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# The effects of welfare and tax reform: the material well-being of single mothers in the 1980s and 1990s

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## Abstract

The tax and welfare programs that provide income and in-kind benefits to single mothers have changed dramatically in recent years. These changes began as far back as the mid-1980s and culminated with the 1996 welfare law that ‘ended welfare as we knew it.’ These tax and welfare changes have sharply increased the employment of single mothers and cut welfare rolls. However, little is known about the effects of these policy changes on the material well-being of single mothers and their children. Studies of those leaving welfare have found that a substantial percentage have problems paying rent, purchasing enough food, and paying utility bills. Other studies found a decline in income among the worst-off single mothers after 1994 or 1995. The goal of this paper is to examine the material well-being of single mothers and their families before and after recent welfare and tax reforms. Using data from two nationally representative household surveys we examine the consumption patterns of single mothers and their families from 1984–2000. We find that the material conditions of single mothers did not decline in recent years, either in absolute terms or relative to single childless women or married mothers. This pattern holds for the average single mother as well as for low-educated single mothers at both the 15th and 25th percentiles of the consumption distribution. In most cases, our evidence suggests that the material conditions of single mothers have improved slightly.

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## 1. Introduction

Recently, state and federal policy makers dramatically changed tax and transfer programs for single mothers. The changes encouraged work and discouraged welfare receipt. Welfare and tax reform began in the mid-1980s and had many elements, culminating with the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) that ‘ended welfare as we knew it.’ By 1999, welfare caseloads were about half their peak levels of March of 1994, and the increases in employment and earnings of single mothers sharply accelerated after 1993.

Two recent studies found that total family income (including transfers) fell shortly after 1994 for single mothers near the bottom of the income distribution. Moreover, studies of those leaving welfare have found that a substantial percentage of leavers have problems providing enough food, paying utility bills, and paying rent. The goal of this paper is to examine the material conditions of single mothers and their families before and soon after welfare and tax reform in order to assess the net effect of recent policy changes on the well-being of these families. Using data from the Consumer Expenditure Survey and the Panel Study of Income Dynamics we examine the consumption patterns of single mothers and their families from 1984–2000. We examine both absolute changes in the consumption of single mothers and changes relative to those for single women without children and married mothers.

We focus on consumption for two main reasons. First, economic theory suggests that consumption is usually a better measure of well-being than income. Consumption captures long-term income prospects, while current income is likely to be disproportionately influenced by transitory fluctuations. Consumption is a more direct measure of well-being and includes the effect of in-kind transfers that income misses. Second, income tends to be under-reported. A substantial ethnographic literature indicates extensive under-reporting of earnings and private transfers by welfare recipients. Other research indicates that there has been substantial under-reporting of government transfers and that this under-reporting has increased in recent years in key survey datasets. These observations are supported by direct comparisons from survey data that show consumption sharply exceeding income for those near the bottom. Of particular importance for evaluating welfare reform is the likelihood that under-reporting is different for single mothers than other groups, partly due to program incentives, and that this difference has changed over time.

By looking at single mothers we concentrate on the at-risk population that is most likely to be affected by the recent reforms. Single mother families account for about 90 percent of the cash assistance caseload, they receive about 60 percent of the credit dollars distributed through the EITC, and they are also the primary beneficiaries of many of the in-kind transfer programs. A large percentage of all single mothers benefit directly from tax and welfare programs. For example, in 1996 more than one-third of all single mother families received means-tested cash transfers. In this paper, we concentrate on two groups that are likely to be affected by recent reforms, all single mothers and low-educated single mothers. We choose these groups because current welfare recipients or those leaving the

rolls are not the only women affected by welfare reform.<sup>1</sup> The increased state discretion under waivers and PRWORA combined with political changes has led to reforms which discourage welfare receipt and often divert potential welfare recipients from traditional programs. Under these conditions, it is likely that the characteristics of those on or leaving welfare will change sharply over time.

In the following section we highlight some of the key features of the reforms in tax and welfare policies that have taken place over the past decade. In Section 3, we provide a brief overview of the vast literature on welfare reform. In Section 4, we discuss why consumption is a better proxy for material well-being than income, while in Section 5 we discuss how recent reforms might be expected to affect consumption. We then describe our sources of consumption data in Section 6. In Section 7, we outline our methodology and present the descriptive results for both single mother households and the comparison groups. Section 8 discusses our main results from regressions that look at the absolute and relative changes in consumption for the average household and for those near the bottom of the consumption distribution, controlling for household characteristics. The sensitivity of these results is further investigated and income regressions are reported in Section 9. We offer conclusions in Section 10.

## **2. Policies, caseloads, and employment**

The 1980s and 1990s was a period of experimentation and rapid change in the tax and transfer programs for single mothers. PRWORA was only a part of the changes and occurred during the period we examine. Early in this period, states reduced real welfare benefits and increased the share of benefits kept by those working. Substantial change took place under welfare waivers—applications to the Secretary of Health and Human Services to change certain program requirements for AFDC (Aid to Families with Dependent Children). Between January 1993 and August 1996, 43 states had waivers approved. The most common waivers imposed work requirements and time limits, loosened asset restrictions and restrictions on two-parent families, or applied family benefit caps.

The passage of PRWORA in 1996 accelerated this gradual overhaul of the welfare system. AFDC was replaced by state administered Temporary Assistance for Needy Families (TANF) block grants. Also added were mandated work requirements, time limits, and additional stipulations for minor parents that required them to live with an adult and work toward a high school degree. Besides these new requirements, PRWORA left the design of welfare programs up to the discretion of each state. The states have responded with a range of programs that differ widely in their eligibility requirements, time limits, and earnings disregards, as well as in additional provisions such as training and childcare.

At the same time that policy makers were remaking welfare policy, the nature of other tax and transfer programs that affect single mothers also changed. The Earned Income Tax Credit (EITC) grew nearly 19-fold over 15 years, from \$1.6 billion in 1984 to \$30 billion

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<sup>1</sup> See National Research Council (1999) and Jencks and Swingle (2000) for related arguments.

in 1999.<sup>2</sup> About two-thirds of the credit dollars go to single parents.<sup>3</sup> The generosity of the EITC increased following the Tax Reform Act of 1986 and also expanded every year from 1991 to 1996. These increases resulted in a substantial rise in the after-tax income of working single mothers. After-tax income for single mothers with annual earnings of \$7500 and at least two children, for example, increased by more than \$1500 from 1993 to 1996.<sup>4</sup> Although the parameters of the credit did not change in real terms after 1996, it is likely that there was a lagged effect as women became more aware of the changes over the next year or two.<sup>5</sup>

Medicaid also significantly expanded during this time period. The expansions allowed many single mothers and/or their children to continue to receive medical coverage when they left welfare or their earnings increased. Medicaid caseloads for families with dependent children increased by 60 percent between 1984 and 1994 while expenditures increased by a factor of three for these families.

Supplemental Security Income (SSI), a means-tested federal transfer program targeted towards the aged, blind, and disabled, nearly doubled its real dollar expenditures from \$16.7 billion in 1984 to \$30.8 billion in 1998.<sup>6</sup> However, because eligibility for SSI generally depends on the disability of a family member, a much smaller fraction of single mothers receive SSI than other transfer programs such as AFDC/TANF or Medicaid.

In addition to these changes, after 1984 there were large increases in federal and state child care spending; training programs were expanded and reoriented; and state income tax provisions affecting the poor were changed. These policies are described in detail in [Meyer and Rosenbaum \(2000, 2001\)](#).

The preceding discussion indicates that many policy changes potentially affecting the well-being of single mothers began well before the passage of PRWORA in 1996. Furthermore, the changes were not limited to cash transfer programs, as in-kind transfers and taxes also changed dramatically. Given these extensive policy changes that are difficult to characterize and date, we examine changes in employment and welfare caseloads to assess when we might expect the conditions of single mothers to change. As reported in [Meyer and Rosenbaum \(2000, 2001\)](#), [Meyer \(2002\)](#) and elsewhere, the employment rate of single mothers increased sharply after 1993, in absolute terms and relative to single women without children or married mothers. Already by 1996 the employment rate of single mothers was six percentage points higher than it was in 1993. The increase in employment seems to roughly coincide with a sharp decline in welfare receipt. [Fig. 1](#) shows the AFDC/TANF caseload for 1963–2000. The number of families

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<sup>2</sup> See U.S. House of Representatives, Committee on Ways and Means (2000), Table 13-14. The 1999 figure is projected. These figures are in nominal terms; in real terms, EITC outlays grew by a factor of 9.7 during this time period. For a description and history of the EITC, see [Liebman \(1998\)](#).

<sup>3</sup> Using figures from U.S. House of Representatives, Committee on Ways and Means (1996), Table 14-13, and U.S. Department of the Treasury, Internal Revenue Service (1996), Table 2.5, we calculate that approximately 68 percent of total EITC dollars went to single parents in 1996.

<sup>4</sup> See [Meyer and Rosenbaum \(2000\)](#).

<sup>5</sup> Both [Eissa and Liebman \(1996\)](#) and [Meyer and Rosenbaum \(2001\)](#) find evidence of a lagged effect of EITC changes.

<sup>6</sup> See U.S. House of Representatives, Committee on Ways and Means (2000). For a description of the SSI program, see [Yelowitz \(1998\)](#) or [Neumark and Powers \(2000\)](#).

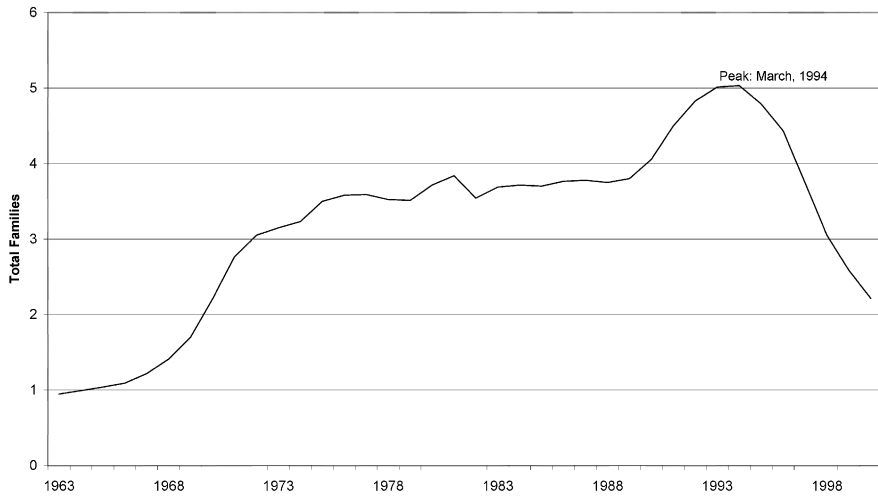


Fig. 1. Average monthly AFDC/TANF caseloads (1963–2000) (in millions).

on welfare rose steeply to a peak in March 1994 and then fell sharply afterwards. Both the sharp increase in employment and rapid dropout in welfare caseloads preceded the passage of PRWORA by over two years.

The magnitude of the contribution of various policies and the macroeconomy to these changes is a subject on which there is a small literature. Meyer and Rosenbaum (2000, 2001) find that the EITC is responsible for a large share of employment increases through 1996, with a smaller, but still important role for welfare benefit cuts and changes in welfare programs under waivers.<sup>7</sup> They also found that improved macroeconomic conditions increased the employment of single mothers, but had a very similar effect on single women without children. The welfare caseload literature (Levine and Whitmore, 1998; Blank, 2001; Ziliak et al., 2000) has reached conflicting results about the relative importance of waivers and macroeconomic conditions. For the purposes of this paper, we will be agnostic about the relative importance of different policies in changing the employment and welfare receipt of single mothers in recent years, as we are estimating the aggregate effect of many reforms independent of macroeconomic effects rather than identifying the specific effect of any single reform.

### 3. Previous research on welfare reform and material well-being

Not surprisingly, the reforms discussed in the previous section have motivated an extensive amount of research on the effects of these policy changes on the well-being of

<sup>7</sup> Also see Ellwood (2000), who attributes recent employment increases to welfare reform, the EITC, and improvements in macroeconomic conditions. Dickert et al. (1995) and Keane (1995) simulated recent tax changes (before they were implemented) and predicted employment changes somewhat larger than those that occurred.

single mothers.<sup>8</sup> More than a dozen welfare leaver studies examine how former welfare recipients have fared since leaving the rolls.<sup>9</sup> These studies differ noticeably in the types of families followed, the frequency and duration of follow-ups, and the nature of questions asked. Nevertheless, some broad generalizations can be drawn. In general, these studies suggest that the family incomes of leavers tend to be lower or similar to their combined earnings and benefits before exit, but poor family income data often limit the conclusions that can be drawn. There is some evidence that former welfare recipients are more likely to experience hardships such as difficulty providing food, paying utilities, or paying rent after exiting welfare, but questions on hardships were asked in only a few of the leaver studies.

Although these studies provide an interesting description of families leaving welfare in certain states, they fail to consider how welfare leavers are doing relative to the counterfactual—if they had remained on the rolls. Furthermore, the lack of a control group and historical information makes it extremely difficult to draw causal inferences about the effects of reforms. Lastly, leaver studies only evaluate the effects of welfare reform on those who exit, ignoring the likely effects that recent reforms have in discouraging families from applying for assistance and the potential effects on those that remain participants.

Randomized social experiments are another common methodology used to evaluate welfare policy. While experimental designs yield more persuasive evidence than other approaches, these studies also have drawbacks. Probably the greatest difficulty with experimental evidence is that randomization occurs when individuals apply for benefits. Thus, the experimental studies fail to capture the effects of reforms on non-applicants. Second, it is difficult to make inferences about the overall effects of welfare reform from evaluations of a subset of program elements for the populations in a few localities. Third, these experiments took place at a time when perceptions about welfare and the culture within welfare offices were changing dramatically. Given this reform-oriented environment researchers are likely to have a difficult time insulating control group participants from these changes.

Other research has identified the effects of different reforms by comparing outcomes across states. Although it is clear that the nature of reforms differed across states, the precise nature of these differences is difficult to characterize for the purposes of evaluation. The difficulty of characterizing the differences in reforms across states is a major obstacle for these cross-state studies.<sup>10</sup> Furthermore, the complex nature of many state reforms makes it difficult to evaluate specific aspects of reforms and to extrapolate the results to other localities.

Due to the limitations of state-level studies, other researchers have turned to nationally representative data. *Bavier (1999)* and *Primus et al. (1999)* both analyze how the income of single mother headed families has changed in the midst of welfare reform using repeated cross-sectional data from the Current Population Survey (CPS). Both studies

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<sup>8</sup> See National Research Council (1999, 2001), Grogger et al. (2002) and Blank (2002) for excellent surveys of these studies.

<sup>9</sup> See General Accounting Office (1999), National Research Council (1999), Brauner and Loprest (1999), Isaacs and Lyon (2000) and Acs et al. (2001).

<sup>10</sup> See *Ellwood (2000)* for a version of this argument.

show that although family incomes for the poorest segments of single mothers rose from 1993 to 1995, incomes for these families fell from 1995 to 1997. Because losses in transfer income outstripped earnings gains in these years, the results suggest that the recent reforms such as PRWORA made this population worse off. More recent data on income paints a more positive picture of the material conditions of single mothers after welfare reform. [Bavier \(2002\)](#) reports that even the poorest showed income gains over the last several years after a post-1995 dip. In 1997 and 1998 income in the bottom quintile was below that in 1994 and 1995. However, by 2000 income in the bottom quintile was well above any prior year. These papers would benefit from examining comparison groups in order to disentangle the effects of changes in welfare policies from changes in the macroeconomic environment.

A number of recent studies examine income (usually from the CPS), often employ comparison groups, and use the timing of waivers or TANF implementation to assess their effects. These studies ([Moffitt, 1999](#); [Grogger, 2003](#); [Schoeni and Blank, 2000](#); [Bitler et al., 2001](#)) tend to find increases in income associated with waivers or TANF implementation, though there are many findings of zero or insignificant effects. In interpreting these studies, one should recognize that because TANF implementation dates only differed by a few months across states, the results for TANF are difficult to separate from time trends.

There is little work on measures of material well-being besides income. [Jencks and Winship \(2002\)](#) examine food insecurity after welfare reform, finding little change or reduced food insecurity. [Bavier \(2000\)](#), [Falk \(2000\)](#) and [Haskins \(2000\)](#) report some early aggregate consumption data that suggests slight increases in consumption. Two other recent studies examine the effect of AFDC on consumption. [Gruber \(2000\)](#) finds that AFDC plays a substantial role in smoothing consumption of mothers following a divorce, while [Page and Stevens \(2001\)](#) find little effect of the level of benefits on the consumption of single mothers. Since these papers do not reach the same conclusion, it is not clear what the implications for welfare reform are. Furthermore, while Gruber's results suggest that a reform that solely cut benefits would decrease consumption, because welfare and tax reform involved increased transfers to the working poor, the results may be difficult to apply to recent policy changes.

#### 4. Consumption and well-being

To measure the material well-being of single mothers, we focus on consumption data rather than income data, for two primary reasons. First, consumption is conceptually a better measure of well-being than income. Second, income is sharply under-reported and systematically understates the financial resources available to a household. Furthermore, the reporting problems with income appear particularly problematic for analyses of trends over time in the well-being of single mothers because the biases have changed, and they are likely correlated with welfare and tax reform.

The conceptual and reporting reasons to prefer consumption are discussed in detail in our companion paper ([Meyer and Sullivan, 2003](#)) so only a brief summary is provided here. However, it is useful to discuss in more detail why biases may have changed over time since that issue is particularly applicable to the patterns we examine.



Economic theory suggests that current expenditures serve as a better proxy for the material well-being of the household than current income.<sup>11</sup> Current income can be a misleading indicator of the economic status of the household because earnings are susceptible to temporary fluctuations due to transitory events such as layoffs or changes in family status. These temporary changes cause current income to vary more than consumption, but they do not necessarily reflect changes in well-being.

Income data also fail to capture in-kind transfers that are reflected in expenditure data. These in-kind transfers are a particularly important source of support for households with low cash incomes. Recent changes in Medicaid are likely to substantially affect family well-being without affecting measured family income. On the other hand, non-medical consumption measures would reflect Medicaid changes. Whether income changes understate or overstate well-being changes as a result of reforms in Medicaid policy is unclear. If families are less likely to receive Medicaid when they leave AFDC/TANF now than in the past, then changes in income would overstate changes in well-being. On the other hand, for families that became eligible for health benefits as a result of recent Medicaid expansions, changes in income would understate changes in well-being.

Income also fails to capture the insurance value of means-tested transfers. If welfare is a valuable source of insurance for poor households, then the value of this insurance falls as welfare reform introduces more rigid eligibility rules such as time limits and work requirements. This creates an incentive for these households to find alternative sources of insurance such as increased savings. Again, the loss of insurance due to a weaker safety net would not reduce income, but could reduce consumption as families save for a rainy day.<sup>12</sup>

As numerous studies have documented, national surveys under-report family income. For low income households, this under-reporting problem is exacerbated by the prevalence of off-the-books income and transfers. Ethnographic research has shown that almost all single mothers supplement their income with informal employment and money or goods from family and friends. These sources of support from informal sources and the underground economy generally are not captured in survey data on income (Edin and Lein, 1997).

The problem of understated income is exacerbated by changes in the extent of under-reporting that are likely related to recent policy changes. For example, with diminished dependence on cash transfers with their high implicit tax rates, there is a reduced incentive to hide income. AFDC caseloads fell dramatically after March of 1994, reducing the incentive for single mothers to hide income. Consequently, reported income for these households might rise even if the true value of income does not change.<sup>13</sup> Incentives to under-report income were also changed by recent EITC expansions that increased the incentive to substitute on-the-books earnings (which would be partially matched by credit dollars) for off-the-books income. Certainly, consumption is measured with error as well.

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<sup>11</sup> For further discussion, see Cutler and Katz (1991), Slesnick (1993), or Poterba (1991).

<sup>12</sup> Consumption also captures the insurance value of credit markets, and better accommodates illegal activity and price changes.

<sup>13</sup> Mayer and Jencks (1993) provide evidence for an earlier period that the growth in both means-tested transfers and illegitimate income resulted in an increase in the under-reporting of income.



However, households do not have the same incentives to under-report consumption, so there is little reason to suspect that the rate at which households mis-report consumption has changed over time.

In addition to the under-reporting of earnings and private transfers, household surveys also fail to capture the full value of government transfers, particularly for single mothers. Under-reporting of means-tested cash transfers has increased in recent years (Bavier, 1999; Primus et al., 1999), which would imply that recent measured changes in income are biased downward. Comparisons of CPS numbers to administrative data suggest that by 1993 unreported means-tested cash transfers were equal to over 11 percent of total reported income for single mothers in the bottom income quintile. Overall, unreported cash transfers grew by 68 percent from 1993 to 1997. Assuming households at the bottom under-report these transfers at the same rate as all welfare recipients, this rise in under-reporting alone would bias downward measured changes over this period in income for single mothers in the bottom income quintile by nearly eight percentage points.<sup>14</sup>

In Meyer and Sullivan (2003) we present strong evidence that income is under-reported and measured with substantial error, especially for those with few resources such as low-educated single mothers. Expenditures for those near the bottom greatly exceed reported income. This result is evident in the percentiles of the expenditure and income distributions, and in comparisons of average expenditures and income among low-educated single mothers. These differences between expenditures and income cannot be explained with evidence of borrowing or drawing down wealth, as these families rarely have substantial assets or debts. Other evidence suggests that earnings reports are understated, as the implied hourly wage rate obtained by dividing earnings by hours is often implausibly low.

Finally, we compare other measures of material hardship or adverse family outcomes for those with very low consumption or income. These problems are more severe for those with low consumption than for those with low income, indicating that consumption does a better job of capturing well-being for disadvantaged families. Another study that examined the relationship between income and well-being argued that income is only weakly correlated with material hardship (Mayer and Jencks, 1989). These arguments provide a strong case for exploiting household expenditure data in an analysis of well-being. Although household expenditures do ignore many important components of well-being such as physical and mental health, neighborhood and school quality, and family functioning, expenditures are arguably the best aggregate measure of the material well-being of a household.

## 5. How policies affect consumption

There are several avenues through which recent changes in welfare and tax policy could affect the consumption of single mothers. First, the most direct effect is through income changes. Both transfers and earnings have changed in recent years. AFDC/TANF receipt

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<sup>14</sup> This figure is based on the authors' calculations using CPS and administrative data reported in Bavier (1999).

and Food Stamp receipt have fallen, while through 1996 there were large increases in federal EITC payments. Welfare and tax reform have been associated with higher probabilities of single mothers working, more total hours worked, and higher earnings (Meyer and Rosenbaum, 2000, 2001; Schoeni and Blank, 2000). While cuts in public transfers might be compensated to some extent by increases in transfers from family and friends, the magnitude of this response has been found to be small in the past (Cox and Raines, 1985; Cox and Jakobson, 1995; Schoeni, 1996). The net effect of these policies on consumption depends on how total income responds to the changes in earnings and government transfers. We would expect consumption to move in the same direction as changes in total income, though not necessarily in the same direction as reported income if there is substantial under-reporting.

Second, a shift from transfer receipt to earnings might change the composition of spending as child care and work expenses rise. However, these effects might be small given recent increases in public child care expenditures as well as the low level of child care spending among the working poor due to reliance on informal arrangements, family and friends (Blau, 2000). However, one reason for our examination of food consumption and entertainment expenses (and alternative consumption measures that exclude all categories that may contain work expenses as in Section 9) is that these expenditures should fall if a larger share of a fixed pool of family resources are devoted to child care. Third, since the welfare safety net has provided a partial alternative to self-insurance, the reduction of the safety net might lead to reduced consumption and increased savings in order to self-insure.

Fourth, changes in particular programs could also affect the composition of spending. If food stamps are not perfectly fungible, declines in Food Stamp receipt might lead to a fall in food consumption. Similarly, if there were cut backs in subsidized housing, well-being would likely fall, as our measure of housing consumption (the rental equivalent; see the data appendix to Meyer and Sullivan, 2001) would likely fall as would other consumption. However, the total number of assisted renters and homeowners, as well as total real dollar outlays in housing subsidies have not changed much in recent years. Fifth, the loosening of asset restrictions for welfare receipt and fewer women subject to the remaining restrictions due to declining welfare rolls has increased somewhat the incentive for single mothers to save at the expense of current consumption. Finally, one could argue that decreased leisure due to greater time devoted to the labor market means that market consumption has been substituted for home time inputs into consumption, resulting in changes in consumption that do not imply changes in well-being. Due to these many different avenues by which recent policy changes may affect consumption, the overall theoretical effect on consumption for single mothers is ambiguous. This discussion also highlights the importance of looking at components of consumption in addition to total consumption, as some policy changes may affect these components differently.

## **6. Data**

We draw on two different sources for expenditure data: the Consumer Expenditure Survey (CE) and the Panel Study of Income Dynamics (PSID). We use both datasets to

provide two independent sources of evidence on the consumption of single mothers and because each dataset has its strengths and weaknesses.

The CE is a nationally representative survey conducted by the Bureau of Labor Statistics (BLS) that is designed to provide a continuous summary of the spending habits of U.S. households. Among other uses, these data are the basis for updating the expenditure weights used in the calculation of the Consumer Price Index. The BLS estimates that the survey accounts for up to 95 percent of all household expenditures, making it the most comprehensive survey on household consumption. There are two separate components of the CE: the Interview and Diary surveys. The data for our analyses come from the Interview survey. This rotating panel survey interviews approximately 5000 households quarterly and follows each household for up to five consecutive quarters.<sup>15</sup> The Interview survey also reports detailed information on demographic characteristics as well as employment and income information for each member of the household.

The unit of observation in the CE is the consumer unit, which generally refers to all related members in a household. Unrelated individuals that pool their incomes to make joint expenditure decisions are also classified as a single consumer unit (for ease of exposition ‘consumer unit’ and ‘household’ will be used interchangeably). Expenditure measures are provided at the household level only.<sup>16</sup>

From total expenditures for each household, we construct a measure of total current consumption by excluding spending that can be construed as an investment. Thus, our main outcome variable, total consumption, includes all household expenditures less spending on education and health care, cash contributions, and outlays for retirement including pensions and social security. In addition to total consumption, we report spending on a few of the components of this total. Food consumption includes spending on food at home, spending on food away from home, and food stamps received, but it excludes food received as pay.<sup>17</sup> Work expenses include spending on domestic services and child care.<sup>18</sup> Discretionary spending reflects household outlays for alcoholic beverages, tobacco, entertainment, reading materials, and apparel. To address concerns about

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<sup>15</sup> Many households fail to complete all four interviews. For a discussion of attrition in the CE and its effects on our analyses, see the data appendix to Meyer and Sullivan (2001).

<sup>16</sup> Because the CE does not provide data on consumption at the subfamily level our sample will not include single mothers who reside in a household with their parents. To address concerns about how this might bias our results, we looked at subfamily patterns from the CPS. The ratio of single mother subfamilies to all single mother families has remained remarkably steady at about 0.2 throughout the period from the late 1980s through the late 1990s. The fact that the prevalence of single mother subfamilies has changed very little over time suggests the following analysis is less vulnerable to bias that may result from failing to observe consumption at the subfamily level.

<sup>17</sup> Garner et al. (1998) and Browning et al. (2002) show that a wording change in the CE interview survey in 1988 had an important effect on reported food at home expenditures. To correct for the effect of this change in the questionnaire, we multiply our measure of spending on food at home in the CE prior to 1988 by an adjustment factor which is equal to the ratio of average spending on food at home from 1988 through 1990 and average spending on food at home from 1984 through 1987. The adjustment factors for single mothers, single women without children, and married mothers are 1.18, 1.30, and 1.12, respectively.

<sup>18</sup> This measure does not include work-related spending on transportation or clothing. We do not include transportation or clothing expenditures because we do not observe whether these expenditures are related to work. We consider a broader measure of work expenses that includes all transportation and apparel spending in Section 9.

the lumpy nature of expenditures on durables, we convert reported housing and vehicle spending to service flow equivalents. The data appendix to Meyer and Sullivan (2001) includes a detailed description of the CE data.

The PSID is an annual longitudinal survey that has followed a nationally representative random sample of families, their offspring, and coresidents since 1968. The survey provides detailed economic and demographic information on both the household and individual level for a sample of about 7000 households each year. Unlike the CE, the PSID follows households that relocate.

Although the PSID does not survey households about all expenditures, it does collect data on household food expenditures. We construct a measure of total food consumption as the sum of expenditures on food at home, expenditures on food away from home, and dollars of food stamps received. To make this measure consistent with CE figures, we report these expenditures in quarterly terms. A more detailed description of PSID data is also provided in Meyer and Sullivan (2001).

From the CE we construct a sample of household-quarter observations, and from the PSID our unit of observation is a household-year. To analyze consumption behavior throughout this period of welfare reform we draw on data from 1984 through 2000.<sup>19</sup> For both surveys, we restrict attention to households whose head is between the ages of 18 and 54 and whose family type falls into one of the following categories: single mothers with at least one child less than 18 years old, single women without children, and married mothers with at least one child under 18. In addition, we exclude any observation with non-positive reported quarterly food consumption.

## 7. Methodology and descriptive results

As discussed in Section 3, a common problem with many of the recent evaluations of welfare reform, particularly the leaver studies, is that they only consider the effects of policy changes on former recipients. Given that diversion of potential applicants was an important component of recent reforms,<sup>20</sup> this approach ignores the impact of policy changes on nonparticipants. It is likely that the characteristics of the population of welfare recipients have also changed as caseloads sharply increased and then fell steeply. For these reasons, some researchers have concluded that looking at all single mothers, rather than just welfare recipients, is the only way to evaluate the overall effects of welfare reform.<sup>21</sup> By looking at single mothers (or low-educated single mothers) we focus on the at-risk population that is most likely to be affected by the recent reforms.

To simplify the presentation of our results and improve the precision of our estimates, we group the years from 1984 through 2000 into four distinct time periods. The first period, 1984 to 1990, ended before implementation of most of the significant policy

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<sup>19</sup> From the CE we include data from the first quarter of the 1984 wave through the first quarter of the 2001 wave. From the PSID we include data from the 1984 wave through the 1999 wave.

<sup>20</sup> Diversion has taken many forms ranging from placing potential applicants in more appropriate programs to discouraging welfare receipt through onerous requirements.

<sup>21</sup> For example, see Jencks and Swingle (2000).

changes discussed in Section 2. The period from 1991 to 1993 coincided with the start of the major expansions in the EITC. Welfare waivers were also starting to appear in several states during this time. In the following period, 1994 to 1995, waivers became noticeably more prevalent, the EITC continued to expand, caseloads started a steep decline, and trends in employment for single mothers changed noticeably. In the final period from 1996 to 2000, waivers continued, PRWORA was passed and implemented, and the EITC expansions were completed.<sup>22</sup> Although this approach will not enable us to identify the separate effects of specific reforms, it should provide evidence on how the series of dramatic changes in welfare and tax policy has affected the well-being of single mothers.

A major obstacle to any non-experimental analysis of the impact of policy changes is that it is difficult to disentangle the effects of these changes from the effects of changes in macroeconomic conditions. This problem may be particularly important for the case of welfare reform given the prolonged economic expansion that took place in the 1990s. While we also estimate specifications controlling for unemployment rates, our main approach is to compare consumption changes for single mothers to those for other groups. By selecting appropriate comparison groups, we may be able to account for these macroeconomic changes. We focus on the relative effects of welfare reform on all single mothers using two separate comparison groups: single women without children and married mothers.

There are several reasons why single childless women and married mothers are appropriate comparison groups for this analysis. All three groups of women are likely to be affected similarly by many economic changes, but the comparison groups are much less likely to be affected by recent policy changes. All three groups of women are in the same labor markets and have similar wages, and this similarity is especially strong when one conditions on educational attainment. Single women with and without children respond in an extremely similar way to aggregate unemployment.<sup>23</sup> We have also compared the base consumption patterns of single mothers and our comparison households. The total consumption of low-educated single mother headed households is only about 60 percent of that of the comparison groups at the mean, 15th or 25th percentiles, using a fairly standard equivalence scale to compare different size families.<sup>24</sup> At the 15th or 25th percentiles, the housing share of consumption (about 0.46) is similar across the groups, while single mothers' food share of consumption is about 50 percent higher (at about 0.34) than that for the comparison groups. Consequently, the level of food expenditures of single mother headed households and the comparison households are quite similar.

Table 1 provides summary descriptive statistics for each of these three groups in the CE sample (analogous PSID descriptive statistics are omitted for the sake of brevity, but can

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<sup>22</sup> While these periods are somewhat arbitrary, we have confirmed that our analyses are not sensitive to the exact division of the years. For example, if 1996 is included with the 1994–1995 period our results do not change qualitatively. Furthermore, an extensive discussion of the results if one ends the final period in 1998 can be found in an earlier version of the paper (Meyer and Sullivan, 2001) and the results are close to those reported here.

<sup>23</sup> For additional evidence supporting the validity of single women without children as a comparison group, see Meyer and Rosenbaum (2000, 2001).

<sup>24</sup> Following National Research Council (1995), we use the scale: scale value=(number of adults+0.7 \* number of children)<sup>0.7</sup>.

Table 1  
 Mean characteristics of single mother and comparison households (sample: women ages 18–54, CE)

	Single mothers (1)	Single, no children (2)	Married mothers (3)	Difference (1) – (2) (4)	Difference (1) – (3) (5)	Single mothers (1)	Single, no children (2)	Married mothers (3)	Difference (1) – (2) (4)	Difference (1) – (3) (5)
	Panel A: 1984–1990					Panel B: 1991–1993				
<i>Educational attainment</i>										
High school dropout	0.266 (0.012)	0.106 (0.008)	0.134 (0.004)	0.160 (0.015)	0.132 (0.009)	0.248 (0.017)	0.094 (0.011)	0.120 (0.006)	0.154 (0.020)	0.128 (0.013)
High school graduate	0.382 (0.012)	0.230 (0.009)	0.417 (0.006)	0.152 (0.015)	–0.035 (0.011)	0.364 (0.018)	0.214 (0.015)	0.367 (0.008)	0.151 (0.023)	–0.003 (0.017)
Some college	0.240 (0.011)	0.335 (0.010)	0.307 (0.307)	–0.094 (0.015)	–0.066 (0.307)	0.268 (0.015)	0.326 (0.016)	0.271 (0.008)	–0.058 (0.022)	–0.003 (0.018)
Age	34.68 (0.192)	33.22 (0.250)	34.93 (0.080)	1.460 (0.315)	–0.254 (0.208)	34.87 (0.323)	35.89 (0.382)	35.53 (0.116)	–1.021 (0.500)	–0.661 (0.344)
Employment	0.704 (0.012)	0.924 (0.007)	0.704 (0.005)	–0.220 (0.014)	0.000 (0.013)	0.691 (0.018)	0.914 (0.010)	0.731 (0.008)	–0.223 (0.020)	–0.040 (0.019)
Family size	2.996 (0.030)	1.000 (0.000)	4.111 (0.012)	1.996 (0.030)	–1.116 (0.033)	2.971 (0.041)	1.000 (0.000)	4.092 (0.017)	1.971 (0.041)	–1.121 (0.044)
Race (White = 1)	0.633 (0.013)	0.863 (0.008)	0.899 (0.003)	–0.229 (0.015)	–0.266 (0.013)	0.659 (0.020)	0.848 (0.012)	0.891 (0.005)	–0.189 (0.023)	–0.232 (0.020)
N	7014	8641	36,833			3266	3695	15,121		

Table 1 (continued)

	Single mothers (1)	Single, no children (2)	Married mothers (3)	Difference (1) – (2) (4)	Difference (1) – (3) (5)	Single mothers (1)	Single, no children (2)	Married mothers (3)	Difference (1) – (2) (4)	Difference (1) – (3) (5)
	Panel C: 1994–1995					Panel D: 1996–2000				
<i>Educational attainment</i>										
High school dropout	0.217 (0.017)	0.074 (0.011)	0.118 (0.007)	0.143 (0.020)	0.099 (0.013)	0.188 (0.010)	0.056 (0.006)	0.106 (0.004)	0.133 (0.012)	0.083 (0.007)
High school graduate	0.406 (0.020)	0.207 (0.017)	0.348 (0.010)	0.199 (0.027)	0.057 (0.020)	0.352 (0.012)	0.199 (0.010)	0.301 (0.006)	0.152 (0.015)	0.050 (0.011)
Some college	0.277 (0.017)	0.355 (0.022)	0.273 (0.009)	–0.078 (0.028)	0.005 (0.024)	0.320 (0.011)	0.379 (0.011)	0.302 (0.006)	–0.059 (0.016)	0.018 (0.012)
Age	35.09 (0.333)	35.80 (0.469)	36.02 (0.152)	–0.718 (0.575)	–0.939 (0.366)	35.63 (0.204)	36.24 (0.258)	36.81 (0.090)	–0.609 (0.329)	–1.187 (0.223)
Employment	0.702 (0.018)	0.891 (0.015)	0.749 (0.009)	–0.189 (0.023)	–0.048 (0.020)	0.798 (0.011)	0.867 (0.009)	0.750 (0.005)	–0.070 (0.014)	0.047 (0.012)
Family size	2.977 (0.041)	1.000 (0.000)	4.095 (0.022)	1.977 (0.041)	–1.118 (0.046)	2.975 (0.027)	1.000 (0.000)	4.087 (0.013)	1.975 (0.027)	–1.112 (0.030)
Race (White = 1)	0.644 (0.020)	0.865 (0.012)	0.894 (0.007)	–0.220 (0.023)	–0.249 (0.013)	0.623 (0.013)	0.812 (0.009)	0.874 (0.005)	–0.189 (0.016)	–0.251 (0.010)
<i>N</i>	2324	2543	10,194			5753	7463	26,951		

Notes: The calculations are from the Consumer Expenditure Survey. Observations represent a household-quarter. See text for additional details. All numbers are weighted. Bootstrap standard errors that correct for within-household dependence are in parentheses. The omitted education group is college graduate.



Table 2  
 Quarterly consumption of single mother and comparison households (sample: women ages 18–54, CE and PSID)

	Single mothers (1)	Single, no children (2)	Married mothers (3)	Ratio (1)/(2) (4)	Ratio (1)/(3) (5)	Single mothers (1)	Single, no children (2)	Married mothers (3)	Ratio (1)/(2) (4)	Ratio (1)/(3) (5)
	Panel A: 1984–1990					Panel B: 1991–1993				
<i>CE</i>										
Total	4676 (88)	4318 (56)	8732 (54)	1.083 (0.025)	0.535 (0.011)	4535 (84)	4336 (71)	8447 (72)	1.046 (0.026)	0.537 (0.011)
Food	1070 (13)	708 (10)	1729 (11)	1.513 (0.028)	0.619 (0.008)	991 (16)	675 (10)	1609 (15)	1.468 (0.033)	0.616 (0.012)
Housing	2073 (44)	1914 (28)	3438 (23)	1.083 (0.028)	0.603 (0.013)	2051 (46)	1996 (37)	3410 (33)	1.027 (0.030)	0.601 (0.015)
Discretionary	826 (19)	945 (22)	1810 (19)	0.874 (0.028)	0.456 (0.011)	767 (27)	817 (24)	1658 (28)	0.939 (0.043)	0.463 (0.018)
Work expenses	–	–	–	–	–	–	–	–	–	–
Child care	–	–	–	–	–	–	–	–	–	–
<i>N</i>	7014	8641	36,833			3266	3695	15,121		
<i>PSID</i>										
Food	1125 (21)	737 (20)	1826 (18)	1.526 (0.050)	0.616 (0.013)	1137 (25)	734 (21)	1727 (19)	1.549 (0.056)	0.658 (0.016)
<i>N</i>	2931	1797	11,220			1827	1151	6547		

Table 2 (continued)

	Single mothers (1)	Single, no children (2)	Married mothers (3)	Ratio (1)/(2) (4)	Ratio (1)/(3) (5)	Single mothers (1)	Single, no children (2)	Married mothers (3)	Ratio (1)/(2) (4)	Ratio (1)/(3) (5)
	Panel C: 1994–1995					Panel D: 1996–2000				
<i>CE</i>										
Total	4617 (93)	4433 (96)	8686 (79)	1.042 (0.031)	0.532 (0.012)	5090 (76)	4469 (56)	9057 (51)	1.139 (0.022)	0.562 (0.009)
Food	1017 (24)	684 (16)	1598 (16)	1.486 (0.048)	0.636 (0.016)	1024 (15)	681 (10)	1628 (9)	1.503 (0.030)	0.629 (0.010)
Housing	2115 (44)	2070 (45)	3599 (41)	1.021 (0.031)	0.588 (0.014)	2368 (35)	2,180 (30)	3763 (24)	1.086 (0.022)	0.629 (0.010)
Discretionary	765 (25)	839 (33)	1698 (31)	0.911 (0.047)	0.451 (0.017)	826 (21)	793 (18)	1683 (21)	1.041 (0.036)	0.491 (0.014)
Work expenses	288 (27)	41 (8)	471 (20)	6.954 (1.517)	0.612 (0.063)	296 (19)	36 (5)	484 (15)	8.218 (1.228)	0.610 (0.044)
Child care	123 (11)	– –	182 (8)	– –	0.676 (0.067)	120 (7)	– –	189 (5)	– –	0.638 (0.043)
<i>N</i>	2324	2543	10,194			5753	7463	26,951		
<i>PSID</i>										
Food	1137 (28)	766 (22)	1711 (22)	1.485 (0.057)	0.665 (0.018)	1133 (21)	752 (20)	1747 (19)	1.506 (0.049)	0.649 (0.014)
<i>N</i>	1392	771	4442			1639	1012	5738		

Notes: All consumption figures are expressed in 1995:2 dollars using the Personal Consumption Expenditure index reported by the Bureau of Economic Analysis. The components of consumption necessary to determine child care and work expenses are not available in the CE before the fourth quarter of 1993. See the notes to Table 1 for additional comments.

be found for the periods through 1997 in Meyer and Sullivan, 2001).<sup>25</sup> Each panel in the tables provides information for a single time period. Both data sources paint a similar picture. Single mothers in these samples are less educated and are more likely to be minorities than either single women without children or married mothers. The mean age is fairly similar across the three groups. The differences between single mothers and the comparison groups (seen by comparing columns 4 and 5 across panels) remain fairly stable over time, although single mothers become younger relative to single women without children between the 1984–1990 period and the 1991–1993 period due to a rise in the mean age of single childless women. The relative means for educational attainment, family size and racial background change very little between 1984 and 2000, though all three groups become somewhat more educated over time, and this increase in educational attainment is slightly more noticeable for single mothers. None of the changes in educational attainment for single mothers relative to single childless women are significantly different from zero. In the CE, however, the changes in educational attainment relative to married mothers from the 1984–1990 period to the 1996–2000 period are significant. In the PSID, we see a significant rise from 1984–1990 to 1996–2000 in the fraction of single mothers that attain only a high school degree relative to this fraction for married mothers. Consistent with the employment data from the CPS reported elsewhere (Meyer and Rosenbaum, 2000; Meyer, 2002), the employment rate for single mothers in both the CE and PSID increases noticeably in recent years both in absolute and relative terms.<sup>26</sup> The rise in the employment rate of single mothers relative to single women without children from 1984–1990 to 1996–2000 is statistically significant in both the CE and the PSID. In the CE, the rise in the employment of single mothers relative to both comparison groups from 1994–1995 to 1996–2000 is also statistically significant.<sup>27</sup>

In order to evaluate how the relative well-being of single mothers changes over the sample period, we compare the changes in the consumption levels of single mothers to the changes in consumption levels of our comparison groups. The mean quarterly levels of various components of consumption from the CE and food consumption from the PSID are reported in Table 2.<sup>28</sup> The means from the CE show that total consumption changes modestly over time in real terms for all three groups of women. (To see this, compare total consumption in columns 1–3 across panels.) For single mothers, we see almost no change in total consumption from 1984–1990 through 1994–1995. After 1994–1995, consumption by single mothers increases significantly from \$4617 in the 1994–1995 period to

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<sup>25</sup> In both the CE and the PSID a single household may remain in the survey's sample for multiple waves. The standard errors reported in Tables 1 through 5 are corrected for this within-household correlation by bootstrapping. We calculate bootstrap standard errors by resampling at the household level, taking all observations for a given household, rather than at the household-year (PSID) or household-quarter (CE) level. These bootstrap standard errors are estimated using 200 replications.

<sup>26</sup> The employment measure for each group of women is the percentage that report having worked for at least one week in the 12 months prior to the interview.

<sup>27</sup> We also examined the same statistics as reported in Table 1, restricting attention to households headed by a woman with a high school degree or less in both the CE and PSID. See Meyer and Sullivan (2001) for these results.

<sup>28</sup> All consumption figures are converted to 1995:2 dollars using the Personal Consumption Expenditure deflator reported by the Bureau of Economic Analysis.

\$5090 in the following period. Between our first and last periods, the level of total consumption for single mothers rises by nearly 9 percent in real terms, a statistically significant increase. Consumption rises for both comparison groups over this same period as well, although these increases are much smaller (between 3 and 4 percent), and for single women without children this rise is not significantly different from zero.

The results for changes in relative total consumption over time for all single women (compare column 4 across panels) show that single mothers on average experience a slight decrease in relative consumption from 1984–1990 to 1991–1993, but relative consumption subsequently rises in the 1996–2000 period. Consumption relative to married mothers (column 5) changes less. Changes between 1994–1995 and 1996–2000 show that consumption for single mothers rises significantly by 9.4 percent relative to single women without children. For this same period, consumption for single mothers rises significantly by 5.7 percent relative to married mothers.

Looking at some of the components of total consumption reported in [Table 2](#), data on food consumption from both the CE and the PSID show that the recent rise in relative consumption for single mothers is not driven by an increase in spending on food. Food consumption in the CE does not change noticeably relative to either of the comparison groups. None of the changes in relative food consumption in the CE are significantly different from zero. In the PSID, there is also no evidence that food consumption for single mothers relative to single childless women changes significantly. Relative to married mothers, results from the PSID suggest that food consumption for single mothers increases by 6.9 percent from the 1984–1990 period to the 1991–1993 period. Both housing and discretionary spending for single mothers relative to the comparison groups rise in the most recent years, with discretionary spending increasing significantly by 14.3 percent from 1994–1995 to 1996–2000 relative to single childless women. Work-related expenditures and child care for single mothers do not increase relative to married mothers from 1994–1995 to 1996–2000.<sup>29</sup> Also, the magnitude of child care and work expenses is too small to account for much of the changes in aggregate consumption.

We also examine how these components of consumption change for a more restricted sample of women with a high school degree or less (results are not reported here; see [Meyer and Sullivan, 2001](#)). In the CE the rise in the level of consumption in recent years is much less noticeable for these less-skilled women than for the sample of all women. Total consumption for less-skilled single mothers remains fairly flat throughout the sample period, except for a fall in the 1991–1993 period. Total consumption for both of the less-skilled comparison groups falls modestly between the 1984–1990 period and the 1996–2000 period, resulting in a modest rise in relative consumption for single mothers between these periods. None of these changes in relative total consumption, however, are statistically significant for these samples of low-educated women.

Interesting patterns are evident in these descriptive results from the CE and the PSID. First, consumption for single mothers relative to single women without children is fairly constant in the years preceding 1996 and rises in the 1996–2000 period. Second, relative

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<sup>29</sup> While average child care expenses are small here, they are consistent with numbers reported in [Blau \(2000\)](#) once one accounts for the fact that the mothers in our samples are low income, many do not work in a typical week, and the vast majority do not pay for child care.

to married mothers consumption for single mothers changes very little until the 1996–2000 period when it rises slightly. Third, changes in total consumption are reflected through changes in housing, discretionary spending, and other consumption categories more than through changes in food consumption. Lastly, changes in relative consumption for less-skilled women are less noticeable during our sample period. None of these results, however, condition on differences in household demographics or control for how these demographics may change over time. For this reason, in the following section we employ regression methods in order to better isolate the effects of recent policy changes on the relative consumption of single mothers.

## 8. Mean and quantile regressions accounting for household characteristics

By comparing single mothers to single women without children and married mothers we can isolate the impact of changes in welfare and tax policy, which affect single mothers differently than the comparison groups, from the impact of other changes in the economic environment, which arguably affect all three groups similarly. Changes in the differences in mean consumption, however, may also result from changes in the characteristics of those in one of these three groups.

To isolate the effects of changes in policies we estimate regression models of the following form:

$$\ln(C_{iq}) = \beta_1 + SM_i * PERIOD_{iq}\beta_2 + PERIOD_{iq}\beta_3 + X_{iq}\beta_4 + M_{iq}\beta_5 + \varepsilon_{iq}, \quad (1)$$

where the dependent variable is log consumption for household  $i$  in quarter  $q$ ;  $SM_i$  is an indicator for whether the household head is a single mother;  $PERIOD_{iq}$  is a vector of indicators for each of the four time periods discussed earlier, 1984–1990, 1991–1993, 1994–1995, or 1996–2000 (1996–1999 for the PSID);  $X_{iq}$  is a vector of demographic characteristics including family size and age composition measures as well as race, educational attainment, and a cubic in age for the female family head;  $M_{iq}$  is a vector of month dummies indicating the specific months during which the expenditures take place;<sup>30</sup> and  $\varepsilon_{iq}$  is a household-quarter error term. The consumption choices of these households are likely to differ across our three groups and these choices are likely to vary systematically with the number and ages of household members. We experimented with different controls for family size and age composition in order to measure different households in equivalent terms. Our results are not notably sensitive to how we control for family size and composition. All results reported in the paper are from specifications which include a third-order polynomial in the number of children and adults in the household, as well as controls for the number of children less than 6 years old and the number of children between 6 and 11 years old.

<sup>30</sup> Month dummies are only included for the CE samples. The month dummies capture seasonal differences in consumption behavior. We use monthly rather than quarterly dummies to account for the fact that the BLS conducts interviews in all three months of each quarter, and reported expenditures for a given respondent can span more than one quarter. We weight the month dummies in order to appropriately reflect seasonality; each month dummy takes on a value equal to the number of times that month's expenditures are counted towards quarterly expenditures.

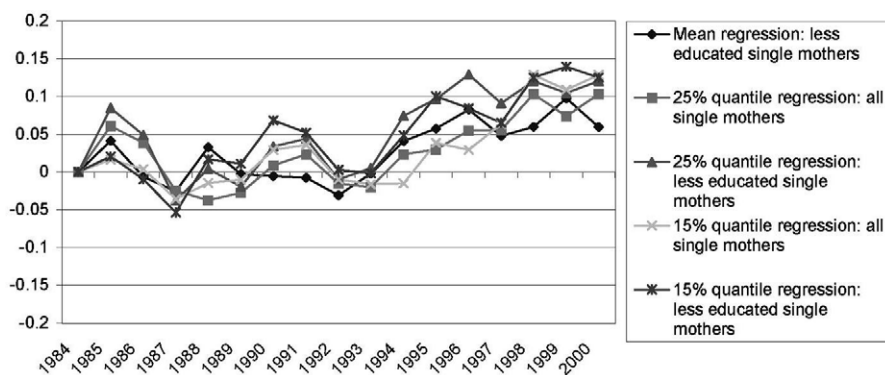


Fig. 2. Total consumption: single mothers, 1984–2000.

Each element of the vector  $\beta_2$  represents the effect on log consumption of being a single mother in a particular period relative to being in one of our comparison groups. Thus, comparisons of the components of this parameter vector indicate how the relative consumption of single mothers changes across periods. For example, to examine how consumption for single mothers relative to single women without children changes between 1994–1995 and 1996–2000, we estimate Eq. (1) for our sample of single women. The coefficient on the interaction term  $SM_i * (1994 - 1995)_{iq}$  from this regression can be interpreted as the percentage difference in the consumption for single mothers in 1994–1995 relative to consumption for single women without children in the 1994–1995 period, while the coefficient on  $SM_i * (1996 - 2000)_{iq}$  yields this same difference for the 1996–2000 period.<sup>31</sup> The difference between these two coefficients can be interpreted as the percentage change in the relative consumption of single mothers between these two periods.

To capture the relative change in expenditures, we estimate Eq. (1) for four separate samples—all single women, all mothers, less-educated single women, and less-educated mothers—using both mean and quantile regressions. We employ both regression models in order to allow policy effects to differ at different points in the consumption distribution. The mean regressions estimate the effect of policy changes for the average single mother, while our quantile regressions estimate the policy effects for those at either the 25th percentile or the 15th percentile of the consumption distribution.

In Fig. 2 we plot the estimated year effects from Eq. (1) for two samples: all single mothers and less-educated single mothers. We exclude the comparison group interaction terms and use single year dummies rather than period dummies in order to show how the level of total consumption changes from 1984 through 2000 for single mother households. The 1984 year dummy is excluded so that the figure represents changes in the level of consumption relative to 1984. Total consumption for single mothers begins to rise after 1988, and rises more noticeably after 1993. Moreover, this pattern is evident not only for single mothers with average consumption levels but also for those at both the 15th and 25th percentiles of the consumption distribution, as well as for less-educated single mothers.

<sup>31</sup> This is true because consumption is expressed in log terms, and for small changes the difference between two logged values is approximately equal to the percentage change:  $\ln(a) - \ln(b) \approx (a - b)/b$ , for small  $|(a - b)/b|$ .

Table 3

Regression and quantile estimates for the level of log consumption of single mother households (1984–2000, CE)

	OLS	Quantile regressions			
	Single mothers with high school degree or less	All single mothers		Single mothers with high school degree or less	
		Mean	25th percentile	15th percentile	25th percentile
	(1)	(2)	(3)	(4)	(5)
1991–1993	–0.0176 (0.0248)	–0.0040 (0.0233)	0.0003 (0.0262)	–0.0048 (0.0303)	0.0006 (0.0312)
1994–1995	0.0452 (0.0285)	0.0283 (0.0292)	–0.0055 (0.0390)	0.0725 (0.0365)	0.0619 (0.0422)
1996–2000	0.0799 (0.0222)	0.0857 (0.0224)	0.0960 (0.0236)	0.1096 (0.0272)	0.1066 (0.0276)
<i>P</i> -values from tests of linear restrictions					
$H_0: (1994–1995)–(1984–1990)=0$	0.1120	0.3330	0.8880	0.0470	0.1420
$H_0: (1996–2000)–(1984–1990)=0$	0.0000	0.0000	0.0000	0.0000	0.0000
$H_0: (1994–1995)–(1991–1993)=0$	0.0378	0.2869	0.8825	0.0434	0.1597
$H_0: (1996–2000)–(1991–1993)=0$	0.0001	0.0003	0.0005	0.0001	0.0012
$H_0: (1996–2000)–(1994–1995)=0$	0.2057	0.0328	0.0080	0.2797	0.2615
$H_0: (1994–1995)–(1984–1990) < -0.05$	0.0004	0.0037	0.1267	0.0004	0.0040
$H_0: (1996–2000)–(1984–1990) < -0.05$	0.0000	0.0000	0.0000	0.0000	0.0000
$H_0: (1994–1995)–(1991–1993) < -0.05$	0.0001	0.0033	0.1312	0.0005	0.0054
$H_0: (1996–2000)–(1991–1993) < -0.05$	0.0000	0.0000	0.0000	0.0000	0.0000
$H_0: (1996–2000)–(1994–1995) < -0.05$	0.0010	0.0001	0.0001	0.0056	0.0087
<i>N</i>	10,997	18,357	18,357	10,997	10,997

Notes: Results are from regressions of the log of total consumption on indicators for the time period, a full set of month dummies, flexible controls for family size and composition, a cubic in age, and indicators for the race and education of the female head for a sample of single mother households. The standard errors in parentheses are corrected for within-household dependence by either using the conventional White estimator (OLS) or by bootstrapping (quantile regressions).

The estimates for Eq. (1), excluding the interaction terms, for these same samples of single mothers are presented in Table 3.<sup>32,33</sup> Consistent with Fig. 2, the point estimates in Table 3 show that consumption levels for single mothers are higher after 1990. Across all

<sup>32</sup> As with the descriptive statistics, the standard errors reported in Tables 3 through 5 are corrected for within-household correlation. For the mean regressions the conventional White estimator is used. For the quantile regressions we calculate bootstrap standard errors by resampling at the household level, taking all observations for a given household, rather than at the household-year (PSID) or household-quarter (CE) level. Again, we use 200 replications to estimate these bootstrap standard errors. This correction increases the magnitude of our standard errors by a factor of about 1.95 on average with the increase ranging from a factor of 1.5 to 2.6. We also verified the closeness of the normal approximation based *p*-values by examining the percentiles of the bootstrap replications for a few of the estimates.

<sup>33</sup> The *p*-values reported in Tables 3 through 5 reflect a high positive covariance between the estimates for different time periods when we include flexible controls for family size and composition. This covariance leads differences between time periods to be estimated much more precisely than is suggested by the variances alone.



five specifications, total consumption is significantly higher in 1996–2000 than in 1984–1990. For example, consumption for a single mother at the 25th percentile in 1996–2000 is 8.6 percent higher than consumption for a single mother at the 25th percentile in 1984–1990, and for less-educated single mothers, the level of consumption is 11.0 percent higher at the 25th percentile in this later period. Total consumption for single mothers in 1996–2000 is also significantly higher than consumption in 1991–1993 across all specifications. These results provide strong evidence that, conditioning on household characteristics, the level of consumption for less-educated single mothers is higher in the 1996–2000 period than either of the periods prior to 1994. The point estimates suggest that consumption rises from 1994–1995 to 1996–2000, but this increase is only significant when comparing single mothers at the 25th or 15th percentile where total consumption increases by 8.6 and 9.6 percent, respectively. We also examine whether consumption for single mothers does not fall appreciably over time. In nearly every case we can reject the hypothesis that the level of consumption for single mothers has fallen in a recent period by more than 5 percent relative to an earlier one. This finding holds for all single mothers as well as for less-educated single mothers.

Tables 4 and 5 report estimates for Eq. (1) showing how relative consumption for single mothers changes during our sample period. Results for total consumption in the CE (see Table 4) are fairly consistent with the results for mean consumption reported in Table 2. Although the means suggest that relative consumption rises mainly after 1994–1995, conditioning on family demographics the rise in relative consumption for single mothers appears to begin after 1984–1990. Looking at the results for single women (in the odd-numbered columns in Table 4), total consumption for single mothers relative to single women without children is higher in the 1996–2000 period than in any of the earlier periods. The rise in relative consumption from 1984–1990 to 1996–2000 is significant across all specifications except when comparing less-educated single women at the 15th percentile, when consumption rises by 11.2 percent (19.0–7.8), a weakly significant increase ( $p$ -value: 0.0804).<sup>34</sup> There is some evidence that consumption for single mothers relative to single women without children rises slightly between the 1994–1995 period and the 1996–2000 period. This rise is significant at the 15th percentile for the sample of all single women (column 7).

Although these estimates provide some evidence that total consumption for single mothers relative to single childless women is higher in 1996–2000 than in 1984–1990, in most cases we cannot make conclusive statements about changes in relative consumption for single mothers after 1990. These results do show, however, that relative consumption for single mothers does not fall noticeably after 1990. For example, we can reject the null hypothesis that consumption for single mothers relative to single women without children falls by more than 5 percent from 1991–1993 to 1996–2000 across all specifications except for less-educated single women at the 15th percentile ( $p$ -value: 0.0513). Moreover, looking at the results for all single women (columns 3 and 7) we can reject the hypothesis that the relative consumption of single mothers falls by more than 5 percent between 1994–1995 and 1996–2000.

<sup>34</sup> For small changes, differences in these coefficients on the interaction terms are approximately percentage changes.

Table 4

Regression and quantile estimates of total consumption of single mother and comparison households (1984–2000, CE)

	OLS		Quantile regressions							
	Women with high school degree or less		All women		Women with high school degree or less		All women		Women with high school degree or less	
	Mean		25th percentile		25th percentile		15th percentile		15th percentile	
	Single	Mothers	Single	Mothers	Single	Mothers	Single	Mothers	Single	Mothers
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Single mother*(1984–1990)	0.0744 (0.0675)	-0.4311 (0.0234)	0.0804 (0.0617)	-0.4519 (0.0274)	0.0604 (0.0828)	-0.4468 (0.0323)	0.0582 (0.0803)	-0.4647 (0.0327)	0.0781 (0.0927)	-0.4556 (0.0406)
Single mother*(1991–1993)	0.1094 (0.0696)	-0.3984 (0.0281)	0.1038 (0.0613)	-0.3997 (0.0278)	0.1075 (0.0899)	-0.4001 (0.0349)	0.0749 (0.0848)	-0.4121 (0.0379)	0.1257 (0.0963)	-0.4216 (0.0456)
Single mother*(1994–1995)	0.1623 (0.0775)	-0.3648 (0.0331)	0.1171 (0.0660)	-0.4065 (0.0337)	0.1617 (0.0957)	-0.3551 (0.0433)	0.0626 (0.0856)	-0.4270 (0.0431)	0.1264 (0.1049)	-0.4052 (0.0497)
Single mother*(1996–2000)	0.2021 (0.0688)	-0.3253 (0.0250)	0.1697 (0.0622)	-0.3364 (0.0271)	0.2024 (0.0896)	-0.3091 (0.0348)	0.1578 (0.0784)	-0.3361 (0.0316)	0.1895 (0.0892)	-0.3169 (0.0412)
1991–1993	-0.0499 (0.0365)	-0.0529 (0.0111)	-0.0213 (0.0260)	-0.0541 (0.0090)	-0.0413 (0.0421)	-0.0430 (0.0133)	-0.0133 (0.0272)	-0.0468 (0.0114)	-0.0318 (0.0589)	-0.0330 (0.0162)
1994–1995	-0.0421 (0.0444)	-0.0261 (0.0126)	-0.0067 (0.0278)	-0.0272 (0.0094)	-0.0197 (0.0618)	-0.0073 (0.0157)	0.0030 (0.0306)	-0.0241 (0.0125)	0.0280 (0.0585)	0.0055 (0.0185)
1996–2000	-0.0484 (0.0324)	-0.0311 (0.0101)	-0.0064 (0.0219)	-0.0392 (0.0078)	-0.0257 (0.0391)	-0.0384 (0.0116)	0.0009 (0.0220)	-0.0405 (0.0100)	-0.0038 (0.0529)	-0.0315 (0.0141)

Table 4 (continued)

	OLS		Quantile regressions							
	Women with high school degree or less		All women		Women with high school degree or less		All women		Women with high school degree or less	
	Mean		25th percentile		25th percentile		15th percentile		15th percentile	
	Single	Mothers	Single	Mothers	Single	Mothers	Single	Mothers	Single	Mothers
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
<i>P</i> -values from tests of linear restrictions										
$H_0 : SM * (1994 - 1995) - SM * (1984 - 1990) = 0$	0.0963	0.0320	0.3840	0.1938	0.1678	0.0186	0.9321	0.3177	0.5244	0.2124
$H_0 : SM * (1996 - 2000) - SM * (1984 - 1990) = 0$	0.0010	0.0000	0.0032	0.0000	0.0031	0.0000	0.0047	0.0000	0.0804	0.0000
$H_0 : SM * (1994 - 1995) - SM * (1991 - 1993) = 0$	0.3513	0.3138	0.7671	0.8410	0.5239	0.2902	0.7986	0.7194	0.9928	0.7000
$H_0 : SM * (1996 - 2000) - SM * (1991 - 1993) = 0$	0.0447	0.0097	0.0516	0.0147	0.1181	0.0165	0.0714	0.0131	0.3598	0.0071
$H_0 : SM * (1996 - 2000) - SM * (1994 - 1995) = 0$	0.4509	0.1908	0.1725	0.0234	0.5857	0.2462	0.0366	0.0153	0.3621	0.0265
$H_0 : SM * (1994 - 1995) - SM * (1984 - 1990) < -0.05$	0.0046	0.0001	0.0199	0.0032	0.0197	0.0002	0.1424	0.0101	0.0974	0.0065
$H_0 : SM * (1996 - 2000) - SM * (1984 - 1990) < -0.05$	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0057	0.0000
$H_0 : SM * (1994 - 1995) - SM * (1991 - 1993) < -0.05$	0.0349	0.0061	0.0798	0.0979	0.1103	0.0128	0.2187	0.1988	0.2583	0.0591
$H_0 : SM * (1996 - 2000) - SM * (1991 - 1993) < -0.05$	0.0010	0.0000	0.0003	0.0000	0.0085	0.0001	0.0019	0.0000	0.0513	0.0001
$H_0 : SM * (1996 - 2000) - SM * (1994 - 1995) < -0.05$	0.0445	0.0016	0.0039	0.0001	0.1121	0.0078	0.0007	0.0001	0.0513	0.0003
<i>N</i>	17,511	53,457	40,699	107,456	17,511	53,457	40,699	107,456	17,511	53,457

Notes: The dependent variable is the log of total consumption. In addition to the variables reported above, all models include a full set of month dummies, flexible controls for family size and composition, a cubic in age, and the race and education of the female head. The standard errors in parentheses are corrected for within-household dependence by either using the conventional White estimator (OLS) or by bootstrapping (quantile regressions).

Table 5  
Regression and quantile estimates of food consumption of single mother and comparison households (1984–1999, PSID)

	OLS		Quantile regressions							
	Women with high school degree or less		All women		Women with high school degree or less		All Women		Women with high school degree or less	
	Mean		25th percentile		25th percentile		15th percentile		15th percentile	
	Single	Mothers	Single	Mothers	Single	Mothers	Single	Mothers	Single	Mothers
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Single mother*(1984–1990)	0.3810 (0.0880)	-0.2954 (0.0287)	0.3898 (0.0948)	-0.3447 (0.0240)	0.4043 (0.0972)	-0.3497 (0.0408)	0.5059 (0.1284)	-0.3506 (0.0366)	0.5408 (0.1543)	-0.3720 (0.0450)
Single mother*(1991–1993)	0.3902 (0.0843)	-0.2033 (0.0307)	0.3539 (0.0956)	-0.2525 (0.0270)	0.3965 (0.1091)	-0.2328 (0.0439)	0.4662 (0.1308)	-0.3011 (0.0444)	0.5386 (0.1603)	-0.3029 (0.0530)
Single mother*(1994–1995)	0.3849 (0.0963)	-0.1742 (0.0368)	0.3387 (0.0935)	-0.2887 (0.0323)	0.3279 (0.1105)	-0.2558 (0.0456)	0.4238 (0.1437)	-0.3097 (0.0434)	0.4938 (0.1755)	-0.3019 (0.0651)
Single mother*(1996–1999)	0.4304 (0.0943)	-0.1919 (0.0290)	0.4126 (0.0996)	-0.2586 (0.0295)	0.4872 (0.1071)	-0.2155 (0.0389)	0.5433 (0.1308)	-0.2711 (0.0411)	0.6007 (0.1532)	-0.2297 (0.0540)
1991–1993	0.0279 (0.0513)	-0.0637 (0.0119)	0.0685 (0.0336)	-0.0625 (0.0094)	0.0607 (0.0650)	-0.0553 (0.0153)	0.0461 (0.0439)	-0.0449 (0.0126)	0.0270 (0.0840)	-0.0476 (0.0178)
1994–1995	0.0343 (0.0610)	-0.0933 (0.0149)	0.0295 (0.0403)	-0.0781 (0.0129)	0.0885 (0.0662)	-0.0778 (0.0178)	0.0504 (0.0487)	-0.0720 (0.0146)	0.0511 (0.0929)	-0.0717 (0.0243)
1996–1999	0.0012 (0.0645)	-0.0643 (0.0150)	-0.0132 (0.0486)	-0.0714 (0.0131)	-0.0252 (0.0713)	-0.0710 (0.0193)	-0.0235 (0.0473)	-0.0805 (0.0144)	0.0012 (0.0784)	-0.0782 (0.0243)
<i>P</i> -values from tests of linear restrictions										
$H_0 : SM * (1994 - 1995) - SM * (1984 - 1990) = 0$	0.9542	0.0016	0.2647	0.1016	0.3019	0.0267	0.1987	0.3231	0.6419	0.2790
$H_0 : SM * (1996 - 1999) - SM * (1984 - 1990) = 0$	0.4834	0.0010	0.6778	0.0039	0.2754	0.0009	0.5255	0.0564	0.5100	0.0028
$H_0 : SM * (1994 - 1995) - SM * (1991 - 1993) = 0$	0.9285	0.3484	0.7271	0.2301	0.3456	0.5327	0.5026	0.8406	0.6588	0.9878
$H_0 : SM * (1996 - 1999) - SM * (1991 - 1993) = 0$	0.5197	0.7127	0.2898	0.8381	0.2861	0.6547	0.2174	0.4881	0.5487	0.1559
$H_0 : SM * (1996 - 1999) - SM * (1994 - 1995) = 0$	0.4193	0.5837	0.1535	0.3073	0.0265	0.2739	0.0483	0.3089	0.2837	0.2074
$H_0 : SM * (1994 - 1995) - SM * (1984 - 1990) < -0.05$	0.2141	0.0000	0.4903	0.0010	0.3608	0.0004	0.3078	0.0140	0.4881	0.0318
$H_0 : SM * (1996 - 1999) - SM * (1984 - 1990) < -0.05$	0.0794	0.0000	0.0917	0.0000	0.0402	0.0000	0.0688	0.0010	0.1135	0.0001
$H_0 : SM * (1994 - 1995) - SM * (1991 - 1993) < -0.05$	0.2225	0.0055	0.2110	0.3233	0.3991	0.2327	0.4523	0.1695	0.4797	0.2040
$H_0 : SM * (1996 - 1999) - SM * (1991 - 1993) < -0.05$	0.0746	0.0243	0.0250	0.0697	0.0490	0.0406	0.0210	0.0320	0.1395	0.0085
$H_0 : SM * (1996 - 1999) - SM * (1994 - 1995) < -0.05$	0.0452	0.1571	0.0084	0.0033	0.0018	0.0071	0.0026	0.0098	0.0578	0.0164
<i>N</i>	6952	18,965	12,520	35,736	6952	18,965	12,520	35,736	6952	18,965

Notes: The dependent variable is the log of food consumption. See Table 4 for additional notes.

Estimates for changes in total consumption for single women without children (captured by the period dummy coefficients in the odd-numbered columns in Table 4) suggest that the level of consumption for this comparison group did not change much over time. In only one case is the estimated drop for single women without children from 1984–90 to 1996–2000 greater than 2.6 percent, and the estimates are never significantly different from zero. This result implies that only a small fraction of any increase in relative consumption for single mothers can be explained by a fall in consumption for single childless women.

The results comparing the total consumption behavior of mothers (in the even-numbered columns in Table 4) suggest slightly more improvement in material conditions for single mothers. Across all specifications the consumption of single mothers relative to married mothers rises over time. Between 1984–1990 and 1996–2000 relative consumption rises by more than 10 percent, and this increase is significant in each specification. For mothers at the 25th percentile, for example, relative consumption increases significantly by 11.6 percent (0.452–0.336). Looking at more recent changes, relative consumption for single mothers increases by 4 to 9 percent between 1994–1995 and 1996–2000. These changes are significantly different from zero in three of the five specifications. Again, the results provide fairly strong evidence that relative consumption for single mothers does not fall during this period of reforms. Other than the period from 1991–1993 to 1994–1995, we can consistently reject the hypothesis that consumption for single mothers relative to married mothers falls by more than 5 percent over time.

Looking at the period indicators for the sample of mothers shows that although the level of consumption for married mothers drops after 1984–1990 this only partially explains the rise in the relative consumption of single mothers. Much of the fall in consumption for married mothers occurs between 1984–1990 and 1991–1993 when consumption drops significantly by 3.3 to 5.4 percent. After 1991–1993, however, consumption for married mothers increases slightly.

Figs. 3 and 4 provide a summary of the results for changes in relative total consumption reported in Table 4. In these figures we plot the coefficients on the interaction term from Eq. (1), using single year dummies rather than period dummies, for a sample of all single women (Fig. 3) and of all mothers (Fig. 4). The interaction of the single mother household indicator with the 1984 year dummy is excluded so that the figures represent changes in relative consumption since 1984. Fig. 3 shows that consumption for single mothers relative to single women without children falls noticeably between 1984 and 1987, but then rises steadily after 1989. This trend is fairly similar at different points in the consumption distribution, and for different levels of educational attainment. Fig. 4 shows that relative to married mothers, consumption for single mothers remains fairly steady from 1984 to 1989, increases from 1989 to 1991, falls from 1991 to 1993, and then rises noticeably after 1993.

We also estimated the analog of the Table 4 specifications using CE food consumption as the outcome variable (not shown). The estimates from the CE show little change in relative food consumption over time using either comparison group. Very few of the changes over time in relative food consumption for single women are statistically different from zero. In the case of single women the point estimates suggest that relative food consumption for single mothers falls from 1984–1990 to 1996–2000, but these changes

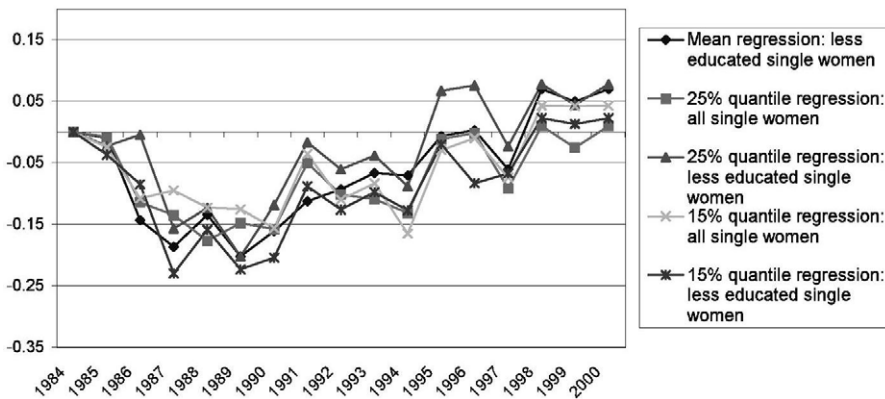


Fig. 3. Relative total consumption: single mothers vs. single women without children, 1984–2000.

are small, and either not significant or only weakly significant. The results for food consumption for mothers show that food consumption for single mothers rises slightly over time relative to married mothers. In a few cases, the rise in relative food consumption from 1984–1990 to either 1994–1995 or 1996–2000 is significant. For this sample of mothers we can usually reject the hypothesis that relative food consumption for single mothers falls by more than 5 percent over time.

The results for food consumption from the PSID in Table 5 follow a fairly similar pattern to the results for CE food, although the results for the PSID are somewhat less precise due to smaller sample sizes. Consistent with the results reported for the CE, most changes over time in the food consumption for single mothers relative to single women without children are not significantly different from zero. Looking at the results for single women in the PSID, however, there is some evidence that relative food consumption rises from 1994–1995 to 1996–1999. For example, relative food consumption rises significantly by 15.9 percent ( $P$ -value: 0.0265) for a less-educated single mother at the 25th percentile (column 5) and by 12.0 percent ( $P$ -value: 0.0483) for a single mother at the 15th

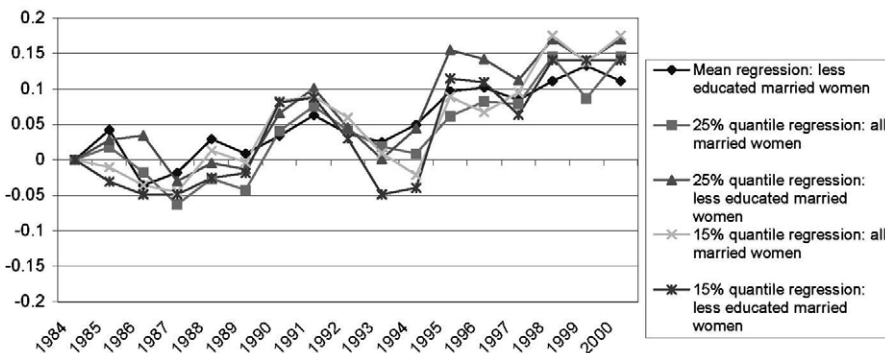


Fig. 4. Relative total consumption: single mothers vs. married mothers, 1984–2000.

percentile (column 7). All other changes in relative consumption for single women are not significantly different from zero. In four of five specifications for single women, we can reject the hypothesis that relative food consumption for single mothers falls by more than 5 percent from 1994–1995 to 1996–1999. In most cases we can also reject this hypothesis for changes in relative consumption between 1991–1993 and 1996–1999.

Food consumption for single mothers also rises relative to married mothers. Between 1984–1990 and 1996–1999 this increase in relative food consumption ranges from 8.0 to 14.2 percent and is significant for four of five specifications. These changes in relative consumption can be explained in part by a drop in food consumption by married mothers of 6.4 to 8.1 percent during this time. In all cases, we reject the hypothesis that food consumption for single mothers relative to married mothers falls by more than 5 percent between 1984–1990 and either of the last two periods.

In sum, these estimates from the CE and the PSID indicate how the relative material well-being of single mothers has changed following the reforms enacted throughout the past decade. There is substantial evidence that total consumption by single mothers increases from 1984–1990 to 1996–2000 in absolute terms and relative to both single women without children and married mothers. This increase in consumption does not appear to be driven by work expenses or child care costs. Consumption during this period for less-skilled single mothers and for single mothers near the bottom of the consumption distribution follow a similar pattern. In cases where there is evidence of increases in relative consumption for single mothers, only some of the gains can be explained by a drop in consumption for the comparison groups. The estimates suggest that this period of reform did not have a negative impact on the relative material well-being of single mothers. In fact, we repeatedly reject the null hypothesis that relative total consumption falls by more than 5 percent after the 1984–1990 period. Comparing relative consumption in 1996–2000 to 1994–1995 often indicates a significant increase in absolute or relative consumption for single mothers. Furthermore, there is stronger evidence that absolute and relative consumption does not fall appreciably during this time, suggesting that the relative material well-being of single mothers has not fallen in response to recent tax and welfare changes.

## **9. Sensitivity analyses and income estimates**

While part of the gain in consumption for single mothers that we find above is likely due to improved macroeconomic conditions in the later years that we examine, we do not believe that this is a significant part of the explanation for several reasons. First, the baseline period of 1984–1990 was a time of growth and low unemployment. Second, we see similar patterns in consumption if we compare single mothers to single women without children or to married mothers, or if we compare the low-educated among either of these groups. Finally, our results are fairly similar at different points in the consumption distribution for these groups.

As an additional check on whether changes in macroeconomic conditions have a significant effect on the relative consumption of single mothers, we also estimate versions of Eq. (1) that include controls for the quarterly (CE) or annual (PSID) unemployment rate



at the state level and its interaction with being a single mother (these results are not reported here). In general, the addition of unemployment controls does not appreciably change our results for the changes in relative consumption for single mothers. For the CE samples, the gains in consumption for single mothers relative to both comparison groups estimated from these models that include unemployment controls are nearly identical to those reported in [Table 4](#). In most specifications the women fare slightly better in low unemployment times, though the estimates of the effects of unemployment on consumption are very noisy. For the samples that do not condition on having a high school degree or less, the unemployment rate coefficients are contrary to expectation, suggesting single mothers have slightly higher consumption when the unemployment rate is higher. Again, these estimates are small and very imprecise. Because the addition of unemployment controls does not affect our main findings, and given that we obtain counter-intuitive results for the cyclicity of consumption in some specifications, we do not emphasize these results.<sup>35</sup> Estimates for food consumption in the PSID that include unemployment controls are similar to those presented in [Table 5](#). These results show little evidence that consumption for single mothers has changed over time relative to single childless women, but relative to married mothers, food consumption increases slightly.

One potential concern with our measure of consumption is that it includes some expenditures—such as spending on child care, transportation or clothing—that may be related to work. Perhaps the increase in consumption levels for single mothers is due, in part, to increases in work-related expenditures—spending that does not necessarily imply an increase in material well-being. To verify that our results are not sensitive to our treatment of work expenses in the CE, we re-estimate the results presented in [Tables 3 and 4](#) using a measure of total consumption that excludes all spending on domestic services, child care, transportation, and apparel (these results are not reported here). On average, these categories account for about a quarter of all expenditures for single mothers.<sup>36</sup>

Analyses of the absolute and relative changes in well-being for single mothers using this more narrowly defined measure of consumption are qualitatively similar to those reported in the previous section. The absolute rise and the rise relative to single women without children are slightly lower with this alternative measure. The fact that most of our findings hold even after excluding all transportation, child care, and apparel spending implies that our results are not driven by changes in work-related expenses.

We also examined if consumption changes varied sharply across states. In particular, we split our sample in half using the measure of aggressiveness of welfare reform as reported in [Ellwood \(2000\)](#). Our results did not differ appreciably between the two halves of the data.

In addition to our analyses of household consumption behavior, we also examine income changes during the 1980s and 1990s for our samples of women from the CE and PSID.<sup>37</sup> Unfortunately, our results for household income are much less precise than

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<sup>35</sup> An additional complication with including state level unemployment controls is that we lose some precision as sample sizes fall because the BLS suppresses the state identifier in the CE for some respondents.

<sup>36</sup> Much of the spending in these categories may not be work related, but unfortunately we cannot determine the fraction of these spending categories that are work related for each household.

<sup>37</sup> We use an after-tax measure of income that includes the cash value of food stamps received. In the CE, we exclude households that are ‘incomplete’ income reporters.

those for consumption. The point estimates for changes in the level of income for single mothers in the CE are not as similar across specifications as those for consumption. At the 25th percentile we see a slight increase in income over time, but at the 15th percentile we see a slight decrease. Income in the 1996–2000 period is 3 to 6 percent higher than in the 1984–1990 period except at the 15th percentile where income from the first to last periods falls slightly. None of these changes, however, are statistically significant.

In all cases income for single mothers relative to single women without children is higher in the 1996–2000 period than in the 1984–1990 period. Increases in relative income over this time range from 4 to 11 percent. However, the results provide little evidence that income rises from 1994–1995 to 1996–2000. Moreover, none of the changes in relative income are statistically significant. Relative to married mothers, income in the CE changes very little, although the point estimates suggest that relative income falls for a single mother at the 15th percentile of the income distribution. Again, none of the changes are statistically significant. In fact, standard errors for the coefficients on the main interaction terms ( $\beta_2$  in Eq. (1)) are nearly twice as large in the specifications for income than in those for consumption.

Data from the PSID suggest that the level of income for single mothers is higher in 1996–2000 than in 1984–1990. These changes, however, are not statistically significant. There is also some evidence that the level of income falls between 1984–1990 and 1991–1993. Looking at all single women, relative income for single mothers follows a pattern similar to that of consumption. For this group, the relative income of single mothers rises by about 10 percent between 1984–1990 and 1996–2000, and this increase is evident at both the 25th and 15th percentiles. Again, none of these changes are significant as the standard errors on these estimates are quite large.

Due to the imprecision in the income estimates in both the CE and the PSID, we cannot draw definitive conclusions about how income for single mothers has changed over time either in absolute or relative terms. For a more detailed discussion of why income is likely to be measured with greater error than consumption for poor households, see Section 4 as well as Meyer and Sullivan (2003).

## 10. Conclusions

In the 1990s the U.S. saw some of the most notable reforms in government tax and transfer programs since President Johnson declared a war on poverty in 1964. These reforms had some clear and immediate consequences. Caseloads fell to half their 1994 peak, the employment of single mothers increased sharply, and their earnings grew in real terms. Despite this significant increase in earnings, reductions in transfer income resulted in lower total income for some single mothers in some datasets, implying that the net effect of these reforms on the well-being of single mothers is unclear.

Our results show that the level of total consumption for single mothers increases in real terms throughout this period. In relative terms, there is some evidence that consumption for single mothers near the bottom of the consumption distribution increased over the 1990s, and this increase is also noticeable for less-skilled single mothers. In most cases, we

see a statistically significant increase in relative total consumption for single mothers between 1984–1990 and 1996–2000. Our results also show that some of these gains in consumption for single mothers occur after 1995, but these changes are smaller and in many cases not statistically significant. Nevertheless, across our different specifications we can repeatedly reject the hypothesis that relative consumption fell by more than 5 percent, providing strong evidence that the material well-being of single mothers has not appreciably declined as a result of recent reforms.

While consumption is arguably the best aggregate measure of material well-being, we should emphasize that it misses many important components of well-being such as physical and mental health, leisure, family functioning, and neighborhood and school quality. Furthermore, increases in consumption may not necessarily imply an increase in well-being if these increases come at the cost of reduced leisure time. We should also emphasize that although our results suggest that most single mothers have benefitted from the recent reforms in tax and transfer policy, they do not suggest that all single mothers are better off. In particular, our results provide no evidence on how reforms have affected low-educated single mothers below the 15th percentile of the consumption distribution.

This evaluation of the effects of welfare reform adds to the existing literature in several ways. First, by looking at all single mothers, as opposed to only those on welfare, we are able to capture both the direct effect of reforms on current and past recipients, as well as effects on those induced not to receive welfare. Second, we use household consumption to evaluate the effects of welfare reform on the well-being of single mothers. Consumption is likely to be a better proxy for well-being than income, and is less likely to be under-reported than income, particularly for poor families. Third, rather than just looking at levels of consumption, we compare the consumption behavior of single mothers to two separate comparison groups. Assuming other economic changes that occurred in the past decade affected single mothers and the comparison groups similarly, this approach enables us to isolate the effects of welfare and tax changes. Lastly, we are able to strengthen these initial findings by analyzing consumption behavior from two independent data sources. The similar patterns of consumption changes that emerge from the PSID and the CE suggest that our results are fairly robust.

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