

Do Welfare Asset Limits Affect Household Saving? Evidence from Welfare Reform

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Abstract: We use data from the Panel Study of Income Dynamics to estimate the effect of new saving incentives implemented as part of the 1996 welfare reform on household saving.

Economic theory predicts that loosening asset limits will increase total savings for households with a large ex-ante probability of welfare receipt such as female-headed households with children. We follow a sample of female heads with children and find that in both absolute terms, and relative to comparison groups of male heads and female heads without children, there has been no effect of welfare policy changes on the saving of at-risk households.

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Wisconsin for helpful comments on an earlier version of this paper that circulated under the title “Welfare Reform and Household Saving.” This project was supported under grant number 00ASPEE355A from the Office of the Assistant Secretary for Planning and Evaluation in the U.S. Department of Health and Human Services. The opinions and conclusions expressed herein are solely those of the authors and should not be construed as representing the opinions or policy of any agency of the Federal Government. The data used in this article can be obtained beginning [date six months after publication] through [three years hence] from James P. Ziliak at Department of Economics, Gatton College of Business & Economics, University of Kentucky, Lexington, KY 40506–0034. E-mail: jziliak@uky.edu.

"Mr. Chairman, the welfare system in and of itself needs radical perestroika, restructuring; radical overhaul. Any asset is a violation of the welfare laws. We tell the American people we want you to save. We want you to be businessmen and women. We want you to go to work. But the welfare system in this socialist economy takes away the asset, the property, and, worst of all, takes away the incentive for getting out of poverty. It's a national disgrace."

--Jack Kemp, Secretary of Housing and Urban Development, Testimony to the Joint Economic Committee Hearing on The War on Poverty, November 19, 1991.

I. Introduction

Saving is a critical part of a household's quest for self-sufficiency. If asset markets are incomplete, savings may be the only way for a household to get a down payment for a home, educate themselves or their children, move to a different neighborhood with better schools, or smooth unforeseen contingencies such as medical emergencies or unemployment. However, it is well documented that low-income American households persistently hold little wealth (Browning and Lusardi 1996; Carney and Gale 2001; Charles and Hurst 2002; Hurst, et al. 1998; Sherraden 1991; Ziliak 2003). In 1994 over 90% of welfare recipients, over 80% of pre-retired households with children who have less than a high school education, and over 70% of pre-retired households with children who have just a high school education have accumulated less than \$500 in liquid assets. Nearly half of low-income families had zero liquid assets in either 1994 or 2001.¹

A long-standing question faced by economists is "Relative to their incomes, why do the poor save so little?" If low-income households are relatively more impatient than high-income households or if low-income households are more likely to have time inconsistent preferences, the difference in time preferences could explain the differences in accumulated wealth between poor and other households, conditional on income (Lawrance, 1991; Samwick, 1997; Laibson,

1997, Angeletos et al., 2001). Alternatively, by providing households with a consumption floor during times of temporary unemployment spells or subsidizing medical care when the household experiences a health shock, governmental welfare policies could reduce the household's income uncertainty and thus reduce their need to save for precautionary reasons irrespective of discount rates (Hubbard, et al., 1995; Gruber and Yelowitz, 1999; Neumark and Powers, 1998; Ziliak 2003). The high replacement rate of income provided by Social Security for low lifetime-income households can reduce their need to save for lifecycle reasons. Aside from decreasing precautionary or lifecycle motives to save, government welfare policies may have additional direct effects on household saving incentives. In order to receive many forms of government assistance, households are required to hold liquid and vehicle assets below the federal or state mandated limits. An influential theoretical analysis by Hubbard, Skinner and Zeldes (1995) shows that such means-tested welfare programs can explain the low savings observed in the data for households with low lifetime resources.

In this paper, we formally test whether welfare asset limits serve as a deterrent to saving for poor households as suggested by the theoretical model of Hubbard, et al. (1995) and by prominent policy makers such as Secretary Kemp. We take advantage of fundamental reform to the U.S. welfare system in the mid-1990s to answer this question and to shed new light on the saving behavior of low-income families. The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 radically changed the delivery of cash welfare to program participants. PRWORA transformed Aid to Families with Dependent Children (AFDC) from an entitlement program that provided cash benefits to those households who satisfied state and federal eligibility standards into a work-based program called Temporary Assistance to Needy Families (TANF) that is almost exclusively controlled by the states. Funding for TANF

is provided by a block grant from the federal government that is tied to the states AFDC expenditure level in 1992–1995, but states are able to exert great discretion over program rules.

In response to PRWORA, many states attempted to reverse the fortunes of the poor and to stimulate saving by loosening limits on liquid-asset and vehicle wealth holdings and by adopting time limits on benefit receipt, which are likely to affect precautionary motives to save. Testing the impact of these policy changes on saving is important both from a program evaluation perspective and because they provide additional evidence on the extent to which the theoretical predictions of Hubbard, et al. (1995) regarding asset limits are borne out in the data.

Using data from the Panel Study of Income Dynamics, including information from the 1994 and 2001 wealth supplements, we provide the first evidence on the extent to which saving responded to the state-level changes in asset limits associated with welfare reform. To identify the effects of the programmatic changes on saving we exploit both cross-state differences over time in policy choices as well as the fact that certain populations are more at risk of taking up welfare and thus more likely to respond to the policy reforms. Our key at-risk group is female-headed households with children. While other components of the cash welfare system changed simultaneously, such as work requirements and earnings disregards, most of these affect saving only indirectly via the individual's earnings. Thus, our empirical model controls for both the baseline level and change in labor-market earnings, along with other measured demographics likely to affect saving.

Across a variety of model specifications we find that the saving of female-headed households with children has not responded economically or statistically to the welfare-reform induced changes in liquid-asset limits, vehicle limits, or time limits implemented as part of PRWORA. Focusing on households most likely to respond to welfare asset limits, we estimate

the *upper bound* saving response of the 95 percent confidence interval to a \$1000 increase in the liquid asset limit to be \$40, while the average response across numerous specifications ranges from -\$80 to \$10. We also show that aside from potentially increasing the incidence of owning a vehicle, these changes in asset limits did not affect other measures of self sufficiency (i.e., owning a checking account, owning a home, or starting a business). We do, however, find that welfare policies did have a modest positive impact on vehicle ownership. Overall, we conclude that the low asset accumulation of the poor – particularly female heads with children – is not caused by welfare asset limits.

II. Background

TANF, like AFDC, is a means-tested program in which eligibility is determined by passing a sequence of gross and net-income tests as well as asset tests (along with the requirement that dependent children under age 18 be present in the household). The income tests under AFDC were based on a state's need standard, i.e. gross income was not permitted to exceed 185 percent of the state's need standard. These income tests are no longer a requirement under federal TANF rules, and most states have altered their AFDC program rules accordingly (TANF Report to Congress 1998).

Historically, states were given some latitude in setting real property and vehicle asset limits used in determining benefit eligibility under AFDC. Indeed, prior to the Omnibus Budget Reconciliation Act of 1981, there was substantial state-specific heterogeneity in asset limits, but by 1984 only five states had vehicle limits below the allowable federal maximum of \$1500, and nine states had non-housing, non-burial personal property limits below the federal maximum of \$1000. However, by 1994, all states but two had their asset limits set equal to the federal

maximum (California and Iowa had received welfare waivers prior to 1994). Under TANF, most states have broke ranks with the more restrictive AFDC rules and have altered their asset limits. Specifically, by federal fiscal year 2001, 41 states and the District of Columbia had increased the liquid-asset limit above their previous 1994 limit of \$1000 (Gallagher, et al. 1998; TANF Report to Congress 1998, 2002). For most of these states, the published goal of increasing asset limits associated with TANF was to promote saving among low income households. In Appendix Table A1, we summarize the changes in liquid-asset and vehicle-equity limits for the typical TANF recipient relative to the previous federal maximum limit. As of 2001, nine states had kept their liquid asset limit at \$1,000, 22 states increased their liquid asset limit by between \$500 and \$1,000, and the remaining 20 states increased their liquid asset limit by more than \$1,000. Ohio is the only state to remove the liquid asset requirement.² The heterogeneity in changes in the liquid asset limits across states will provide identification for our empirical work.

To our knowledge, Powers (1998) offers the only formal empirical test of asset limits on private saving.³ She studied how changes in the net wealth of 229 female heads of household in the National Longitudinal Survey of Young Women responded to the homogenization of cross-state asset limits after passage of the Omnibus Budget Reconciliation Act of 1981. Her preferred estimate is that saving between 1978 and 1983 decreased by \$0.25 for each \$1 decrease in the asset limit in 1981. In our study, we offer new and improved estimates of the impact of asset limits on household saving; new because this is the first study to exploit the most comprehensive overhaul in welfare policy and its impact on saving; improved because we use a higher-quality survey of wealth, we implement a more precise identification strategy of policy reforms, and we examine more targeted outcomes associated with the policy reforms (e.g. liquid asset accumulation, propensity to purchase vehicles, and propensity to become a homeowner). In later

sections, we offer some possible explanations for the difference between our results and the results of Powers.

III. Data Description

To examine the effects of recent welfare reform on the saving of low income households, we use data from the Panel Study of Income Dynamics (*PSID*) for the years 1994 to 2001. For the purpose of this study, a key feature of the *PSID* is the wealth supplements, particularly those collected in 1994 and 2001. The wealth supplements contain comprehensive data on net worth, defined as the sum of liquid assets (i.e. checking accounts, savings accounts, CDs, IRAs, bond and stock values), the value of business equity, real estate equity, and vehicle equity, less any outstanding debts. The *PSID* wealth data compares favorably with other, more targeted, wealth surveys such as the Survey of Consumer Finances (SCF) (Curtin, et al. 1989; Juster, et al. 1999), with the added feature that because low-income households are over-sampled we get a more detailed picture of saving among actual and potential welfare recipients.⁴

Aside from the *PSID*, which contains all pertinent demographic information, the other data needed are information on state-specific welfare policy variables. The data for these variables come from Gallagher, et al. (1998), Crouse (1999), TANF Report to Congress (1998; 2002), and various issues of the Committee on Ways and Means *Green Book*. The program data are readily linked to the *PSID* data via state identifiers. All income and wealth data—aside from that which is presented in the appendices describing the change in welfare limits – are converted into 1996 dollars using the corresponding seasonally adjusted June CPI-U.

A. Defining At Risk Welfare Population

As argued by the National Research Council (2001), evaluations of welfare reform should not be restricted simply to the population of current recipients or leavers, but rather to the at risk population at large. This coincides with the model by Hubbard, et al. (1995), whereby the populations touched by means-tested asset programs are all households who are "at risk" of ending up welfare. Hence, we wish to identify a group that has a high probability of welfare receipt. Given the historical composition of the welfare caseload, and previous research (e.g. Meyer and Rosenbaum 2001), we focus on female headed households who have children under the age of 18 and who have less than 16 years of school. Between the years 1994 and 2001, 48% of this demographic group participated in AFDC or TANF at some time. The high-risk of welfare participation among female-headed families contrasts sharply with other demographic groups in the population. The probability of welfare use any time between 1994 and 2001 for either male headed households or for female headed households with no children is essentially zero (1.9% and 0.0%, respectively). Given the near zero probabilities of welfare take up in the short term for households in these groups, asset limits should have little or no effect on their saving decisions. However, if asset limits are an important deterrent to save, female headed households with children should respond to their removal.

Formally, we define our at risk sample to include all PSID female heads where the head (i) had a child under 18 present in her household for all years between 1994 and 2001, (ii) was between the ages of 18 and 44 in 1994, (iii) had less than 16 years of schooling, (iv) remained in the sample continuously between 1994 and 2001, (v) did not change their state of residence between 1994 and 2001, (vi) did not change marital status between 1994 and 2001, and (vii) did not have missing values for wealth in either 1994 or 2001. Throughout the paper, we report

results where some of these restrictions are relaxed. Before we proceed, however, we will discuss our rationale for these restrictions.

First, we restrict our analysis to households under the age of 44 in 1994 and with less than 16 years of schooling because these are the households with the most risk of welfare take up. The AFDC/TANF take up rate for female heads with children who have more than 16 years of schooling was essentially zero. The remaining restrictions (iv – vii) impose that our sample composition is homogenous between 1994 and 2001. By following the same household heads over time we are able to track 7-year changes in the household's asset position and also avoid potential sample composition bias arising from individuals changing family status in response to the policy changes. Such composition changes may plague program evaluations using groups of households over time such as found in repeated cross-section data (Blundell and MaCurdy 1999). Next, holding state of residence fixed allows us to avert potential welfare-migration problems, which in this case could occur if welfare recipients move to states with more generous treatment of assets.⁵

In total, our panel sample used in estimation is comprised of 281 at risk households. Appendix Table A2 provides descriptive statistics for this sample and for a similarly defined at risk sample which imposed the additional restriction that the female heads had accumulated less than 13 years of schooling (column II). We will use this latter sample in some of our robustness specifications.

We begin our analysis with Table 1 by examining the distribution of liquid asset holdings for female heads with children in the PSID for the years 1989, 1994 and 2001. Here, we do not restrict female heads with children to be present in all years, and thus the cross-sectional sample sizes differ across years. Broadly, if TANF had a strong impact on the saving of households who

were at risk for welfare take up, we would expect to see the level of their liquid assets increase after 1994. This hypothesis is rejected by the data. The median liquid asset holdings for low educated female heads with children were zero both prior to and after welfare reform. Likewise, mean liquid asset holdings for this group remained constant between 1994 and 2001 (\$2,700 and \$2,800, respectively). Such similarities persist throughout the full liquid asset distribution.

In Table 2, we compare the distribution of the *change* in liquid assets prior to and after welfare reform. As in Table 1, the sample sizes vary across years because we are not requiring continuous panel participation and/or continuous marital status over 1989 to 2001. Like the distribution of the level of liquid assets shown in Table 1, the distribution of the change in liquid assets was nearly identical before and after welfare reform. Specifically, the mean, median, and 90th percentile of annual liquid asset accumulation between 1989 and 1994 were \$0, \$130, and \$240, respectively. The comparable numbers between 1994 and 2001 were \$0, \$60, and \$500.

If welfare reform was effective at stimulating saving among the at risk population, we would expect increases in both the level of liquid assets after 1996 and in the change in liquid asset accumulation between 1994 and 2001 (compared to liquid asset accumulation between 1989 and 1994). As seen in Tables 1 and 2, there is no supportive evidence of this conjecture in the simple summary statistics, which casts doubt that TANF reforms had an impact on the liquid asset accumulation of female heads with children.

IV. Examining the Effect of State Liquid Asset Limits on Asset Accumulation

In this and the ensuing sections we formalize tests of TANF asset policy reforms on asset accumulation by exploiting differences in welfare rules across U.S. states. To do this, we use the panel aspect of the PSID, and focus attention on the 281 at-risk female heads of household.

Panel A of Table 3 shows the wealth holdings in 1994 and 2001 for our sample of female headed households with children, broken down by whether they live in a state that implemented small (or zero) liquid asset limit increases between 1994 and 2001 (i.e. $\leq \$1,000$) or whether they live in a state that implemented large liquid asset limit increases between 1994 and 2001 (i.e. $> \$1,000$). Two things are of note in Panel A. First, in 1994, all but two states applied the federal AFDC liquid asset limit of \$1,000 and nearly all female headed households with children had liquid assets *less* than their state's AFDC liquid asset limit (87% in low asset limit changing and 82% in high asset limit changing states). If welfare asset limits were a binding deterrent to saving, we would expect to see a large amount of households with savings close to the state mandated asset limit. However, this is not the case. Households who have liquid wealth below the asset limits are always far below the limit. Specifically, for female heads with children in low asset limit changing states, 98% of those with 1994 liquid wealth below the 1994 asset limit had liquid wealth below \$500 (0.85/0.87) and 85% had zero liquid assets (0.74/0.87). The comparable numbers for female heads with children in high asset limit changing states were 94% and 80%, respectively. The results of Panel A of Table 3 suggest that the original 1994 liquid asset limits did not appear to be binding for female heads with children in the sense that female heads with children had liquid wealth far below the asset limits.⁶

The low asset holding of female heads with children is not an artifact of the PSID data. Similar results are found using data both from National Longitudinal Survey of Youth (NLSY) and the Survey of Income and Program Participation (SIPP).⁷ In the 1997 NLSY, the share of families with zero liquid assets is 48.9%, the share with less than \$500 in liquid assets is 66.9%, and the share with less than \$1000 in liquid assets is 74.6%.⁸ In the 1993 SIPP data, 84% of female headed households with children reported having less than \$1,000 in liquid assets, 78%

had less than \$500 in liquid assets, and 58% had zero liquid assets (author's calculation). The differences between the SIPP and PSID most likely arise from the fact that the liquid asset measure in the SIPP data includes cash held outside the banking system. However, even accounting for cash holdings, female heads with children accumulate few liquid assets.⁹

The second thing of note from panel A of Table 3 is that the change in wealth between 1994 and 2001 for female heads with children in high asset limit changing states does not look different than the change in wealth between 1994 and 2001 for females with children in low asset limit changing states. If the welfare limits were a strong deterrent to wealth accumulation, one would predict a bigger increase in wealth accumulation for households who lived in states that relaxed the liquid asset limits the most. This is not the case. Liquid assets, at the median, did not change at all between 1994 and 2001 for females with children in either the low or the high asset changing states. Median net worth for female heads with children in high asset limit changing states increased *less* between 1994 and 2001 than the median net worth increase for female heads with children in low asset limit changing states during the same time period (\$900 versus \$100, respectively; p-value of difference = 0.08).

Additionally, if the 1994 welfare asset limit of \$1,000 was a binding constraint for households, we should see the propensity for households to have liquid assets above \$1,000 increase dramatically between 1994 and 2001 (as the asset limits were relaxed). In both low asset limit changing states and high asset limit changing states, there is weak statistical evidence of an increase in the propensity for female heads with children to have liquid assets above \$1,000 between 1994 and 2001 (6 and 8 percentage points (p-values of 0.14 and 0.07), respectively). Similar evidence exists for the propensity to have liquid assets above \$500 between 1994 and 2001 (8 percentage points in both high and low asset limit changing states; p-values of 0.07 and

0.17, respectively). Each change is over 40 percent above the baseline propensity. However, there is no evidence that households who lived in high asset limit changing states increased the propensity to hold liquid assets above \$500 or \$1,000 than households living in low asset limit changing states (p-value of differences are 0.90 and 0.77, respectively). Indeed, looking down the difference-in-differences column of Panel A reveals that, at least qualitatively, several measures of saving actually fell for female heads with children in high asset limit changing states relative to the saving in low asset limit states.

Three comments are merited with respect to Table 3. First, a potential problem with our empirical strategy could occur if households shelter assets from both welfare agencies and the *PSID*. If asset sheltering is prevalent, large changes in welfare asset limits should reduce the incentives to shelter. As a result, we may observe an increase in measured assets in the data that represents nothing more than a shift from unmeasured (sheltered) savings to measured saving. This, however, seems rather unlikely for most households. An ethnographic study of low-income mothers by Edin and Lein (1997) suggests that some mothers shelter income from welfare authorities but they state clearly that none of the women own liquid assets of any note. If the results of Edin and Lein are not universal, the fact that some households shelter assets could cause us to *overstate* the effect of changing asset limits on household saving. Given that we are not finding any evidence of increased saving resulting from the change in welfare policies that occurred in the mid 1990s, the potential of hidden assets will not affect our conclusions.

Additionally, as seen in Panel A of Table 3, female headed households with children that lived in states which increased their welfare asset limits the most had higher initial levels of saving in 1994. Specifically, 56% of female heads with children living in high asset limit changing states owned a car in 1994 and 28% owned a home in 1994. The comparable numbers

for female heads with children living in states with low asset limit changes were 42% and 16%. Additionally, 35% of females with children in high asset limit changing states had positive liquid assets. In contrast, only 26% of female heads with children in low asset limit changing states had positive liquid asset. This suggests that the ex-ante saving propensities of female heads with children living in high asset limit changing states may have been higher than the saving propensities of their counterparts in low asset limit changing states. If households in high asset limit changing states have higher saving propensities, we may find a spurious correlation between a change in liquid asset limits at the state level and a change in household saving.

Using comparison groups can help us to mitigate the impact of this spurious correlation. The sample of all male headed households and female heads with no children (Panel B of Table 3) display similar saving patterns across the two types of asset limit changing states. In 1994, male heads and female heads with no children who lived in high asset limit changing states had higher net worth, higher vehicle ownership propensities, higher home ownership propensities, and larger changes in median net worth between 1994 and 2001. If households in high asset limit changing states have high saving propensities, we would expect to find a positive correlation between changing asset limits and the saving of male heads and female heads with no children. However, theoretically, these households should not respond to changes in asset limits. It should be noted that even if there was a positive spurious correlation between savings behavior and the change in asset limits, the model would be biased towards concluding that the initial asset limits were a deterrent to household saving. As we show below, our conclusion is quite the opposite.

Lastly, Table 3 illustrates that, between 1994 and 2001, there was a general increase in asset holdings for all households (including male headed households and female headed

households without children) in all states. This is similar to the increase in liquid asset holdings for female heads with children between 1994 and 2001 displayed in Tables 1, 2 and 3 Panel A. This is not surprising for two reasons. First, we are focusing on stable households over time. As households progress through their lifecycle, the permanent income hypothesis predicts that wealth should increase as household's age (up until retirement). This fact alone would cause household wealth to be increasing over time for our sample of households. Additionally, the period between 1994 and 2001 was one marked by strong economic growth. Both corporate equity markets and housing markets earned above normal returns during this time. Furthermore, earned income grew at rapid rates (as unemployment rates and duration fell sharply). Both facts decreased welfare caseloads and increased household wealth accumulation.

In the empirical work that comes next, we will control for many facets of the economic environment in the late 1990s. In many of the specifications, our identification will mainly come from comparing the savings behavior of female headed households in high versus low asset-policy changing states with the savings behavior of other groups in the same states (Meyer and Rosenbaum 2001). The reason we use these comparison groups is to account for the potential endogeneity associated with the changing of a given state's asset limit. As seen in Table 3, it appears that states with high saving citizens were more likely to increase their state welfare asset limits than other states. As noted above, this could cause a spurious correlation between the change in state asset limits and the subsequent change in liquid assets of at-risk female heads with children. Our hypothesis is that female heads with children should be the only group that respond to the change in the asset limit because they are the only group that is at high risk of welfare take up. The liquid asset accumulation of any other group should be unaffected by the changes in savings incentives that occurred as part of welfare reform. As a

result, in some of our specifications, we will look at the differential response of female heads with children (relative to some other comparison group) to a change in liquid asset limits. In the following section, we discuss in detail the many different comparison groups we used.

In summary, the results in Tables 1 to 3 are quite powerful. Tables 1 and 2 show that the asset accumulation of single women with children was essentially zero throughout most of the distribution between 1994 and 2001. Moreover, liquid asset accumulation for low educated single mothers after welfare reform (1994 – 2001) was not dramatically different than liquid asset accumulation prior to welfare reform (1989 – 1994). Additionally, Table 3 shows that increasing AFDC/TANF asset limits had no apparent effect on the propensity to accumulate liquid wealth for female heads with children. The fact that households did not respond to a relaxation of welfare asset limits should not be too surprising given that, as shown in Table 3, the welfare asset limits in 1994 did not seem to serve as a binding constraint for most households.

V. Empirical Model

Based on the previous discussions, we develop a multivariate empirical model to relate welfare policies to asset accumulation. In Appendix I, we describe the foundations of our empirical model and discuss our assumptions pertaining to individual and state fixed effects. In summary, our base model can be expressed as:

$$(1) \quad \Delta A_{ikt} = \delta + Z_{ikt}\beta + \Delta Z_{ikt}\alpha + \varphi\Delta LL_{kt} + P_{kt}\eta + \Delta P_{kt}\lambda + \varepsilon_{ikt},$$

where ΔA_{ikt} is the change in liquid assets of household i in state k between 1994 and 2001, Z_{ikt} is a vector of 1994 income and demographics for household i , ΔZ_{ikt} is the change in those income and demographic variables for household i between 1994 and 2001, ΔLL_{kt} is the change in state k 's liquid asset limit between 1994 and 2001, P_{kt} is a vector of state k controls and ΔP_{kt} is the

change in those state controls between 1994 and 2001. We estimate (1) using only our sample of at-risk households. If welfare asset limits were initially binding, the sign of φ will be positive.

When using comparison groups, we augment (1) as follows:

$$(2) \quad \Delta A_{ikt} = \delta + Z_{ikt}\beta + \Delta Z_{ikt}\alpha + \omega D_{it} + \varphi_1 \Delta LL_{kt} + \varphi_2 \Delta LL_{kt} D_{it} + P_{kt}\eta + \Delta P_{kt}\lambda + \varepsilon_{ikt},$$

where D_{it} is a dummy variable equal to 1 if the household head is at-risk for welfare participation (i.e., a female head with a child). Our estimation of (2) is executed on a sample containing both at-risk households and comparison households. Our hypothesis is that female headed households with children will respond more strongly to the policy changes than households in our comparison group. Because saving by members of the comparison group should not respond to the change in welfare policy, the coefficient φ_1 should be zero. To the extent that φ_1 is different from zero could represent a spurious correlation between changes in state asset limits and the underlying saving behavior of households in that state.

Before proceeding, an obvious question arises as to how big an effect we should expect the change in asset limits to have on the wealth accumulation of women with children between 1994 and 2001. While savings rates may respond quickly after the implementation of the welfare reform policies, the stock of savings may respond much more slowly. Female headed households with children earned, on average, \$15,000 of labor income between 1994 and 2001 (Appendix Table A2). If such households had a 2% savings rate, we would expect them to accumulate an additional \$1,500 in net worth during the 5 years between 1996 and 2001 (\$300/year). We start our hypothetical in 1996, given that is the year the asset limits were relaxed for almost all states. This implies that if their state's asset limit increased by \$1,000 (the median increase for households in the sample), households would increase their savings by the full \$1,000. Given our sample, 71% of female headed households live in states where the liquid asset limit increased

by less than \$1,500 and 96% lived in states where the liquid asset limit increased by less than \$2,000. In other words, φ (from (1)) or φ_2 (from (2)) should be close to 1 for the median female headed households with children in all environments where saving rates are greater than or equal to 2% per year. Even if household savings rates were as low as ½% per year, our estimates of φ (or φ_2) would be approximately 0.35 if households respond to changes in liquid asset limits. If we find estimates statistically close to zero, we can reject a response of household saving to changes in liquid asset limits even in an environment with extremely low household saving rates.

A. Base Results

In Table 4, we report the estimates of ω , φ_1 , and φ_2 from (2) using a robust estimator. When estimating (2), we use three different comparison groups. First, as a comparison group we include all other female heads who did not have any children in the household between 1994 and 2001 (results shown in column I of Table 4). Our second comparison group includes all male heads without children and all female heads without children (column II). Our third comparison group includes all male heads (with and without children) and all female heads without children (column III). Notice, the first comparison group is a subset of both the second and the third. Likewise, the second is a subset of the third. All of these comparison groups were restricted to have household heads between the age of 18 and 44 and to have less than 16 years of schooling. Additionally, we imposed restrictions on interstate mobility similar to those described for our at risk sample. Descriptive statistics for these comparison groups are shown in Appendix Table A3.

We focus attention on the coefficients associated with the state change in asset limits between 1994 and 2001 and these state asset limit changes interacted with whether the household head was a female with children. However, our estimation includes additional controls for the

household head's 1994 age, race, education, and level of liquid assets. Additionally, we include controls for the change in household size between 1994 and 2001, the average household labor income between 1994 and 2001, average labor income squared, the change in labor income between 1994 and 2001. Lastly, we include a vector of state specific controls including the state GDP per capita in 1994 and the change in the state unemployment rate between 1994 and 2001.¹⁰

The first thing to note about Table 4 is that, regardless of the control group used, the results are nearly identical across all the specifications.¹¹ Specifically, both φ_1 and φ_2 are statistically close to zero. The fact that φ_1 is close to zero implies that the liquid asset accumulation of the comparison groups did not respond to the changes in welfare asset limits. Theory says that these households should not respond. Moreover, the fact that φ_2 is close to zero implies that the liquid asset accumulation of female heads with children (who are at risk of welfare participation) did not respond to the changes in liquid asset limits. The estimates of the response of liquid asset accumulation to changes in liquid asset limits range from -0.0366, standard error = 0.0127 (specification II) to 0.0092, standard error = 0.1288 (specification III). In column IV of Table 4, we re-estimate column III restricting both the at-risk households and the comparison group of households to have heads who attained less than 13 years of education. The estimate of $\varphi_2 = -0.1842$ (standard error = 0.1117).

Even taking into account the standard errors, we can reject any sizable response of saving of at risk households to change in liquid asset limits. For example, specification II of Table 4 yields a 95% confidence band for a \$1,000 increase in the liquid asset limit of -\$66 to \$11 for female heads with children while specification IV yields a 95% confidence band for a \$1,000 increase in the liquid asset limit of -\$407 to \$39. Notice, that in both of these specifications, the upper bound of the 95 percent confidence interval for a \$1,000 increase in the liquid asset limit is

no more than \$40. This estimate is far less than the estimates obtained by Powers (1998) and far less than the estimates that one would predict if households were constrained by the initial asset limits and had reasonable saving rates. If AFDC/TANF asset limits were a hindrance to savings for households at risk of welfare participation, we would expect to see a large response in liquid asset accumulation to their removal (i.e., ϕ_2 would be large). Empirically, this is just not the case.¹²

In Table 4, we do not report the results of our estimation of (1). The reason for this is that using a robust estimator, the estimation did not converge. This is not surprising given that when focusing on a sample exclusively containing low educated female heads with children, the change in liquid assets between 1994 and 2001 is essentially zero for almost the entire distribution. Instead of the robust regression, we can report the results from an OLS regression. Estimating (1) via OLS (with no comparison group), we got an estimate of ϕ equal to -0.02 (with a standard error equal to 0.20). Although the estimate is imprecisely estimated, the point estimate is consistent with all the results presented in columns I – IV of Table 4.

It is possible that the results in Table 4 mask the saving response to the liquid asset change because we include households who were likely not bound by the initial asset limits in 1994. Specifically, if the asset limit in 1994 was binding, households should have accumulated less than \$1,000 in liquid assets. Column I of Table 5 re-estimates equation (2) on a sample of households who had liquid assets in 1994 less than \$1,000. In columns II and III of Table 5, we increase the sample restriction for 1994 liquid assets from \$1,000 to \$2,500 (column II) and from \$1,000 to \$5,000 (column III). We do so to account for the possibility that the near poor, i.e. those low-income families who maintain a low stock of wealth in the event that a negative income shock would force them onto welfare, may respond to the higher asset limits.

Panel A of Table 5 uses male heads without children and female heads without children as the comparison group (this comparison group corresponds to column II of Table 4). Panel B of Table 5 uses all male heads and female heads without children as the comparison group (this comparison group corresponds to column III of Table 4). The results in Table 5 are even more striking than those presented in Table 4. Particularly, when we restrict our analysis to those who could potentially be bound by the initial welfare asset limits, our estimates are much more tightly estimated. For example, using male heads without children and female heads without children as a comparison group, the 95 percent confidence band of our estimates of φ_2 is -0.0485 to -0.0001 . If we use all male heads and female heads without children as our comparison group, the 95 percent confidence band ranges from -0.1879 to 0.0273 (column III of Panel B). Of all the results in the paper, this one proves most challenging for the theory that AFDC liquid asset limits are a deterrent to household saving. By focusing on households that should be bound by the asset limit (those with initial liquid asset less than \$5,000) and focusing on those who are most likely to take up AFDC/TANF (female heads with children), we find no response at all to the change in liquid asset limits.

Collectively, the results from Tables 4 and 5 suggest that φ_2 (from (2)) or φ (from (1)) are close to zero. Even though we have small sample sizes, we can statistically reject that φ_2 is greater than 0.04 for female heads with children (using the 95 percent confidence bands from Tables 4 and 5).¹³

B. Changes in Asset Ownership

One of the major rationales for relaxing welfare liquid asset limits was to promote self-sufficiency among the population at risk for welfare take up. In this sub-section, we examine the

extent to which female heads with children enter different asset markets in response to changes in state liquid asset limits. Table 6 examines the transition into checking account ownership, vehicle ownership, home ownership, stock ownership or small business ownership between 1994 and 2001. The control variables are the same as those used in Tables 4 and 5, and the sample used for Table 6 is the same as that used in specification II of Table 4. The only additional restriction we make to the sample is that the households in the sample do not own the given asset in 1994.¹⁴ That is, we want to ask if the relaxation of the welfare asset limits spurred entry into different asset categories. For example, in column I of Table 6, we examine the transition into checking/saving account ownership for households who did not own a checking/savings account in 1994. Similar restrictions are imposed for columns II–V of Table 6.

Overall, as seen in column I to Table 6, female heads with children were more likely to start a checking or savings account than the comparison group of male headed households or female heads with no children (coefficient = 0.099; standard error = 0.090). However, the propensity to own a checking account is unrelated to the change in the state asset limit. If anything, female heads with children may have been slightly less likely to start a checking account if they lived in a state that had large increases in welfare asset limits (coefficient = –0.018 with a standard error of 0.055). The 95 percent confidence bands imply that the propensity to become a checking or savings account owner changes by –0.128 to 0.092 percentage points for every \$1,000 increase in the states welfare asset limit. Similar results hold for entering home ownership (column III), becoming a stock owner (column IV), and starting a business (column V). Female heads with children entered these markets with a lower probability than similar male or female headed households with no children. More importantly, their propensity to enter these markets was unrelated to the relaxation of welfare asset limits.

One notable exception was entering vehicle ownership (column II of Table 6). Females with kids were 3.4 percentage points *less* likely to become a car owner than male headed households without children or female headed households with no children (standard error = 0.118). However, this negative propensity diminished for females who lived in high asset limit changing states. Formally, every \$1,000 increase in asset limits increased a female headed household with children's propensity of owning a car by 14.6 percentage points (standard error = 0.069). This implies that a female head with children who lived in a state where the asset limit remained constant (in real terms) was 3.4 percentage points less likely to buy a car between 1994 and 2001. A female head with children who lived in a state where the asset limit increased by \$1,000 (in real terms) was 3.2 percentage points more likely than the comparison group to buy a car between 1994 and 2001 ($-0.034 + (-0.080) + 0.146$). A female head with children who lived in a state where the asset limit increased by \$2,000 (in real terms) was 9.8 percentage points more likely to buy a car during that same time period compared to either male heads without children or female heads without children. Of all the results in the paper, we only find a positive effect of relaxing liquid limits on the propensity to purchase a car. In terms of increasing self sufficiency during the late 1990s for female heads with children, even this effect is only modest for those living in states with large liquid asset limit increases.

C. Net Worth and the Powers Sample

In this section, we examine the effects of relaxing liquid asset limits on net worth. Given the results above, there is little reason to believe that net worth will change. We have shown that changes in liquid asset limits did not affect changes in the level of liquid assets for female heads with children nor did they affect the propensity to start a business, open a checking account,

purchase stocks, or buy a home for these households. In this sub-section, we re-estimate equation (4) by replacing the change in liquid assets between 1994 and 2001 with the change in net worth between 1994 and 2001. For consistency with Powers (1998), we restrict the sample to only female headed households with children. This eliminates our use of the comparison groups of men and female heads without children. Powers, using NLSY data, had a sample of 221 households. Our sample, using the PSID, has 274 households.

The coefficient on the liquid asset limit change for this sample with the dependent variable being the change in net worth between 1994 and 2001 was -0.49 (standard error = 0.42). If we restrict the analysis to households with initial net worth in 1994 $< \$1,000$ or initial net worth in 1994 $< \$5,000$, our estimates were, respectively, 0.01 (standard error = 0.20) and -0.20 (standard error = 0.27). The standard errors on our estimates are quite large (as are those in Powers' net wealth regressions). However, in all our specifications the point estimate was zero or largely negative. Moreover, if we run a simple regression where the dependent variable is a dummy variable indicating whether the change in net worth was positive, we find that the coefficient on a $\$1,000$ change in asset limits is 0.01 with a standard error of 0.03 . This implies that while the actual net worth change may be noisily estimated, the probability of increasing net worth increased by essentially zero in response to the relaxation of liquid asset limits.

That we are unsuccessful in replicating Powers' point estimate of 0.25 may be due to a number of reasons. First, Powers uses nominal dollars for her income and wealth calculations, which may lead to a spurious positive finding in her results as the 1979-1983 period was a time of high inflation (e.g. average annual nominal income grew at 11 percent per year for her sample, even though real incomes among female heads fell overall). Second, her sample period spanned a severe recession whereas ours is a period of expansion, and she did not include controls for

state business cycles as we do. Third, the quality of her NLSY net worth measure is likely inferior to the one we use in the PSID both because the NLSY does not have vehicle equity and it does not have as broad a measure of outstanding debts as in the PSID. Lastly, and perhaps most importantly, there is evidence that a state's choice of welfare asset limit is positively related to the saving behavior of households in those states (Table 2). In our analysis, we take this correlation seriously by using comparison groups and by restricting our focus to only those households who could have been conceivably bound by the initial policies.

D. Examining Other Policy Reforms

The PRWORA legislation introduced a plethora of additional programmatic changes to cash welfare, some of which were expected to directly affect saving, others of which were expected to affect saving indirectly via changes in labor-market earnings. Included in the latter group are work requirements for benefit receipt and benefit sanctions for failure to follow program rules. To the extent that saving and earnings are positively correlated, these work policies are expected to raise saving insofar as they raise earnings. All of our empirical work above controls directly for levels and changes in household earnings. For completeness we also experimented with including controls to capture state work requirements (not reported). The inclusion of such variables neither directly affected household saving (once controlling for earnings), nor did their inclusion alter any of the parameter estimates discussed above.

Aside from relaxing liquid asset limits and implementing work requirements, PWRORA allowed states to alter other policies regarding their delivery of cash welfare. In particular, many states altered their vehicle asset limits and imposed time limits on the receipt of welfare benefits. We briefly address each of these two policy changes.

First, prior to PRWORA, almost all states had a binding vehicle asset limit of \$1500. Currently, 22 states allow unlimited vehicle equity on at least one automobile. For those that restrict the amount of vehicle equity, the vehicle equity limits have been significantly expanded. Appendix Table A1 summarizes the changes in vehicle equity limits across states. If the vehicle limit was initially binding, we would predict that relaxing the vehicle limit would stimulate either car ownership directly or it would stimulate liquid asset accumulation (giving a greater incentive to save for a car down payment). We will test for this directly by augmenting equation (4) with two additional variables: 1) a dummy variable indicating whether the state has a binding vehicle equity limit and 2) the change in the vehicle asset limit if the state does not allow unlimited vehicle equity. We predict the coefficient on the first variable would be negative and the coefficient on the second variable would be positive. In other words, the higher the new limit, the bigger the increase in savings.

Additionally, we control directly for whether the state has imposed welfare time limits. Under AFDC recipients remained eligible for benefits so long as they met program eligibility rules. However, PRWORA fundamentally changed the provision of benefits by imposing a lifetime limit on benefit receipt. Because the limit may be lowered at state discretion, nineteen states have opted to lower the time limits below the sixty-month federal maximum. Four states (California, Maryland, New York, and Rhode Island) have opted to provide a reduced benefit to the family or children after the sixty-month time limit is reached, while Michigan has opted out of terminal time limits altogether and will provide the full benefit out of state funds after the federal limit is reached. States are permitted to exempt up to twenty percent of their caseload from the time limits for any reason. Appendix Table A7 provides a summary of state time limits. To capture the effects of time limits, we include a variable that measures (in months) the

maximum amount of time a household can receive TANF benefits. All else equal, at risk households living in states with a shorter time limit should save more.^{15, 16}

In Table 7 we show the results of three models using all males and female heads with children as our comparison group: a linear probability model of whether liquid assets increased between 1994 and 2001; a robust regression model of the dollar change in liquid assets; and a linear probability model of whether vehicle equity increased between 1994 and 2001. As in Tables 4 and 5, there is no evidence that for female heads with children liquid asset accumulation or changes in vehicle equity are related to changes in the state asset limits. Likewise, time limits do not appear to affect liquid asset accumulation for those at risk of welfare take up. However, consistent with the results in Table 6, having a vehicle asset limit does increase the propensity of liquid asset accumulation for female heads with children.¹⁷

VI. Conclusion

Are the 'poor' on the road to self-sufficiency after welfare reform? The evidence presented here suggests that to date little progress is being made with respect to improved financial balance sheets. In general, the new saving incentives available to current and prospective welfare recipients have had at best a negligible economic impact on saving, with the possible exception of fostering the acquisition of a vehicle. Perhaps it is still premature to make definitive claims on saving given the infancy of all the new programs. But, as noted throughout the paper, even with modest saving rates, the relaxation of welfare limits should have increased savings by a sizeable amount between 1996 and 2001. At the same token, nearly 85 percent of high welfare-risk households (i.e., female household heads with children) held liquid wealth below one half of the pre- welfare-reform limit. This suggests that the limits are rarely binding

for most households and thus, it is not too surprising that saving only responds minimally to the majority of the large changes in saving incentives offered through the welfare system.

The model in Hubbard, et al. (1995) clearly recognized that not only may asset limits deter saving but also the fact that income transfers provide a consumption floor and thus reduce the need for precautionary saving. Indeed, Ziliak (2003) showed both that means-tested transfers (i.e. AFDC/TANF, food stamps, and SSI) reduce liquid asset accumulation among the poor and that the poor show few signs of precautionary saving. In contradistinction, these programs did not affect asset accumulation among the near poor and non poor, yet the latter groups demonstrated precautionary saving behavior. Likewise, Neumark and Powers (1998) showed that the consumption floor provided by SSI reduces saving among the poor near retirement, while Engen and Gruber (2001) find that the floor provided by Unemployment Insurance reduces saving. While the latter three studies did not separately identify the impact of asset limits from the consumption floor (note that there are no asset limits imposed on UI receipt), their results, coupled with the lack of asset-limit effects found in this study, point to the conclusion that if welfare programs do affect household savings it may be via access to the consumption floor and not asset limits per se.

What is self evident from this study is that any theory put forth to explain the asset accumulation of low-income households needs to reconcile the large percentage of households who persistently hold zero liquid assets. However, these theories need not rely on non-optimizing households. Variants of the life cycle model where households have high intertemporal discount rates or have time inconsistent preferences have been shown through calibration and simulation to match the large fraction of households with zero liquid assets in the

data (see Angeletos et al., 2001). Regardless, the road to self-sufficiency for the poor is long indeed.

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Table 1
Distribution of Liquid Asset Holdings in 1989, 1994, and 2001 for Female Heads with Children

Percentile	A. 1989	B. 1994	C. 2001
10	0	0	0
25	0	0	0
50	0	0	0
75	100	300	800
90	1,300	4,200	4,400
Mean	1,400	2,700	2,800
Percent Zero Liquid Assets	0.71	0.69	0.53
Sample Size	216	653	424

Notes: Data are from the 1989, 1994, and 2001 Panel Study of Income Dynamics. All amounts are in 1996 dollars. Liquid assets are measured as including checking account balances, savings account balances, and stock and bond holdings. See text for full details.

For column A, sample includes all households where the head is female between the age of 18 and 44 with at least one child present in 1989. These households are all present in 1994, but not necessarily 2001. For column B, sample includes all households where the head is female between the age of 18 and 44 with at least one child present in 1994. The head was not required to be present in either 1989 or 2001. For column C, the sample includes all households where the head is female between the age of 18 and 44 with at least one child present in 2001. Lastly, all samples were restricted to include only households with education less than 16 years of schooling.

Table 2
 Distribution of the Change in Liquid Asset Holdings between 1989 - 1994 and 1994 - 2001 for Female Heads with Children

Percentile	A. Average Annual Change in Liquid Assets 1989 – 1994	B. Average Annual Change in Liquid Assets 1994 – 2001
10	-80	-110
25	0	0
50	0	0
75	0	50
90	240	500
Mean	130	60
Percent Zero Change in Liquid Assets	0.63	0.53
Sample Size	216	424

Notes: Data are from the 1989, 1994, and 2001 Panel Study of Income Dynamics. All amounts are in 1996 dollars. Liquid assets are measured as including checking account balances, savings account balances, and stock and bond holdings. See text for full details.

For column A, the sample includes all households where the head is female between the age of 18 and 44 with at least one child present in both 1989 and 1994. For column B, sample includes all households where the head is female between the age of 18 and 44 with at least one child present in both 1994 and 2001. Lastly, all samples were restricted to include only households with education less than 16 years of schooling. To compute the average annual change in liquid assets between 1989 and 1994, we took the total

change in liquid assets between 1989 and 1994 and divided by 5. To compute the average annual change in liquid assets between 1994 and 2001, we took the total change in liquid assets between 1994 and 2001 and divided by 7.

Table 3
Comparison of Saving (1994-2001) by Households Who Lived in States with Low and High Asset Limit Changes

Panel A: Female Headed Households with Children Sample (281 observations)										
	<u>States with Low Asset Limit Changes</u>				<u>States with High Asset Limit Changes</u>					
	1994	2001	Diff	p-value	1994	2001	Diff	p-value	Diff-Diff	p-value
Liquid Assets (median)	0	0	0	1.00	0	0	0	1.00	0	1.00
Net Worth (median)	0	900	900	<0.01	1,900	2,000	100	0.89	-800	0.08
Percent with Liquid Assets > \$1,000	0.13	0.19	0.06	0.14	0.18	0.26	0.08	0.07	0.02	0.77
Percent with Liquid Assets > \$500	0.15	0.23	0.08	0.07	0.23	0.31	0.08	0.17	0.00	0.90
Percent with Liquid Assets > \$0	0.26	0.41	0.15	<0.01	0.35	0.45	0.10	0.13	-0.05	0.41
% Owning a Car	0.42	0.60	0.18	<0.01	0.56	0.67	0.11	0.10	-0.07	0.33
% Owning a Home	0.16	0.26	0.10	0.03	0.28	0.32	0.04	0.56	-0.06	0.27
Panel B: Male Heads and Female Heads without Children Sample (1,137 observations)										
	<u>States with Low Asset Limit Changes</u>				<u>States with High Asset Limit Changes</u>					
	1994	2001	Diff	p-value	1994	2001	Diff	p-value	Diff-Diff	p-value
Liquid Assets (median)	1,600	1,800	200	0.72	1,300	1,800	500	0.14	300	0.57
Net Worth (median)	22,900	38,800	15,900	<0.01	27,100	44,000	16,900	<0.01	1,000	0.92
Percent with Liquid Assets > \$1,000	0.57	0.57	0.00	0.87	0.55	0.57	0.02	0.54	0.02	0.42
Percent with Liquid Assets > \$500	0.66	0.64	-0.02	0.54	0.62	0.63	0.01	0.73	0.03	0.37

Percent with Liquid Assets > \$0	0.74	0.78	0.04	0.06	0.73	0.76	0.03	0.22	-0.01	0.81
Percent Owning a Car	0.86	0.88	0.02	0.26	0.90	0.91	0.01	0.65	-0.01	0.61
Percent Owning a Home	0.57	0.68	0.11	<0.01	0.67	0.74	0.07	0.01	-0.04	0.15

Notes: Panel A focuses on female heads with children over 1994 to 2001 who are between the ages of 18 and 44 in 1994, are continuously single, have a child under age 18 present, do not change states, and have fewer than 16 years of schooling. Panel B focuses on the combined sample of male headed households and female heads without children who have fewer than 16 years of schooling and do not change states. The sample is divided into households who live in states with low asset limit changes between 1994 and 2001 (\$1,000 and less) and households who live in states with high asset limit changes between 1994 and 2001 (greater than \$1,000). Appendix Table 1 lists the states with small and large asset limit changes. The column labeled "Diff" reports the difference in economic status between 1994 and 2001 within each state asset limit change grouping. The "Diff-Diff" column reports the difference in the 1994-2001 change across the states with low asset limit change and the states with the high asset limit changes.

Table 4
Response of Liquid Assets Accumulation by Female Heads with Children to Relaxation of State Asset Limits

	I. Comparison Group: Female Heads Without Children	II. Comparison Group: Male and Female Heads Without Children	III. Comparison Group: All Male Heads and Female Heads Without Children	IV. Comparison Group: All Male Heads and Female Heads Without Children
Change in State Asset Limit (\$1,000)	-0.3 (0.2)	28.0 (10.6)	36.7 (53.8)	133.2 (46.0)
Female w/Kids * Change in State Asset Limit (\$1,000)	0.2 (0.2)	-36.6 (12.7)	9.2 (128.8)	-184.2 (111.7)
Female w/Kids Dummy	-0.3 (0.3)	33.8 (19.9)	133.7 (172.3)	190.5 (147.3)
Education Restriction of Household Head	Less than 16 years	Less than 16 years	Less than 16 years	Less than 13 years
Sample Size	345	454	1,416	974

Notes: Data is from the 1994 - 2001 Panel Study of Income Dynamics. Dependent variable is the change in liquid assets between 1994 and 2001. All specifications have as a treatment group female heads who consistently had a child under the age of 18 present in the household in all years between 1994 and 2001. The comparison group used for specification I is female heads who consistently did not have a child under 18 present in the household in all years between 1994 and 2001. The comparison group for specification II is both male heads who consistently did not have a child present in the household in all years between 1994 and 20001 and female heads

who consistently did not have a child present in the household in all years between 1994 and 2001. The comparison group for specification III is all male heads in the sample (those with and without children present in the household) and female heads who consistently did not have a child present in the household in all years between 1994 and 2001. Specifications I through III restricts all household heads (in both the treatment and the comparison groups) to have accumulated less than 16 years of schooling. In specification IV, we re-estimate specification III with the additional restriction that all household heads (in both the treatment and comparison groups) have accumulated less than 13 years of schooling. In addition, we impose that all households in our samples had a constant head and marital status of the head between 1994 and 2001. We further restrict our sample by including only household heads between the age of 18 and 44. Lastly, our samples include only those households that did not change their state of residence between 1994 and 2001. All estimation is done using robust regressions. All regressions include demographic, income and state economic controls. See Appendix A4 for the full results to the regressions reported in specifications III and IV. Bootstrapped standard errors are reported in parentheses.

Table 5

Response of Liquid Assets Accumulation by Female Heads with Children to Relaxation of State Asset Limits: Restricting Sample to Those Potentially Bound By Initial Asset Limit

	I	II	III
	1994	1994	1994
	Liquid	Liquid	Liquid
	Assets \leq	Assets \leq	Assets \leq
	\$1,000	\$2,500	\$5,000
<hr/>			
Panel A: Use of Both Male Heads and Female Heads Without Children as Comparisons			
Change in State Asset Limit (\$1,000)	1.9 (4.3)	-1.0 (5.1)	16.3 (10.4)
Female w/Kids * Change in State Asset Limit (\$1,000)	-0.9 (4.9)	3.1 (6.0)	-24.3 (12.1)
Female w/Kids Dummy	6.2 (7.5)	7.9 (9.5)	16.3 (19.0)
Sample Size	349	386	407
<hr/>			
Panel B: Use of All Male Heads and Females Heads Without Children as Comparisons			
Change in State Asset Limit (\$1,000)	9.5 (4.1)	47.9 (18.8)	79.1 (26.3)
Female w/Kids * Change in State Asset Limit (\$1,000)	-4.9 (7.8)	-61.3 (37.7)	-80.3 (53.8)
Female w/Kids Dummy	6.8 (10.5)	95.1 (52.3)	138.5 (74.4)
Sample Size	737	912	1,027

Notes: Data is from the 1994 - 2001 Panel Study of Income Dynamics. Dependent variable is the change in liquid assets between 1994 and 2001. The sample for Panel A is the same as the sample used in specification II of Table 4. The sample for Panel B is the same as the sample used in specification III of Table 4. Column I for both panels restricts all households to have less than \$1,000 of liquid assets in 1994. Column II for both panels restricts all households to have less than \$2,500 of liquid assets in 1994. Column III for both panels restricts all

households to have less than \$5,000 of liquid assets in 1994. All estimation is done using a robust regression. All regressions include demographic, income and state economic controls. Bootstrapped standard errors are reported in parentheses. See text for full details.

Table 6

Change in Asset Ownership between 1994 and 2001 as a Function of State Asset Limit Changes: Use of Men and Female Heads With No Children as a Comparison Group

	Dependent Variable (Dummy Variable = 1 if Own Asset)				
	I. Own Checking	II. Own Vehicle	III. Own Housing	IV. Own Stocks	V. Own Business
Change in State Asset Limit *1,000	0.035 (0.057)	-0.080 (0.070)	0.045 (0.051)	-0.024 (0.022)	-0.005 (0.016)
Female with Kids * Change in State Asset Limit * 1,000	-0.018 (0.055)	0.146 (0.069)	-0.049 (0.059)	0.020 (0.019)	-0.009 (0.017)
Female with Kids Dummy	0.099 (0.090)	-0.034 (0.118)	0.001 (0.096)	-0.092 (0.040)	-0.001 (0.019)
Mean of Dependent Variable	0.297	0.435	0.175	0.048	0.020
Sample Size	276	209	349	416	441

Notes: Data is from the Panel Study of Income Dynamics. Sample is the same as specification II from Table 4. However, column I further restricts the sample to only include households who did not own a checking or savings account in 1994, column II restricts the sample to include only those households who did not own a vehicle in 1994, column III restricts the sample to only include households not owning a home in 1994, column IV restricts the sample to only include households not owning stocks in 1994, and column V restricts the sample to include only households not owning a business in 1994. Dependent variable is a dummy variable equal to 1 if the households owned the portfolio component in 2001. OLS estimation is performed. All regressions include the same

demographic, income and state economic controls as included in the regressions reported in Table 4. The standard errors (in parentheses) are robust to heteroskedasticity and within-state autocorrelation.

Table 7

Response of Saving to Multiple Welfare Policy Changes: Using All Male Heads and Female Heads With No Children as a Comparison Group

Variables	Dependent Variable		
	Dummy: Positive Change in Liquid Assets (1994-2001)	Change in Liquid Assets (1994-2001)	Dummy: Positive Change in Vehicle Equity (1994-2001)
<i>Policy Variables</i>			
Change in Asset Limit (\$1,000)	0.16 (0.04)	0.01 (0.01)	0.02 (0.04)
Have a Vehicle Limit	0.15 (0.08)	-48.25 (29.70)	-0.02 (0.12)
Change in Vehicle Limit (\$1,000)	-0.01 (0.01)	0.002 (0.006)	0.02 (0.02)
Have a Time Limit	-0.05 (0.06)	-6.86 (20.56)	0.03 (0.07)
<i>Policy Variable * Females w/Children</i>			
Change in Asset Limit (\$1,000)	-0.09 (0.04)	-0.01 (0.02)	0.03 (0.05)
Have a Vehicle Limit	0.11 (0.11)	73.86 (38.70)	0.14 (0.19)
Change in Vehicle Limit(\$1,000)	0.01 (0.02)	-0.01 (0.01)	0.006 (0.03)
Have a Time Limit	0.09 (0.06)	33.67 (26.49)	0.06 (0.08)
Dummy: Female Head with Children	-0.70 (0.41)	53.49 (146.54)	-0.75 (0.99)
Sample Size	454	454	454

Notes: Data is from the Panel Study of Income Dynamics. Sample is the same as that discussed in Specification II of Table 4. Dependent variable in column I is a dummy variable equal to 1 if the households had a positive change in liquid assets between 1994 and 2001; in column II it is the dollar change in liquid assets; in column III it is a dummy variable if the family owned a

vehicle in 2001 and the change in vehicle equity was positive. All regressions include the same demographic, income and state economic controls as included in the regressions reported in Table 4. Regressions in columns I and III are estimated via OLS while column II uses a robust estimator. The standard errors in columns I and III are robust to heteroskedasticity and within-state autocorrelation, while those in column II are bootstrapped.

¹ Authors' calculation using 1994 and 2001 data from the Panel Study of Income Dynamics.

² To account for the unlimited liquid asset limits, we exclude households from Ohio from our sample. Our results were not sensitive to this restriction. In fact, we found that at-risk households in Ohio were not more likely to increase liquid asset holdings between 1994 and 2001 (compared to households in other states).

³ Gruber and Yelowitz (1999) also study the impact of Medicaid asset limits on private saving and find evidence consistent with Powers (1998). Their analysis is less direct than Powers (1998) because the impact of asset limits is identified off an interaction between states with asset limits and changes in Medicaid coverage. In related work, Neumark and Powers (1998) examine the effect of cross-state differences in SSI benefits (i.e. the consumption floor) on pre-retirement saving.

⁴ A recent study sponsored by the Social Security Administration and conducted by Mathematica Policy Research Institute (Czajka et al., 2003) concludes that the PSID and the SCF provide high quality wealth estimates. They also conclude that data from the Survey of Income and Program Participation (SIPP) dramatically underestimates household wealth holdings.

⁵ Relaxing this restriction raises the sample size by 8.9%, but only by 4.1% among female heads with children. We reestimated our models without imposing this restriction and our results were unchanged. Additionally, we found no evidence that welfare migration was important. The cross-state moves by female heads were fairly evenly distributed across high asset limit states and low assets limit states. Among the set of movers 63% went to low-asset limit changing states and 37% to high-asset limit changing states. Thus, there is not much evidence of welfare-induced migration.

⁶ Data from selected issues of Quarterly Public Assistance Statistics in the 1980s and early 1990s provide supporting evidence consistent with the hypothesis that liquid asset limits do not bind for welfare recipients. The data indicates that only about 4 percent of new AFDC applicants were denied benefits due to asset-limit violations, while only about 1.5 percent of recipients were denied benefits at recertification.

⁷ The PSID data also calibrates well with the Survey of Consumer Finances (SCF). For example, 74.2% of all female heads under the age of 65 in the 1989 SCF (regardless of educational attainment or whether children were present in the households) report having liquid assets less than \$5,000. See Haveman and Wolff (2001). The comparable number for a similarly defined sample within the 1994 PSID data was 80.8%.

⁸ We thank Annamaria Lusardi for providing us with statistics from the NLSY.

⁹ Given its panel dimension, the PSID data is much more appropriate for our analysis than the SIPP data, despite the SIPP's large sample size. The SIPP panel runs from 1996 through 2000 and does not span the change in welfare asset limits. As discussed above, we have examined the mean wealth holdings in the SIPP for different cross sectional years and they line up well with the PSID for the group of households at risk of welfare participation.

¹⁰ Appendix Table A4 shows the results of the complete regression associated with columns III and IV of Table 4. The main thing to note about Table A4 is that for our PSID sample, liquid asset accumulation varies as predicted by the permanent income hypothesis. In this specification, household liquid asset accumulation is a convex function of average family income. For households with average earned income above \$12,500, household saving between 1994 and 2001 is strictly increasing in income. Also, households who had positive income growth between 1994 and 2001, who were higher educated, and who were white saved more

between 1994 and 2001. All of these coefficients were statistically significant at the 1% level. This is consistent with much of the findings in the literature (see Hurst, Luoh and Stafford 1998).

¹¹ In the ensuing tables the standard errors for the linear probability models are corrected for heteroskedasticity and clustering by state of residence. The standard errors are bootstrapped in the robust regression models.

¹² In Appendix Table A5 we examine a variant of the specification described by (2). Instead of using the level of liquid asset accumulation as the dependent variable, we use a dummy variable equal to one if the household had positive liquid asset accumulation. Consistent with the results in Table 4, we find no evidence that households responded to changes in their state's welfare asset limits.

¹³ Tables 4 and 5 were also estimated using state fixed effects. The coefficients on the change in asset limits interacted with the dummy for female head with children did not change when state fixed effects were included. In earlier versions of the paper, we directly explored the endogeneity of the state's welfare policy changes with respect to the savings behavior of citizens within its state. We found no evidence that such endogeneity was important. See Hurst and Ziliak (2001).

¹⁴ In Table 6, we use the comparison group of male heads without children and female heads without children. In Appendix Table A6, we redo Table 6 using the comparison group of all male heads and female heads without children (the same sample as specification III of Table 4). The results are nearly identical.

¹⁵ We also control for the level and change in welfare benefits between 1994 and 2001, as summarized in Appendix Table A8.

¹⁶ In an earlier version of this paper we included an indicator variable for the presence of an Individual Development Account (IDA) program. Such a program offers state matching funds for targeted saving by low income households. The saving is earmarked for specific goals like human capital accumulation or the down payment for a home. The coefficient on the IDA dummy was economically small and statistically zero. Because of the limited availability of the IDA program relative to other statewide reforms like asset limits and time limits we drop IDAs from the current paper and leave the evaluation of this potentially important program to future research. None of the results presented in this paper are sensitive to the inclusion of IDA controls.

¹⁷ In Hurst and Ziliak (2004), we performed an additional robustness test. First, given that nearly 90 percent of AFDC/TANF recipients also receive assistance from the Food Stamp Program, we explicitly accounted for program interactions. This is particularly important given that the Food Stamp Program also has an asset limit for eligibility and this asset limit is constant across all states and did not change between 1994 and 2001 (in nominal terms). Accounting for potential program interactions did not change the conclusions of this paper.