a 16 point (29 percent) relative increase in the propensity of owning a transaction account and a 13 point (22 percent) relative increase in the propensity to own a bank account.

As a check on these results, I consider families with "Minimum Schooling". These estimates, also reported in Table 5, are roughly half the magnitude of those for families with no qualifications and suggest that account ownership increased 4 to 6 percent for families with children. A smaller response amongst this sample is expected because their higher pre-period rates of account ownership provide less opportunity for a behavioral response.

The large increases in the propensity to own transaction accounts and the more general category of bank accounts, suggest that the mandate had large effects on banking behavior, particularly for families without qualifications. Because the difference-in-differences estimator compares relative responses, the 22 percent increase for *BankAccount* versus the 24 percent increase for *AnyAccount* amongst families without qualifications suggests that a small portion of previously unbanked Child Benefit recipients chose a POCA rather than an account offered by a commercial bank. The 16 percentage point increase in transaction accounts compared to families without children (who could also own a new Basic Bank Account), suggests that Basic Bank Accounts and other transaction accounts were a more popular choice amongst Child Benefit recipients than families without children. This is evocative of Washington's 2006 conclusions: expanding the supply of low-cost bank accounts, such as the Basic Bank Account, is not enough to substantially boost account ownership. However, mandating the ownership of an account capable of receiving an electronic transfer for benefit recipients, while offering low-cost options, does increase bank account ownership.

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[17] As a check, I also perform estimates with a probit approach. The mean marginal effects from a probit approach are nearly identical. These estimates suggest that less educated families with no qualifications increased their ownership of any account, transaction accounts, and bank accounts by 22 percent, 19 percent, and 27 percent, respectively. For less educated families with minimum levels of schooling, account ownership increased by 6 to 8 percent.

Robustness of the First Stage

One concern that could bias these results is if the mandate reduced participation in the Child Benefit program. Families without an account in the pre-mandate period experienced the highest costs of adapting to the new regime. The direct and transactional costs associated with obtaining an eligible account could raise the direct costs of participation enough to reduce take-up.

I examine participation amongst both of types of less educated families with children. The Child Benefit had extremely high self-reported take-up in both periods: roughly 97 percent of families with children. These estimates provide no evidence of a change in take-up and replicate the government's own estimates (House of Commons, 2006). Even when estimating participation conditional on observable characteristics, I find no evidence that take-up declined after the mandate went into effect.[18] Finally, I consider the sample of nonparticipants in both-periods. I find non-participants in the post-period are significantly *more* likely to own an account capable of accepting electronic transfer (p=0.001) than those in the pre-period, indicating that families did not opt out of the program because the mandate imposed large costs.

Another potential threat to my results arises from the series of reforms to the Family Credit. The small and insignificant point estimate on the maximum credit variable may result from insufficient variation, rather than indicate no effect on the propensity to own an account. I conduct an additional check to see if these reforms bias my results by testing directly for these reforms. I use the approach of Gregg et al. (2006) who argue that these reforms reduced the material hardship of lower income families with children as evidenced by increasing consumption levels, particularly on durable goods. Using their logic, if these reforms explain increases in account ownership, ownership should change more for those with children under age 11 than for those with children age 11 to 15 because these reforms provided greater benefits to families with younger children.[19] I use a difference-in-difference approach with the same

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[18] These results are available by request from the author. The estimate of the electronic transfer mandate on take-up is positive but insignificant without a linear trend. With a linear time trend, the implementation of the mandate increased take-up by less than 1 percentage point, conditional on observable characteristics. I also check if the launch of the CTF, also in March 2005, contributes to an increase in take-up, swamping a negative effect of the mandate on participation. The estimate is unchanged.

[19] Gregg et al. consider not only the reforms to the Family Credit but also increases in the Child Benefit and Income Support (cash welfare). In their main specification, they adopt a triple-difference estimator which compares the behavior of lower income families with young children to higher income families with young children. I do not

covariates as my prior specification but further limit my sample to families with children under age 16. I consider families with children under the age of 11 as the treatment group and families with children age 11 to 15 as the control group. If the Family Credit reforms increased bank account ownership, the difference-in-difference estimator should be positive and significant.

The results for this robustness check in Table 6 provide no evidence that those families receiving larger benefits from these reforms increased account ownership more than those who received smaller benefits. The point estimates are negative but only statistically significant for the *AnyAccount* outcome. Thus, families with younger children do not appear to respond differently to the mandate than families with older children. This robustness check suggests that the series of reforms to the Family Credit do not bias my first stage results.

The first stage estimates show large, significant, and robust increases in account ownership arising from the mandate. This increase provides an exogenous change to identify the impact of bank account ownership on access to credit markets, consumption of durable goods, and accumulation of financial assets.

Second Stage Results: Credit Market Access
Bank accounts could provide lower cost access to credit, allowing families to forgo more costly credit sources such as pawn brokers and payday lenders, in favor of credit cards and commercial loans. I investigate this possibility by examining if bank account ownership changes these measures of credit market access using a two-sample IV approach.

The first row of Table 7 provides the reduced form results, that is, the estimate of the difference-in-difference estimator on credit card ownership. The estimate is positive and significant – ownership increased almost 9 points after the mandate. With a 2SLS approach in the second column, owning a bank account increases the probability of owning a credit card by nearly 71 percentage points. With the difficulty in owning a credit card without owning a bank account, an

difference the data by income for two reasons. First, high-income families already had virtually universal levels of account ownership in the pre-period. Therefore, these families cannot respond to the mandate by increasing their ownership of accounts. Secondly, income is clearly an outcome measure of many these reforms as they provided incentives for increased labor supply on both the intensive and extensive margin. Selecting the sample on income could bias my results by changing the composition of my treatment and control groups.

increase in credit card ownership after transitioning into bank account ownership is expected. The magnitude of the response is striking, however. This estimate suggests that nearly every family with children that was induced into owning a bank account because of the mandate was also induced into owning a credit card.[20]

Also included in Table 7 are results for commercial loans: receipt of a loan in the last year and total number of commercial loans owned by the family. The reduced form estimate on each of these outcomes is insignificant. All coefficient estimates from 2SLS are positive, but results are not statistically significant. Therefore, families that transitioned into account ownership because of the mandate did not change their use of commercial loans.

The evidence that new bank account owners access credit markets by owning a credit card rather than obtaining a commercial loan may arise from lower transaction costs associated with credit cards. Due to the pervasiveness of the credit card in modern society, credit cards may be more familiar to consumers who want to increase their consumption. Additionally, credit cards may present an easier application process and less stringent approval criteria than a commercial loan. There is also the possibility that credit card ownership increased because banks marketed and sold credit cards to their customers.

If credit cards provide lower cost credit options than alternative credit sources, the government appears to have succeeded in its goal to increase access to affordable credit. Although I do not have information on the alternative credit market, such as payday lenders and pawn shops, these alternative credit sources are generally thought to be substitutes to mainstream credit sources. To the extent that this is true, the increase in bank account ownership may crowd out the use of the alternative credit market. Further work is needed to measure the extent, if any, of this crowd out.

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[20] Estimates performed using a probit model in the first stage rather than a linear probability model suggest that owning a bank account increases the probability of owning a credit card by 17 points. Estimates using a probit approach in both stages suggest an effect of 23 points. The sensitivity of the measured effect to the choice of first stage specification is an area for further work. I report the 2SLS approach because these estimates are consistent whether or not the first stage conditional expectation function is linear (Angrist, 2001).

Second Stage Estimates: Consumption of Durable Goods

The increase in credit card ownership could be related to families realizing greater consumption possibilities, particularly the need to finance large purchases such as durable goods. To examine the effect of bank account ownership on the consumption of durable goods, I estimate the same two-sample IV model as in the results for credit market access. The durable good outcomes include ownership of at least one vehicle, purchase of a vehicle in the past year, and number of household goods in the family's residence.

I report the reduced form and two-sample IV estimates for durable good consumption in Table 8. The reduced form estimate is quite small and insignificant for both vehicle ownership and vehicle purchase in the last year. The IV results find positive but insignificant estimates for vehicle ownership and vehicle purchase. These suggest that there was no change in either vehicle ownership or vehicle purchase arising from the increase in bank account ownership caused by the electronic transfer mandate among families with minimum levels of schooling.

In contrast to the results for vehicle ownership, the results for household durable goods are positive and significant. The reduced form estimate is positive and significant, suggesting that household durable goods did increase after the mandate for families with children. The IV estimate shows a 1.4 increase in the number of household durable goods.[21] Therefore, families that were induced to own a bank account because of the mandate, on average, purchased more than one additional durable good for their household.

These estimates indicate if a family has high consumption needs, providing access to more affordable credit creates an opportunity to meet those needs. The response in household durable good, but not vehicles, is consistent with the credit access results given that household durable goods would be purchased with a credit card while vehicles are usually purchased with a loan.

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[21] Estimates performed using a probit model in the first stage rather than a linear probability model suggest that owning a bank account increases the number of household durable goods by 0.56. The sensitivity of the measured effect to the choice of first stage specification is an area for further work. As in the estimates for owning a credit card, I report the 2SLS approach because these estimates are consistent whether or not the first stage conditional expectation function is linear (Angrist, 2001).

Second Stage Estimates: Financial Assets

Bank accounts are typically thought of as a mechanism to save money and create financial assets. The increase in durable good consumption suggests, however, that there could be a reduction in financial assets to finance this purchase of durable goods. To examine the effect of bank account ownership on savings I estimate the two-stage model presented above for each of four different financial asset measures: *Estimate1500, Asset10, Asset100,* and *LogAssets*. Estimates with the dichotomous dependent variables *Estimate1500, Asset10,* and *Asset100* are performed using an OLS specification in both stages, as suggested by Angrist (2001). I also perform quantile regressions of *Assets* for the 5th through 95th quantile with the reduced form specification. Because the financial asset measures are in the FRS, I can perform estimation with both definitions of less educated families.

Panel A of Table 9 provides results for the sample of families with no educational qualifications while Panel B provides results for the sample of families with minimum levels of schooling. The first row of each panel provides OLS estimates of equation 2. The effects in both panels are large, statistically significant, and economically large: bank accounts increase the probability of estimating savings and investments at more than £1,500 by 7 to 9 percentage points (91 percent to 41 percent for families without qualifications and families with minimum schooling, respectively), the probability of accumulating £10 of financial assets by 25 to 31 points (128 to 66 percent for families without qualifications and families with minimum schooling, respectively), and the probability of accumulating £100 of financial assets by 18 to 22 (83 to 57 percent for families without qualifications and families with minimum schooling, respectively) points. Using a continuous measure of financial assets produces similar results: owning a bank account increases financial assets by 150 to 190 percent for less educated families with no qualifications and minimum schooling, respectively. These effects are biased upwards because families that own a bank account likely have higher preferences for savings than families that do not own a bank account.

With these initial results, I begin to address the endogeneity of bank account ownership. The next row of each panel provides reduced form estimates for the financial asset outcomes. The effect of the difference-in-difference estimator on each dichotomous measure is small – less than two percentage points for each dichotomous outcome and slightly more than 7 percent for

LogAssets – and statistically insignificant for all but one outcome. Only the reduced form estimate for families without qualifications possessing more than £10 of financial assets is significant. Overall, these reduced form estimates provide little evidence that there is a direct relationship between the implementation of the mandate and financial asset levels for those with children.

The final row of each panel provides two-stage least squares estimates for each outcome. Taken as a whole, these IV estimates show that, after removing the endogeneity of bank account ownership, owning a bank account is no significantly related to an increase in these financial asset outcomes.[22] For both samples, estimates of the probability of initially estimating savings and investments at £1,500 or more are negative but insignificant. The sign on the point estimates for *Asset100* and *LogAssets* changes depending on the sample used but no estimate approaches statistical significance. Only the point estimate for *Asset10* among families without qualifications is positive and statistically significant. This estimate suggests that owning a bank account increases the probability of having £10 of financial estimates, a 53 percent increase for these families. This estimate is fairly large in magnitude with the only one year of data I have after the mandate was fully implemented but the result is not robust to the choice of less educated sample.

Finally, I perform reduced form quantile regressions with the *Asset* outcome. I plot the difference-in-difference coefficient obtained from a reduced form specification with no covariates for the two samples of families in Figures 1 and 2.[23] The solid line in each figure is the difference-in-difference estimate at the 5th through 95th quantile while the dashed line represents the 90 percent confidence interval created by a bootstrapping procedure with 999 replications. Both figures show a similar story with the mandate increasing assets at the upper end of the distribution. For the "No Qualifications" sample, families with children increased

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[22] Results from bivariate probit estimation with 500 bootstrap replications for the standard errors are larger than the results with the endogenous dependent variable and very significant. Bivariate probit results suggest that that account ownership increased the propensity of owning financial assets of £10 and £100 by 26 percentage points and 38 percentage points, respectively, for low educated families with "No Qualifications." Estimates for low educated families with "Minimum Schooling" are nearly identical – bank account ownership increased the propensity of owning at least £10 and £100 of financial assets by 28 and 37 percentage points, respectively. With reduced form estimates suggesting no effect on behavior, I focus on the linear estimates.
[23] The asymptotic properties of IV quantile regression are not as well understood as 2SLS. I plan to estimate IV quantile models in future work. I do not include covariates in the reduced form specifications due to difficulties achieving convergence when covariates are included.

assets above the 70th through the 93rd quantile; for the "Minimum Schooling" sample, families with children increased assets above the 50th through the 90th quantile. Both of these effects are economically large: the mandate increased financial assets by up £2,300 for families without qualifications and by up to £1,300 for families with minimum levels of schooling. These results suggest that bank account ownership may have positive effects on financial assets for the upper portion of the distribution. This suggests that there is heterogeneity in the response to the mandate. Or, it may be that the mandate helped families that were saving outside of a bank account, for example by storing cash in their home or in a relative's account, to move these assets into their bank account.

The evidence suggesting that changes in financial assets occur largely in the upper end of the distribution is surprising. Because it is only one year after the full implementation of the policy and affected families are likely facing high consumption needs, it is the lower end of the distribution that we would expect to first measure a response in financial assets, if for no other reason than some level of inertia in families withdrawing Child Benefits from their bank account. Therefore, if the increase in bank account ownership, rather than an omitted factor, is responsible for a positive effect on financial assets, we would likely see it first in the propensity of families to hold at least £10 of financial assets, as shown for one of my samples. It seems possible that other policies are responsible for the effects in the right tail or omitted covariates may provide some explanation. Additional data from the 2006-2007 FRS, as well as implementing an IV quantile approach will be useful in finding a robust, consistent finding for financial assets.

Several sources of measurement problems may contribute to conflicting estimates of the effect of owning a bank account on financial assets. First, any changes in account values may be difficult to measure in cross-sectional data because of the low levels of financial assets that low-income families own, regardless if they own a bank account.[24] In addition, for much of my sample, the financial asset values are an imputed value based on the interest collected in their accounts. If either the interest earned is misreported or if accounts do not earn interest, it will be difficult to calculate a discernible change in financial assets.[25] In fact, some Basic Bank Accounts do not

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[24] These low levels of financial assets may arise because low incomes increase the opportunity cost of foregone consumption and low-education levels may lead to little financial education to understand the importance of saving.
[25] The FRS does not ask if the account is interest bearing. Therefore, it is difficult to discern if the bank account earns interest on deposits or if no monies are held in the account to generate interest. These problems suggest that

earn interest, which may make it impossible to measure changes in financial assets until families owning Basic Bank Accounts accumulate enough savings to value the account at £1,500 or more. Finally, measuring changes after only a year since the mandate was implemented may prevent estimating a detectable response. Unfortunately, currently available data make it impossible to measure changes in financial assets for new bank account owners over a long time period.

Conclusion
In this paper, I use a new approach to identify the effect of bank account ownership on credit access, durable good consumption, and savings. I first show that an electronic transfer mandate in the UK had large effects on account ownership. Using this exogenous change in bank account ownership, I find bank account ownership increases ownership of credit cards and purchase of household durable goods. I find no effect, however, on use of commercial loans or ownership of vehicles.

One year after all recipients were subject to the mandate, I conclude that the mandate may only be related to a change in financial assets in the upper tail of the financial asset distribution. Bank accounts do not change the probability that families report £100 of financial assets but do increase the probability that families with the lowest level of job market skills report £10 of financial assets. Ownership has no effect, however, at the mean level of financial assets. Because increasing financial assets was one of the mandate's goals and evidence is suggestive of an increase only at the upper end of the financial asset distribution, on this measure, the mandate has limited success. This conclusion however, has a number of caveats, including difficulties measuring the financial assets of low-income families, the data collection methods in the FRS, and the short time period I allow for a response.

Measuring a response for durable good consumption rather than savings after families with children transitioned into account ownership is evidence against the notion that the poor would save more if only they had a bank account.[26] It may be that the average lower income family

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the structure of the FRS questionnaire should be changed to collect detailed account values on all respondents so that savings levels of lower income families can be more accurately measured.
[26] Work in the US suggests that low-income families do not save because of asset tests in means-tested cash-welfare programs (Hubbard, et al., 1995; Ziliak, 2003; Hurst and Ziliak, 2006). As a result, low-income families save by accumulating durable goods because these often do not limit eligibility for means-tested programs. The UK maintains asset tests in their cash welfare program, Income Support, but the asset limits are so high (£16,000) that

receives greater utility from purchasing a durable good than storing funds in a bank account because durable goods provide a current service flow that is more valuable than the flow of interest received from a bank account. In addition to providing this service flow, durable goods still provide these families some liquidity through second hand markets if they have an adverse income shock. It could also be that self-control problems lead to families with children favoring current period consumption over future consumption. If families have self-control problems and engage in "excessive consumption", the increase in credit card ownership for previously unbanked families could result in larger levels of consumer debt. In such a case, bank account ownership may not improve long-term economic well-being. In future work, I plan to explore the extent to which these families with children have present-biased preferences to provide insight into these issues.

My findings of up to a 29 percent increase in ownership of bank accounts among families with children can inform US policymakers interested in transitioning the unbanked into the financial mainstream. EFT'99, the US law mandating electronic transfer for federal benefits, envisioned a mandate similar to the UK's mandate, complemented by the provision of low-cost bank accounts (Stegman, 1999). The Treasury's rulemaking process, however, made electronic transfer voluntary. As a result, recipients must opt-in to electronic transfer in large federal benefit programs, such as Social Security and the EITC. While the federal government requires electronic benefit transfer (EBT) in Food Stamps and Temporary Assistance to Needy Families (TANF), EBT largely consists of a debit card only capable of accessing benefits, much like the UK's POCA. Additionally, EBT is not coupled with the provision of a low-cost bank account for recipients and banked recipients cannot always receive an electronic transfer into their bank account (Barr, 2004).

If the US enacts a binding electronic transfer mandate, while also providing the option of a low-cost bank account appropriate for lower income populations, unbanked recipients will transition into bank account ownership. The effects on account ownership in the US could be smaller than the effects in the US. Unlike the UK Child Benefit, most transfer programs in the US are means-tested. If recipients in a means-tested program, like the EITC or TANF, are more sensitive to

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few potential applicants are affected. Thus, means-tested programs in the UK would not explain the decision to save through durable good purchase rather than financial assets.

changes in transaction costs created by the mandate, some unbanked recipients may choose not to participate, rather than transition into an account. However, the populations served by these means-tested programs are more likely than the general population to not possess any type of bank account and these means-tested programs could be a useful way to target such a policy at the unbanked.

Transitioning the unbanked population in the US may increase their access to affordable credit and consumption of durable goods but, as this paper shows, it will not necessarily reverse the low levels of financial assets that the average unbanked family holds in the short run. To the extent that policymakers want to encourage bank account ownership to reduce the use of alternative financial providers, forcing the unbanked into a bank account may be a desirable policy. However, if the primary policy goal is to help lower income families save, it is not likely that requiring families to own an account will achieve this objective.

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Table 1. Payment Methods of Families Receiving Child Benefit, By Time Period

A. Pre-Mandate Period (April 1999 - March 2003)

	Coupon Book	Bank	Check	Other
All Families	55.5	43.9	0.3	0.4
Without A Transaction or Savings Account	96.0	2.2	1.0	0.8
With A Transaction or Savings Account	51.5	48.0	0.2	0.3
Education Groups By Age at School Leaving				
Less Educated	70.1	29.2	0.4	0.4
More Educated	30.5	69.1	0.2	0.2
Education Groups by Recognized Qualifications				
Less Educated	83.4	15.3	0.8	0.6
More Educated	27.1	72.4	0.1	0.3

B. Post-Mandate Period (April 2005 - March 2006)

	Coupon Book	Bank or POCA	Check	Other
All Families	1.1	97.3	0.8	0.8
Without A Transaction or Savings Account	10.3	73.7	10.3	5.7
With A Transaction or Savings Account	0.8	98.0	0.5	0.6
Education Groups By Age at School Leaving				
Less Educated	1.4	96.2	1.3	1.1
More Educated	1.0	98.7	0.2	0.2
Education Groups by Recognized Qualifications				
Less Educated	2.6	94.2	1.7	1.6
More Educated	0.6	98.6	0.4	0.5

Note: Authors' calculations using FRS data 1999-2003 and 2005-2006. Other methods of receiving the Child Benefit include the Benefit Payment Card project and payments made to registered charities on behalf of disabled persons. Families are considered owning a transaction or savings account if at least one adult in the family reports owning a Basic Bank Account, Current Account, NSB Investment Account, NSB Ordinary Account, or Savings or Investment Account. See text for definitions of less and more educated groups.

Table 2. Pre-Period Observable Characteristics, by Survey and Definition of Less educated Families

| | Family Resources Survey | | | | Expenditure and Food | |
| | No Qualifications | | Minimum Schooling | | Minimum Schooling | |
	With Children	Without Children	With Children	Without Children	With Children	Without Children
	(1)	(2)	(3)	(4)	(5)	(6)
Working Families	0.422	0.521	0.718	0.749	0.778	0.804
	(0.494)	(0.500)	(0.450)	(0.434)	(0.415)	(0.397)
Net Earned Income, if Working	2.69	2.51	3.92	3.25	3.67	2.74
	(3.880)	(3.950)	(5.690)	(4.350)	(2.480)	(2.390)
Weekly Hours of Main Earner, if Working	34.88	40.53	40.51	42.33		
	(15.650)	(12.080)	(14.860)	(11.580)		
Single Adult	0.609	0.847	0.373	0.723	0.351	0.738
	(0.488)	(0.360)	(0.484)	(0.447)	(0.477)	(0.440)
Nonwhite	0.171	0.100	0.071	0.052	0.068	0.057
	(0.377)	(0.300)	(0.257)	(0.223)	(0.251)	(0.231)
Homeowner	0.279	0.466	0.545	0.630	0.540	0.616
	(0.449)	(0.500)	(0.498)	(0.483)	(0.498)	(0.486)
Number of Children	1.98	-	1.85	-	1.82	-
	(1.080)		(0.931)		(0.924)	
Age 0 to 4	0.466		0.445		0.356	
	(0.689)		(0.658)		(0.578)	
Age 5 to 10	0.699		0.641		0.665	
	(0.820)		(0.766)		(0.777)	
Age 11 to 15	0.656		0.596		0.584	
	(0.780)		(0.742)		(0.726)	
Age 16 to 18	0.161		0.164		0.144	
	(0.404)		(0.395)		(0.373)	
Age Distribution of Oldest Adult						
Under 25	9.58	25.38	6.12	25.25	6.47	31.22
Age 25 to 30	11.50	8.13	9.70	10.00	9.33	9.39
Age 30 to 35	17.53	8.43	18.19	9.92	17.73	9.33
Age 35 to 40	22.18	9.01	24.34	9.27	25.31	7.90
Age 40 to 45	19.72	11.00	21.59	10.22	21.78	9.97
Age 45 to 50	12.15	15.28	13.16	13.91	12.53	12.69
Age 50 to 55	7.34	22.77	6.92	21.43	6.86	19.50
Observations	3,946	5,565	15,221	19,351	3,882	5,349

Note: Author's calculations using FRS and EFS data from 1999-2003 and 2005-2006. All statistics are weighted. Net earned income and child benefit values are both adjusted to constant 2005 pounds. Earned income is reported in hundreds of pounds per week.

Table 3. Pre-Period Outcomes, by Survey and Definition of Less educated Families

	Family Resources Survey				Expenditure and Food Survey	
	No Qualifications		Minimum Schooling		Minimum Schooling	
	With Children (1)	Without Children (2)	With Children (3)	Without Children (4)	With Children (5)	Without Children (6)
Account Ownership						
Own Any Account	0.624	0.667	0.845	0.862	-	-
	(0.484)	(0.471)	(0.362)	(0.345)		
Own Transaction Account	0.541	0.580	0.788	0.804	-	-
	(0.498)	(0.494)	(0.409)	(0.397)		
Own Bank Account	0.623	0.664	0.843	0.859	-	-
	(0.485)	(0.472)	(0.363)	(0.348)		
Credit Market Access						
Credit Card Ownership	-	-	-	-	0.505	0.579
					(0.500)	(0.494)
Received Loan in Last Year	-	-	-	-	0.160	0.293
					(0.384)	(0.089)
Number of Loans, for Loan Holders	-	-	-	-	1.261	1.227
					(0.551)	(0.509)
Weekly Loan Payment, for Loan Holders	-	-	-	-	44.76	45.25
					(33.100)	(30.320)
Durable Good Ownership						
Vehicle Ownership	-	-	-	-	0.728	0.736
					(0.445)	(0.441)
Vehicle Purchase					0.252	0.253
					(0.434)	(0.435)
Household Goods	-	-	-	-	4.699	4.449
					(0.902)	(1.117)
Financial Assets						
Estimate1500	0.065	0.140	0.212	0.265	-	-
	(0.246)	(0.347)	(0.409)	(0.441)		
Assets	1744.86	2303.74	4619.77	5082.49		
	(34469.6	(17481.5	(77255.44)	(48150.65)		
	[0]	[0]	[0]	[24.17]		
Log Assets	1.23	2.12	3.23	3.7	-	-
	(2.650)	(3.370)	(3.710)	(3.890)		
Asset10	0.196	0.309	0.469	0.516	-	-
	(0.399)	(0.462)	(0.499)	(0.500)		
Asset100	0.145	0.254	0.388	0.439	-	-
	(0.353)	(0.435)	(0.487)	(0.496)		
Observations	3,946	5,565	15,221	19,351	3,882	5,349

Note: Author's calculations using FRS and EFS data from 1999-2003 and 2005-2006. All statistics are weighted. Net earned income and child benefit values are both adjusted to constant 2005 pounds. Earned income is reported in hundreds of pounds per week. Median assets is reported in square brackets.

Table 4. Raw Difference-in-Difference Estimates of Impact on Family Account Ownership for Less educated Families with No Educational Qualifications

	Pre-Mandate (April 1999 - March 2003)	Post-Mandate (April 2005 - March 2006)	Time Difference for Groups
A. Ownership of Any Account			
Families with Children	0.624	0.956	0.333
	(0.007)	(0.010)	(0.017)
Families without Children	0.667	0.851	0.184
	(0.006)	(0.008)	(0.006)
Group Difference at Point in Time			
	-0.043	0.105	
	(0.010)	(0.008)	
		Difference-in-Difference	0.148
			(0.023)
B. Ownership of a Transaction Account			
Families with Children	0.541	0.838	0.297
	(0.008)	(0.014)	(0.019)
Families without Children	0.580	0.728	0.148
	(0.006)	(0.011)	(0.015)
Group Difference at Point in Time			
	-0.039	0.110	
	(0.010)	(0.012)	
		Difference-in-Difference	0.149
			(0.025)
C. Ownership of a Bank Account			
Families with Children	0.623	0.878	0.254
	(0.007)	(0.013)	(0.018)
Families without Children	0.664	0.787	0.123
	(0.006)	(0.010)	(0.014)
Group Difference at Point in Time			
	-0.041	0.090	
	(0.010)	(0.018)	
		Difference-in-Difference	0.131
			(0.024)

Source: Author's calculations using FRS data from 1999-2003 and 2005-2006. All means are weighted.

Table 5: Linear Probability Estimates for Types of Account Ownership Types, Less educated Samples

	Any Account		Transaction Account		Bank Account	
	No Qualifications	Minimum Schooling	No Qualifications	Minimum Schooling	No Qualifications	Minimum Schooling
	(1)	(2)	(3)	(4)	(5)	(6)
Kids	-0.002	-0.002	0.001	-0.005	0.004	-0.000
	(0.012)	(0.009)	(0.018)	(0.012)	(0.011)	(0.008)
Post Period	0.150***	0.041***	0.085***	0.018*	0.090***	0.011
	(0.007)	(0.008)	(0.010)	(0.009)	(0.006)	(0.007)
Kids*Post Period	0.152***	0.044***	0.155***	0.047**	0.134***	0.037**
	(0.013)	(0.012)	(0.015)	(0.013)	(0.011)	(0.011)
Net Earned Income	0.0181***	0.005***	0.031***	0.011***	0.018***	0.005***
	(0.005)	(0.001)	(0.007)	(0.025)	(0.004)	(0.001)
Net Earned Income Squared	-0.0003**	-0.0000***	-0.001***	-0.00001***	-0.0003***	-0.0000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Earned Income Cubed	0.00001***	0.00001***	0.0001***	0.00001***	0.00001**	0.00001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Maximum Credit	0.0001	-0.00004	0.0002**	-0.00003	0.0001*	-0.00004
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Single	-0.001	-0.015***	-0.013	-0.028***	-0.005	-0.017***
	(0.007)	(0.005)	(0.009)	(0.006)	(0.005)	(0.004)
Nonwhite	-0.039**	-0.042**	-0.028**	-0.039**	-0.030	-0.037**
	(0.024)	(0.017)	(0.014)	(0.014)	(0.025)	(0.019)
Homeowner	0.118***	0.083***	0.153***	0.120***	0.129***	0.088***
	(0.020)	(0.009)	(0.011)	(0.009)	(0.012)	(0.006)
Working Family	0.303***	0.263***	0.321***	0.301***	0.320***	0.280***
	(0.031)	(0.032)	(0.014)	(0.017)	(0.016)	(0.018)
Age 25 to 29	0.016	0.012	-0.018	0.015**	0.006	0.007
	(0.030)	(0.012)	(0.013)	(0.005)	(0.022)	(0.008)
Age 30 to 34	0.040	0.025***	0.013	0.020**	0.030	0.020**
	(0.023)	(0.013)	(0.014)	(0.007)	(0.020)	(0.009)
Age 35 to 39	0.039	0.026	0.008	0.017	0.029*	0.022*
	(0.023)	(0.017)	(0.017)	(0.013)	(0.016)	(0.012)
Age 40 to 44	0.061***	0.024	0.027*	0.0127	0.051***	0.021
	(0.029)	(0.018)	(0.013)	(0.007)	(0.018)	(0.013)
Age 45 to 50	0.091***	0.029***	0.048***	0.015*	0.077***	0.023***
	(0.026)	(0.014)	(0.012)	(0.008)	(0.011)	(0.007)
Age 50 to 55	0.134***	0.046***	0.086***	0.031***	0.120***	0.040***
	(0.020)	(0.008)	(0.011)	(0.005)	(0.012)	(0.005)
Time Trend	0.009**	0.012***	0.015***	0.016***	0.009**	0.012***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
Region Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,544	41,361	11,544	41,361	11,544	41,361

Note: Author's calculations using FRS data from 1999-2003 and 2005-2006. Estimates are weighted and standard errors clustered by time and the number of children. Earned income and maximum benefit values are both adjusted to constant 2005 pounds. Earned income is reported in hundreds of pounds per week. Asterisks denote statistical significance: * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6. Mean Marginal Effects for Types of Account Ownership for Less educated Families with Children, by Age of Children

	No Qualifications	Minimum Schooling
Panel A. Any Account		
Young Children*Post	-0.089**	-0.029***
	(0.051)	(0.013)
Panel B. Transaction Account		
Young Children*Post	-0.007	-0.002
	(0.050)	(0.020)
Panel C. Bank Account		
Young Children*Post	-0.078	-0.014
	(0.083)	(0.019)
Observations	4,472	16,877

Note: Author's calculations using FRS data from1999-2003 and 2005-2006. Estimates created with a probit specification. All regressions are weighted and standard errors clustered by the number of children and time. Treatment families are defined as families with all children under the age of 11. Control families are families with all children age 11 to 15. Other covariates include a cubic in weekly earned income; the maximum Family Credit, WFTC, or WTC credit based on demographic characteristics; dichotomous variables for single adult family, employed family, nonwhite family, and homeowner; fixed effects for the five year age grouping of oldest adult; fixed effects for government region; and, a linear time trend. Asterisks denote statistical significance: * significant at 10%; ** significant at 5%; *** significant at 1%

Table 7. Two Sample IV Estimates of Bank Account Ownership on Access to Credit Markets

		Families with Minimum Schooling	
		Reduced Form	Second Stage Estimate
Access to Credit Cards			
Have Credit Card		0.085***	0.714*
		(0.027)	(0.320)
Access to Commercial Loans			
Received a Commercial Loan in Last Year		0.024	0.651
		(0.033)	(0.627)
Number of Commercial Loans Currently Held		0.022	0.606
		(0.033)	(0.915)
First Stage F-Statistic		-	10.50
	N	11,032	11,032

Note: Author's calculations using FRS and EFS data from 1999-2003 and 2005-2006. All regressions are weighted. The standard errors for second stage estimates are corrected for the first-stage predicted using a bootstrap approach. Other covariates include a cubic in weekly earned income; the maximum Family Credit, WFTC, or WTC credit based on demographic characteristics; dichotomous variables for single adult family, employed family, nonwhite family, and homeowner; fixed effects for the five year age grouping of oldest adult; fixed effects for government region; and, a linear time trend. Reduced form estimates are regressions of the outcome on the instrument (ie the difference-in-difference estimator). All estimates are performed using OLS. Asterisks denote statistical significance: * significant at 10%; ** significant at 5%; *** significant at 1%

Table 8. Two Sample IV Estimates of Bank Account Ownership on Durable Goods

|	Families with Minimum Schooling	
	Reduced Form	Second Stage Estimate
Durable Goods		
Own Vehicle	0.004	0.102
	(0.021)	(0.576)
Purchased Vehicle in Last Year	0.009	0.250
	(0.025)	(0.678)
Number of Household Durable Goods	0.087***	1.366**
	(0.050)	(0.573)
First Stage F-Statistic	-	10.50
Observations	11,032	11,032

Note: Author's calculations using FRS and EFS data from 1999-2003 and 2005-2006. All regressions are weighted. The standard errors for second stage estimates are corrected for the first-stage predicted using a bootstrap approach. Other covariates include a cubic in weekly earned income; the maximum Family Credit, WFTC, or WTC credit based on demographic characteristics; dichotomous variables for single adult family, employed family, nonwhite family, and homeowner; fixed effects for the five year age grouping of oldest adult; fixed effects for government region; and, a linear time trend. Reduced form estimates are regressions of the outcome on the instrument (ie the difference-in-difference estimator). All estimates are performed using OLS. Asterisks denote statistical significance as follows: * significant at 10%; ** significant at 5%; *** significant at 1%

Table 9. Linear Results for Financial Asset Measures, by Types of Less educated Families

Panel A. Sample of Families without Qualifications

Approach	Estimate1500	Asset10	Asset100	LogAssets
OLS	0.067***	0.250***	0.175***	1.499***
	(0.022)	(0.039)	(0.040)	(0.279)
Reduced Form	-0.002	0.017**	0.005	0.074
	(0.014)	(0.008)	(0.007)	(0.068)
2SLS	-0.033	0.104*	0.007	0.550
	(0.110)	(0.054)	(0.062)	(0.483)
Observations	11,544	11,544	11,544	11,544
F-Statistics on the First-Stage	160.02	160.02	160.02	160.02

Panel B. Sample of Families with Minimum Schooling

| Approach	Estimate1500	Asset10	Asset100	LogAssets
OLS	0.087***	0.310***	0.220***	1.890***
	(0.027)	(0.036)	(0.037)	(0.294)
Reduced Form	-0.016	-0.003	-0.015*	-0.098
	(0.009)	(0.010)	(0.009)	(0.078)
2SLS	-0.629	-0.287	-0.629	-4.494
	(0.543)	(0.502)	(0.590)	(4.637)
Observations	41,361	41,361	41,361	41,361
F-Statistics on the First Stage	10.50	10.50	10.50	10.50

Note: Author's calculations using FRS data from 1999-2003 and 2005-2006. All regressions are weighted and standard errors clustered by number of children and time. Other covariates include a cubic in weekly earned income; the maximum Family Credit, WFTC, or WTC credit based on demographic characteristics; dichotomous variables for single adult family, employed family, nonwhite family, and homeowner; fixed effects for the five year age grouping of oldest adult; fixed effects for government region; and, a linear time trend. Asterisks denote statistical significance as follows: * significant at 10%; ** significant at 5%; *** significant at 1%

Figure 1: Reduced Form Quantile Estimates on Distribution of Financial Assets for Families
With No Qualifications
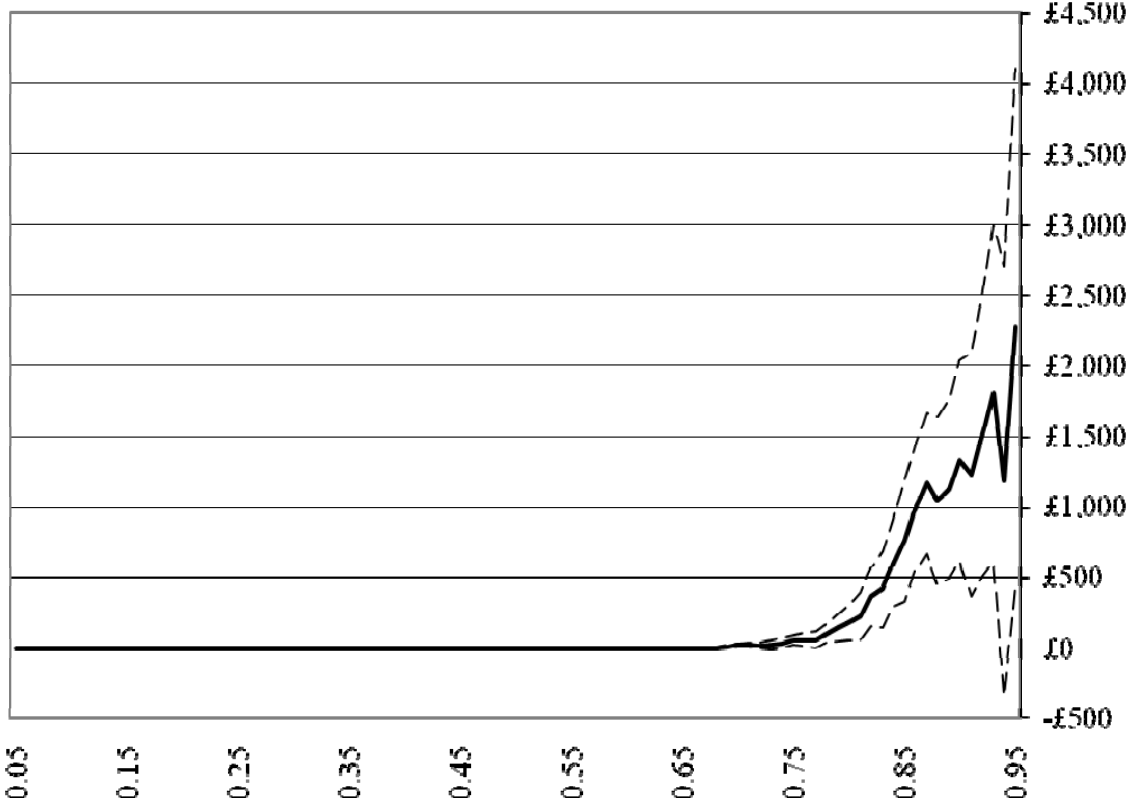
The solid line is the quantile estimate. The dashed line is the 90% confidence interval from a bootstrapped
procedure with 999 replications. To ensure convergence, these estimates do not include any covariates.

Figure 2: Reduced Form Quantile Estimates on Distribution of Financial Assets for Families With Minimum Schooling
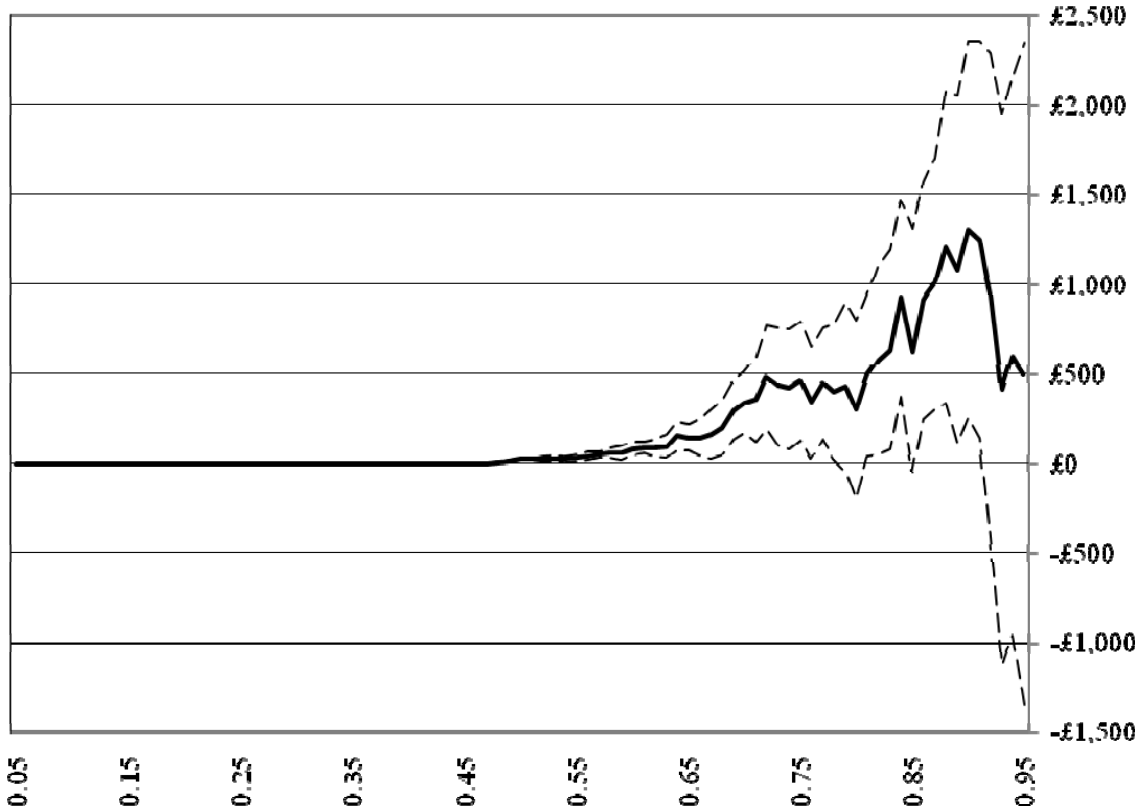
The solid line is the quantile estimate. The dashed line is the 90% confidence interval from a bootstrapped procedure with 999 replications. To ensure convergence, these estimates do not include any covariates.

Appendix I. Description of Two-Sample IV (TSIV) Methodology

Angrist and Krueger (1992, 1995) described instrumental variable (IV) techniques to estimate parameters of interest when the variables are derived from two different datasets. In this research, I use their approach to combine information on bank account ownership from the Family Resources Survey (FRS) with information on durable good ownership and access to credit markets, both available in the Expenditure and Food Survey (EFS). Both datasets contain the same exogenous regressors. Both datasets also provide data to create the instrument, the difference-in-difference estimator, by providing information if the family unit contains children eligible for the Child Benefit and the year of the survey.

To measure the effect of bank account ownership on durable good ownership, as well as access to credit markets, I run a first stage, linear equation using observations only from the FRS. I use these estimates to predict the probability of bank account ownership for families in the EFS. Then, again with a linear regression, I include these predicted values as my variable of interest in the second stage equation. To meet the exclusion restriction required for the linear IV approach, I exclude the difference-in-difference estimator from the second stage. In both equations, I weight the data with the appropriate survey weight and cluster the standard errors at the government region level.

The TSIV approach requires making an adjustment to the standard errors in the second stage equation to correct for the use of a different sample between the first and second stage equation, as well as the use of a second stage regressor that contains prediction error. To adjust the standard errors, I use a bootstrap approach with 999 replications.

Appendix II. Dependent Variables of Interest and Underlying Survey Questions

Variable	Survey Question(s)
Account Ownership	
Any Account	Do you have now, or have you had at any time in the last 12 months any accounts? This could be in your own name only, or held jointly with someone else.
Transaction Account	Which of these accounts do you have now or in the last 12 months? Current account with a bank, building society, supermarket/store or other organization; Basic Bank Accounts including introductory/ starter accounts
Savings Account	Which of these accounts do you have now or in the last 12 months? National Savings Bank (Post Office) Easy Access Savings or Ordinary Account; National Savings Bank (Post Office) Investment Account; Savings Account, Investment account/bond, any other account with a bank, building society, supermarket/store or other organization
Any Bank Account	Binary Variable that takes a value of one if the family reports owning a Current Account or Savings Account.
Credit Market Access	
Credit Card	Do [any of] you at present have a credit card, charge card, shop card or store card account on which interest can be charged or on which an annual standing charge is made?
Received a Commercial Loan	Are [any of] you at present making regular payments to any of the organizations shown on this card? Finance house, credit union, second mortgage, bank or building society for a personal loan
Number of Commercial Loans	Count of the number of commercial loans current held.
Durable Goods	
Drier, Dishwasher, Freezer, Microwave, or Washing Machine	"Does your household have any of the following in (your part of) the accommodation?"
Central Heat	"Do you have central heating, including storage heaters, in this accommodation?"
Owned Vehicle Purchased Vehicle	"At any time in the last 12 months, have (any of) you owned or privately leased any motor vehicles? Please remember to include any vehicles that you have sold." "In the last 12 months since.., have (any of) you bought any of the vehicles you have mentioned with cash, credit card or with a loan from a friend or relative?"

Financial Assets

Estimate1500   Thinking of your [names of all assets possessed by respondent] roughly what would you say is the current value held by you [and partner/spouse]? Less than £1,500; From £1,500 up to £3,000; From £3,000 up to £8,000; From £8,000 up to £20,000; Over £20,000

Assets   Estimated based on responses from account and asset questions. For those that complete the asset questionnaire, their responses are edited to correct values for gilts, stocks and shares, unit / investment trusts, SAYE, PEPs, and national savings capital/deposit bonds. For those that do not complete the asset questionnaire, the value is assigned by calculating the approximate amount of capital per individual that could have generated the amount of interest reported by the adult.