A Hand Up for the Bottom Third:

Toward a New Agenda for Low-Income Working Families

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Over the last decade, the United States has enjoyed the longest period of economic expansion in its history. Amid this unprecedented prosperity, there are indications that even the most economically vulnerable have benefited: propelled forward by the 1996 welfare reform legislation, new supports for the working poor, and a strong labor market, welfare caseloads have fallen by more than half. Studies put the proportion of former welfare recipients now employed at between 60 and 65 percent.[2]

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[2] Cancian et al. (1999), Loprest and Zedlewski (1999).

At the same time, the level of poverty – although it has fallen in recent years – is higher today than it was during the early 1970s. Despite a decade of prosperity, more than one in ten Americans, and more than one out of every six children, remains officially poor. Moreover, we estimate that a little more than one-third of the population has an income that is less than twice its poverty threshold.[3]

This paper addresses the question of how we can produce sustainable improvements in the conditions faced by low-income working Americans. Policies designed to support and encourage work can take the form either of a stick or a carrot. The 1996 welfare law provides a stick. It limits the amount of time that recipients can receive welfare, and requires most of these individuals to get a job. This paper examines some complementary carrots: increases in the minimum wage, in the Earned Income Tax Credit (EITC), and in child care subsidies for working parents.[4] We use data from the Census Bureau's annual household survey to assess the impact that expansions in such policies would have on the material well being of those in this target population.

Initially, we focus our attention on the poverty population. We find that a great deal of poverty is related to the fact that poor household heads work too few hours. Specifically, we find that nonpoor family heads work almost three times as much as their poor counterparts, and that the poverty rate could be cut in half if the poor worked as much as the nonpoor.[5] This suggests that any new policies designed to assist the poor need to encourage work. Thus, we also assess the impact that each policy option

[3] This threshold corresponded with an income of a little more than $26,800 for a single-parent family with two children in 1999.
[4] For purposes of practicality, other policy proposals – such as those designed to improve access to health care, education and job training, and community service jobs – are not addressed in this paper.
[5] It should be noted that these results take into account the fact that work opportunities may be greater among the nonpoor.

considered would have on the labor supply of poor family heads. The very tight means-testing of past programs often discouraged work among their recipients. A single parent who went to work lost most of her benefits. Non-means-tested or universal programs largely avoid these problems, but they are extremely expensive.

We would suggest that focusing assistance on the bottom one-third of the population is a good compromise, avoiding both the worst disincentives to work associated with more tightly-targeted programs (which sharply reduce benefits when recipients move up the income scale) and the huge costs associated with universal programs. If, in addition, policies designed to enhance the value of work actually elicit certain changes in behavior, they will be much more cost-effective than past efforts. In short, such policies provide incentives for people to help themselves, thereby delivering a bigger bang for the taxpayer's buck. Too often in the past, programs aimed at the poor delivered far less than a dollar of income for every dollar spent by the government because the programs in question led people to work less and to become overly dependent on public assistance. Arthur Okun called this the "leaky bucket" phenomenon. In this paper, we look for policies that not only plug these leaks, but also cause the bucket to overflow.

In this context, we find that a dollar spent on work-support programs can generate more than a dollar of income, if the program in question can elicit a sufficiently large labor supply response from its recipients. For instance, when we simulate labor supply responses to a variety of child care and EITC initiatives, our estimates indicate that a dollar spent can increase income within the target population by as much as $1.52.

A number of different proposals for changing the minimum wage, the EITC, and child care policy are currently under discussion. We separately analyze a number of these proposals, and, after sorting through them and roughly estimating their costs and their ability to help the bottom one third, we settle on a package of proposals that includes:

- An increase in the minimum wage from $5.15 to $6.15.
- A proposal that increases the EITC by providing the largest benefits to those working full-time at a minimum wage job.
- A child care subsidy that fully covers child care expenses among poor working families and gradually phases out above the poverty line.

The combination of these three policies would cost taxpayers $25.8 billion annually. However, they would also greatly enhance the well-being of the bottom third. Specifically, we find that this combination of policies would assist over 20 million families in the bottom third, providing them with an average benefit of about $1500 per family. We estimate that these combined initiatives would reduce the poverty rate by almost two percentage points, lifting 4.6 million people, including 1.9 million children, out of poverty.

The large costs associated with this set of initiatives will undoubtedly give some people pause. However, it is worth noting that this package would also draw a large number of people into the labor market who are not now working (more than 800,000), producing some offsets in the form of increased revenues (more than $3 billion). Moreover, because this package is designed to encourage work, we suspect that, over

time, these initiatives would have even more beneficial effects than we are able to estimate here. As this paper documents, work is a powerful antidote to poverty. Policies that support work have the merit not only of being far more cost-effective than past efforts, but also of having secured broad public support. Thus, the policies examined here would seem to present an opportunity for policymakers simultaneously to pursue good politics and good policy.

We spend considerable time in this paper scrutinizing the work-support policies discussed above. Here we highlight just a few of the key findings:

On the minimum wage:

- Although the majority of people earning the minimum wage do not fall below the official poverty line, more than 60 percent of wage-earners in poor families would benefit from a $1.00 increase, and these effects would likely be even larger if the impact of the increased minimum "rippled up" the wage scale.
- Despite the fact that we assume "a worst case scenario" in terms of its likely effects on employment opportunities for the least skilled, our simulation still shows that a $1.00 increase in the minimum wage would result in a net reduction in the poverty rate of four tenths of a percentage point, which corresponds with lifting approximately 850,000 people out of poverty.

On the EITC:

- In contrast to the minimum wage, the EITC is extremely well-targeted to the bottom third, with roughly 90 percent of its benefits going to this group. The EITC currently lifts 4.1 million people – of whom 2.2 million are children – out of poverty.

- We simulate the likely effects of five different policies, all of which would make the EITC still more generous at an additional cost to the Treasury of between $2.7 billion and $11.2 billion a year. These policies are estimated to reduce the poverty rate by between two tenths and six tenths of a percentage point (lifting between 500,000 and about 1.7 million people out of poverty).
- Our preferred EITC policy would "make work pay" even more than it does now by providing larger benefits to those who work the most hours at very low-wage jobs, regardless of the size of their family. Although it is expensive, this policy has the advantage of bringing a lot of new workers into the job market, which is crucial to the creation of "an overflowing bucket."

On Child Care:

- One of the innovations of this paper is that we impute child care expenses to working families with children. We subtract any such expenses from these families' earned income in order to construct a more accurate measure of the net gain from working. We find that 43 percent of all working parents with children pay for care, and that the average amount paid among these families is around $5,044 a year.
- If working parents who now pay for child care were relieved of this expense, it would remove 1.9 million people from poverty.
- We simulate the effects of five different child care proposals that would partially or fully meet this need (at an additional cost to the government of between $1 billion and $14.2 billion a year). Not all of these proposals are well-targeted to the bottom one-third, however. The result is that they vary widely in their effects, reducing the poverty rate from anywhere between one tenth of a percentage point to almost an

entire percentage point, which corresponds with lifting between two hundred thousand and two million people out of poverty.

The remainder of this paper provides more details on all of the above simulations. First, however, we look more closely at the phenomenon of poverty in the United States, dissecting some of its causes, and addressing the question of what sorts of policy approaches would be most likely to yield enduring improvements in the well-being of those in the bottom third.

The Extent and Nature of Poverty in the United States

Chart 1 shows the trend in the poverty rate over the last 40 years. The graph shows that the percentage of people in the United States who are poor declined substantially throughout the 1960s and early 1970s. After steadily increasing over the late 1970s and early 1980s, the level of poverty has generally remained within the twelve-to-fifteen percent range for the last 15 years, and has been in a state of modest decline since 1993.[6]

[6] Poverty thresholds are updated for inflation each year using the Consumer Price Index for Urban Consumers (CPI-U). However, many economists believe that this index tends to overstate price increases. Burtless and Smeeding (2000) suggest that an alternative measure of inflation, such as the CPI-U-RS index, may be more appropriate. This measure reflects various improvements on the part of the Bureau of Labor Statistics to the measurement of price changes. The authors find that, if one were to use this index instead of the traditional CPI-U, the estimated level of poverty would be lower than the official rate suggests (since current poverty thresholds – and therefore current poverty rates – would be reduced if a lower rate of inflation were assumed in updating thresholds over time). In 1998, for instance, the poverty rate measured using CPI-U-RS was approximately one-sixth lower than the official rate.

Chart 2 affords a closer look at the makeup of the poverty population in 1998.[7] As the first row of the chart indicates, the official poverty rate for the population as a whole in 1998 was 12.7 percent, representing almost 35 million people. The extent of poverty varies substantially, however, by family type: the rate among single-parent families is more than four times that of two-parent families. Meanwhile, the rate for unrelated individuals (people who do not reside with other family members) is also quite high, whereas the rate among families without children is very low. The linkage between single parenthood and poverty is well-documented; indeed, the increase in single-parent families can explain all of the increase in child poverty since 1970.[8]

A family's poverty status is a direct function of two factors: its income and its size. For a family of three in 1998, the poverty threshold was about $13,000. There are well-documented flaws, however, in the way that poverty is officially measured. The official measure fails to take into account a variety factors that affect families' disposable incomes. These factors include tax liability, the receipt of cash and cash-like government benefits, and the incurrence of work-related expenses – child care in particular.[9] We correct for these deficiencies by adjusting families' incomes for each of the aforementioned factors. Specifically, we subtract from family income estimates of federal income and payroll tax liability, as well as work-related child care expenses. We then add to it estimates of Food Stamp and Earned Income Tax Credit benefits. (The

[7] Unless otherwise indicated, all charts in this paper refer to incomes of the population of the United States during the calendar year 1998. Analyses for this report were performed on data gathered by the Bureau of the Census during the March 1999 administration of the Current Population Survey. Family characteristics other than income refer to 1999.

[8] Sawhill (1999).

[9] Some studies also take into account housing costs and medical expenses. For purposes of practicality, and in order to ensure sufficient focus for our analyses, we do not do so here. For excellent summaries of both topics, see Short et al. (1999) and Citro and Michael (1995).

method by which we adjust income for child care expenses will be discussed in further detail later in the paper. For a comprehensive description of the methodology underlying our income adjustments, please refer to the Technical Appendix.) The second line of Chart 2 shows the poverty rate after income has been adjusted in this fashion. The overall rate drops by half a percentage point, but single-parent families still have by far the highest rates of poverty, while two-parent families and families without children have much lower rates.

The last two lines of the chart show official and adjusted poverty rates among children. According to the official measure, almost 19 percent of all children are poor, while the "adjusted" rate is somewhat lower. The variation in the child poverty rate with respect to family composition mirrors that of the overall rate. Research has demonstrated a link between a child's poverty status and his/her prospects for self-sufficiency as an adult; this has been found to be particularly true among nonwhite children, who comprise a substantial portion of the poverty population.[10] For this reason, our paper will often focus on the rate of poverty among children, as well as within the population as a whole.

For the remainder of this paper, we will measure poverty using adjusted income. Since the poverty line represents an estimate of the amount of income required to maintain a minimally-acceptable standard of living, multiples of this threshold may provide a useful set of benchmarks against which to measure the distribution of well-being across the entire population. Accordingly, we have divided the population into four groups: those who are poor; those who are not poor, but whose incomes are less than 200 percent of the poverty line (the "lower middle income" group); those whose incomes

are between 200 and 400 percent of the poverty line (the "middle income" group); and those whose incomes exceed 400 percent of the poverty line (the "affluent" group). For a family of three in 1998, the upper income cutoff for the "poor" category was roughly $13,000, the cutoff for the "lower middle income" group was roughly $26,000, the cutoff for the "middle income" category was roughly $52,000, and families making more than this amount are considered to have been "affluent."

Although they are somewhat arbitrarily derived, these categories nonetheless represent a convenient taxonomy of well being that is essentially based on a ratio of income to needs. Chart 3 shows the income-to-needs breakdown of the population as a whole. A little more than one-third (35.5 percent) of the population falls either into the "poor" or the "lower middle income" category. For reasons that will be discussed shortly, we will pay particularly close attention throughout this study not just to the poor population, but also to those in the "lower middle income" category. Together, these two groups – the combination of which we will refer to as the "bottom third" – constitute what we consider to be the critical "target population" for the work support initiatives examined in this paper.

The Labor Supply of Poor Family Heads

There are a host of factors that affect the income-to-needs distribution of the population. Among the most important of these factors is labor force participation. Chart 4 shows the average number of hours worked per year by poor and non-poor able-bodied

[10] Corcoran (2000); Duncan and Brooks-Gunn (1997); and Haveman and Wolfe (1994). For a somewhat different perspective on the long-term effects of child poverty, see Mayer (1997).

family heads.[11] As the chart demonstrates, nonpoor family heads work almost three times as much as their poor counterparts. Estimates of hours worked per year are attained by multiplying the (self-reported) number of weeks worked per year by the (self-reported) number of hours usually worked per week. A reasonable question one might ask is whether the difference in annual hours worked between poor and nonpoor family heads is attributable primarily to differences in hours worked per week, or in weeks worked per year. Chart 5 indicates that nonpoor heads work about twice as many hours per week – and about twice as many weeks per year – as do poor family heads.

Not surprisingly, these differences in hours worked translate into big discrepancies in income. According to published Census data, the poverty rate in 1998 among people living in families was 3 percent if the head worked full-time and year-round, 10 percent if the head worked less than this, and 21 percent if the head did not work at all.[12] These kinds of comparisons can be misleading, however, if one of the reasons that some people don't work very much (if at all) is that their earnings potential is limited by a lack of education, poor health, time-consuming family responsibilities, or other factors. Even were they to work more, they might not be as well off as those who are currently employed. For these reasons, we estimate the potential wage rates of all those who did not work in 1998, and, as an illustrative exercise, we then conduct a simple

[11] For two-parent families, we assign "family head" status according to earnings: the higher-earning spouse is considered to be the head of the family. If neither spouse has any earnings, we assign family head status to whomever the Census Bureau has designated as the head. In one-parent households, the single parent is considered to be the head. Since they are responsible for providing for themselves, and since they are counted as distinct family units by the Census Bureau for the purposes of poverty measurement, we also consider unrelated individuals to be family heads. We assign "able-bodied" status to a family head if he/she is older than 17 and younger than 65, and so long as he/she does not report having received any type of disability income.

[12] Short et al. (1999). Estimates refer to families whose head is between the ages of 16 and 64 (inclusive).

simulation in which we "put to work" all able-bodied family heads at their estimated wage rate.[13]

Chart 6 shows the results of this simulation among families with able-bodied heads. The overall adjusted poverty rate for this group is 11.5 percent. The chart shows that, *if all able-bodied poor family heads were to work 2,080 hours per year, the poverty rate among these families would be almost halved.*[14] If we apply a less stringent work standard and assume that family heads work only 1500 hours per year, the poverty rate is still reduced, but to a lesser extent. In either instance, however, greater work effort sharply reduces poverty.

If work represents such a powerful antidote to poverty, then why, in a tight labor market, do many poor family heads work less than full-time, if at all? Chart 7 helps us to answer this question. The top two panels focus on the reasons given by poor female family heads for not working or for only working part-time, while the bottom two panels focus on poor male family heads. Among poor women, the most commonly-cited reason for not working at all is "taking care of home or family," which, one would assume, implies more often than not that they are at home caring for their children. The "family/personal obligations" and "child care problems" responses also represent a substantial chunk of the reasons cited among poor women for working only part-time.

Among poor men, the most common reason given for not working at all was "ill or disabled," despite the fact that we have excluded from our sample all family heads

[13] See the Technical Appendix for a discussion the methodology we employ in estimating predicted wages. To the extent that the nonworking poor have unmeasured characteristics that reduce their earnings potential, our results may overestimate the decline in poverty associated with increases in labor supply among this group.

[14] The number 2,080 is simply the product of the number of hours worked per week that we consider to constitute full-time employment (40) and the number of weeks in a year (52).

who are receiving any type of disability income.[15] "Going to school" is also a commonly cited reason. (Although we have excluded from this analysis anyone who is under the age of 18 and not a head of household, many college students and even a few high school students may be living independently and show up as household heads.) As for the reasons cited among poor male family heads for working only part-time, the combined percentages associated with "could only find part-time work" and "slack work conditions" imply that a lack of full-time work may have played a role in some heads' part-time status. On the other hand, "unable to find work" was one of the most infrequently-mentioned reasons among both men and women for not working at all. Thus, while the availability of jobs may have played a role in determining some family heads' part-time status, it does not seem to have been as important a factor in explaining why some heads do not work at all. It is important to note, however, that these data are for 1998, when the overall unemployment rate was around four and a half percent. Our results might look quite different in a less robust economy.

Policy Objectives

Our analysis thus far implies that the incidence of poverty is closely linked to work habits. In light of this finding, we now lay out a set of objectives that, in our opinion, any new policy initiative in this arena ought to attempt to satisfy. We begin with the proposition that one goal of such policies is the reduction of poverty. However, one can

[15] An alternative method for assigning disability status would be to use the response to this very question as the basis for assignment. It may be that our definition – which is based solely on receipt of formal disability benefits – is not broad enough for us to be able to capture all family heads who cannot work because of some form of physical disability (for instance, those who are temporarily disabled or ill are not likely to be counted under our measure).

approach this objective from a long-term or a short-term perspective. If our goal were the immediate elimination of poverty, we might simply give every poor family enough money to bring them all up to the poverty line. This would have cost about $74 billion in 1998.[16]

However, aside from its political infeasibility, this approach has the drawback of failing to deal with the phenomenon that is so closely linked to the rate of poverty over the long run: insufficient work. In addition, simply providing families with more income might not improve children's futures as much as is sometimes assumed.[17] Thus, we would suggest that any policy that has as its long-term objective the reduction of poverty ought to focus on supporting work. This is not only the most effective means of reducing poverty; it is also consistent with public expectations and values. Unless antipoverty policies are brought into line with these values, public support for them is likely to be minimal at best.

Critics of this approach are likely to raise two objections. The first is that not everyone shares these values. The values debate is not one that research can fully resolve. But worth noting are findings from a number of surveys of welfare recipients showing that they want to work and consider this a reasonable requirement.[18] The second objection is that, values aside, work is not always an option, and that those who lack jobs should not be left destitute. However, this argument is harder to sustain in the present context of a robust labor market. It seems more likely to us that, when individuals have other alternatives (such as welfare), they may become choosier about which jobs are acceptable. Giving people some choices is, within reason, a good thing. No one, for

[16] Dalaker (1999), p. 21.
[17] Mayer (1997).

instance, wants the poor to have to work in sweatshops. But public policy should, wherever possible, tilt the choices in directions that encourage, rather than discourage, poverty-reducing behaviors.

Current policy has unintentionally discouraged work. This is in part because it has, until recently, required little or nothing of recipients in return for public assistance. But it is also partly attributable to the fact that, in the process of targeting assistance to the poorest Americans and withdrawing this assistance as they move up the income ladder, we have unwittingly created an incentive for them to remain on the bottom rungs. The short-run budgetary savings of such targeting may not be worth the longer-term potential costs they impose in the form of reduced work effort and less marriage.

This doesn't mean that the short-term alleviation of poverty should be abandoned as a legitimate policy objective. We only suggest that it ought not to be considered the sole goal of antipoverty policy. As such, we will evaluate the policies examined in this paper both in terms of their immediate antipoverty effectiveness, and of the extent to which they support low-wage workers in the bottom third, whether those workers are poor or "lower middle income." Keeping these goals in mind, we will focus on policies whose primary objective is not necessarily the direct transfer of income to the poor, but is, instead, the provision of support to low-wage workers who might not otherwise find regular participation in the workforce to be a comparatively rewarding pursuit.

The remainder of the paper focuses on three policy tools: the minimum wage, the Earned Income Tax Credit, and child care subsidies for working parents. We begin by

[18] Cherlin et al. (2000).

analyzing the merits and shortcomings of one of America's oldest work support policies: the minimum wage.

The Minimum Wage

In June of 1938, President Franklin Roosevelt signed the Fair Labor Standards Act into law. Among the legislation's many provisions was the establishment of a minimum hourly wage of $.25.[19] Since that time, the government has raised the minimum wage eight times. The current federal minimum is $5.15 an hour. This amount represents 56 percent of the median hourly earnings of hourly employees, and it translates into an annual pretax income of about $10,700 for a full-time worker. However, as Chart 8 illustrates, the real value of the minimum wage is now less than 70 percent of what it was when it peaked in 1968.

The minimum wage has been the focus of debate in recent years, as Congress has been considering raising it to $6.15 an hour. Those opposed to the increase assert that it would result in a loss of jobs, and that its positive effects for those at the bottom of the income distribution are overstated by its proponents. Minimum wage supporters, meanwhile, argue just the opposite – that the minimum does, in fact, have positive distributional effects, and that the loss in jobs caused by an increase would be negligible or nonexistent. Our data shed some light on these issues.

One of the most common criticisms of the minimum wage is that many of its recipients are teenagers working part time, rather than family heads struggling to make

ends meet. Chart 9, which compares the composition of the minimum-wage population to that of all wage-earners, shows that a disproportionate percentage of minimum-wage earners are, in fact, under the age of 21.[20] However, the chart also shows that over 60 percent of minimum-wage earners are family heads or spouses of family heads.

Chart 10 focuses on the income-to-needs distribution of minimum-wage earners. We find that only a quarter of minimum-wage earners are poor, while a substantial number of these workers lives in either middle income or affluent families. It is findings such as these that have led critics of the minimum wage to declare that "the once-strong link between low wages and poverty has been broken."[21]

However, we do not agree entirely with this assessment. Chart 11 shows that 44% of all wage earners in poor families make the minimum wage. Since poor people comprise only 12.2 percent of our sample, even if all of them earned the minimum wage, they would not necessarily constitute a large percentage of all minimum-wage workers. But that has nothing to do with the distribution of wages within the poor population itself. And, in this case, a sizeable proportion of poor wage earners is working for the minimum wage.

Chart 11 also shows that an additional 17 percent of poor wage earners would qualify for a raise under a minimum wage increase by virtue of the fact that they are earning between $5.15 and $6.15 an hour. Thus, while our data confirm that the substantial majority of minimum-wage earners are not poor, we also find that over 60

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[19] Grossman (1978).

[20] The CPS does not contain hourly wage data. As such, we estimate hourly wages by dividing annual wages by the product of hours worked per week and weeks per year. This approach leads to an under-estimation of hourly wages for some observations, which we correct via a process discussed in detail in the Technical Appendix.

[21] Burkhauser and Finegan (1989).

percent of wage earners in poor families would benefit from an increase in the minimum. In addition, Chart 10 further shows that, if we broaden our discussion to take into consideration those wage earners that are "lower middle income" in addition to those that are poor, 55 percent of minimum-wage earners are in the bottom third. Overall, then, it appears that a minimum wage increase – even if it is not as well-targeted as some other work support initiatives considered in this paper – would, in fact, direct a substantial proportion of its benefits to workers in the bottom one-third of the income-to-needs distribution.

What, then, about the other major objection to raising the minimum wage – that it would lead employers to lay off some low-wage employees? Some economists argue that the "disemployment effects" of the minimum wage have been exaggerated, and that minimum wage increases may sometimes actually *increase* the level of employment.[22] The evidence – compiled in a 1995 book written by David Card of The University of California, Berkley and Alan Krueger of Princeton University – is quite extensive, and we find it to be persuasive, for the most part.

Nonetheless, we prefer to take a more conservative route and assume that there are some disemployment effects associated with increases in the minimum wage. Notwithstanding the findings of Card and Krueger, most studies find that a 10 percent increase in the minimum wage will result in a one-to-three percent reduction in teenage employment.[23] (The most readily-discernible impact of minimum wage increases is generally thought to be on teenage – rather than adult – employment.[24]) We have simulated a $1.00 minimum wage increase in our analysis, and we have incorporated into

[22] Card and Krueger (1995).
[23] Neumark and Wascher (1991), Brown (1988), and Brown et al. (1982).

our simulation a reduction in teenage employment. In order to get a sense of what the "worst-case scenario" would look like, we take the upper end of the estimates in the literature (a 3 percent reduction in teenage employment given a 10 percent increase in the value of the minimum wage). Thus, in addition to raising to $6.15 the hourly wages of anyone making between $5.15 and $6.14 (inclusive), our simulation also removes the appropriate percent of teenage workers from the workforce.

Chart 12 shows the impact of our simulated $1.00 increase in the minimum wage on the poverty rate. Despite the fact that we simulate a loss of jobs as a result of the increase, the poverty rate still declines four tenths of a percentage point, which corresponds with lifting approximately 900,000 people out of poverty.[25] While the magnitude of this impact is not large, it certainly belies the notion that an increase in the minimum will have a net negative impact on the working poor. Chart 12 also shows that, when we focus solely on families in which the head is earning the minimum wage, the effect is much more dramatic: the poverty rate among these families would be reduced by a quarter. In addition, Chart 13 demonstrates that almost 60 percent of the earnings increases resulting from a raised minimum wage would go to families in the bottom third. Thus, we find no evidence in our simulations that a loss of jobs resulting from a minimum wage increase would overshadow the earnings gains made by those on the

[24] Linneman (1982).

[25] Many analysts point out that demand elasticities for teenagers earning low wages may, in fact, be much larger than the overall elasticity for all teenagers. See, for instance, Neumark and Wascher (1997) and Brown (1999). Brown (1999) suggests that, roughly speaking, the overall elasticity for teenage workers should be multiplied by a factor of five in order to calculate the elasticity of demand for such workers at or near the minimum wage. If correct, this would mean that the composition of job losers would be more heavily weighted toward low-wage workers than our analysis might suggest. This could, in turn, have a substantive impact on our findings regarding the antipoverty effects of a minimum wage increase. We tested the sensitivity of our results by using an elasticity for low-wage workers that was five times larger than for all other workers. Our results were robust to this new specification; utilization of the larger

lower end of the income-to-needs distribution. In addition, some workers earning just above the new minimum of $6.15 may receive upward adjustments in their wages as employers seek to maintain traditional differentials between workers at different skill levels.[26]

Overall, a modest increase in the minimum wage from its current level is not likely to have a major effect on poverty, but it is quite helpful nonetheless. Although it is not as poorly targeted as its opponents might assert, there does seem to be a certain amount of "leakage" intrinsic to the minimum wage. And while a raised minimum could, in fact, result in a loss of jobs, the extent of job loss associated with a $1.00 increase would probably be slight. Moreover, in conjunction with some of the other work supports addressed later in this paper, a minimum wage increase might actually encourage work among those now dependent on welfare or other income transfers with longer-lasting effects on self-sufficiency (in fact, a number of studies – including that of Card and Krueger – have shown that, for some groups and/or in particular contexts, a minimum wage increase can have positive effects on labor supply).[27]

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elasticity only reduced the antipoverty effect of the minimum wage increase by one tenth of a percentage point.

[26] Grossman (1983) finds that an increase in the minimum wage may give way to a "ripple effect," such that workers earning wages above the minimum may also experience an increase in their wages. Card and Krueger (1995) also find modest evidence of a ripple effect for some workers whose wages are just above the minimum.

[27] There are a variety of empirical and theoretical examinations of contexts in which a minimum wage increase may lead to increases in labor supply. See, for instance, Rebitzer and Taylor (1991); Hammermesh (1981); Boschen and Grossman (1981); and Card and Krueger (1995).

The Earned Income Tax Credit

Among the various work support programs whose expansion might provide an effective complement to a minimum wage increase, one of the most important is the Earned Income Tax Credit (EITC). The EITC – first introduced in the mid-1970s and expanded most recently in 1990 and 1993 – acts as a wage supplement for working families earnings as much as $32,000 a year. The credit for which a family is eligible depends in part upon its earnings. For the first few thousand dollars of earnings, a family's EITC benefit increases at a constant rate for each dollar earned. At a certain point along the earnings scale, families' benefits "level off" at a maximum level. And, at a point further still up the earnings scale, the benefit amount begins to phase out as a percentage of those earnings that exceed a pre-specified "phase-out point." There are three different EITC benefit schedules: one for families with no children, one for families with one child, and one for families with two or more children. The phase-in rates, maximum benefit levels, and phase-out rates vary considerably across these three categories (families with no children receive the smallest benefit, while families with two or more children receive the largest). Federal government estimates indicate that the IRS paid out a little over $30 billion in EITC benefits in 1998.

If one defines target efficiency as the transfer of benefits to a target population with a minimum of "leakage," and if we take the target group for the EITC to be the bottom third, then the EITC – unlike the minimum wage – is a remarkably well-targeted program. Chart 14 illustrates this target efficiency by displaying two measures of the 200

percent poverty gap[28] – one that is calculated before income is adjusted for receipt of the EITC, and one that is calculated after this adjustment is made. The overall 200 percent poverty gap is $428 billion before adjusting income for receipt of the EITC. As the chart shows, the EITC reduces the 200 percent poverty gap by almost $20 billion. Our estimate of the total cost of the EITC is approximately $21.6 billion.[29] Thus, roughly 90 percent of the dollars we estimate to have been spent on the EITC have gone towards the reduction of the "200 Percent Poverty Gap."[30]

It is also worth pointing out that, even though the EITC is not just an antipoverty program, and in our view should not be judged on these grounds alone, it does, in fact, have a significant antipoverty effect: Chart 15 shows that receipt of the EITC lifts 4.1 million people – of whom 2.2 million are children – out of poverty. A number of proposals to expand the EITC have been made in recent years. Given its size, and the current interest in expanding it, all features of the program warrant some attention:

[28] The 200 percent gap is measured for both poor and low-income families in much the same way that the regular poverty gap is measured for poor families: by subtracting family income from a particular threshold. In this instance, that threshold is equal to twice the regular poverty line. The overall 200 percent poverty gap is calculated by summing up these amounts across all poor and low-income families.

[29] Due to limitations in our data, it is difficult, if not impossible, to "locate" all of the dollars paid out in EITC benefits; we underestimate the program cost for the EITC by approximately $9 billion. Please refer to the Technical Appendix for a detailed discussion of this matter.

[30] Throughout our paper, we use the technique described here (dividing the dollar amount by which the 200 percent poverty gap is reduced by the total – or, in some cases, marginal – cost of the program) in order to assess the cost-effectiveness of various policy initiatives. We are not the first to take this approach; both Kim (2000) and Beckerman (1979) use similar methods (although they focus on the 100 percent poverty gap, rather than the 200 percent gap). As was noted previously, our program cost estimates for the EITC are too low. However, our estimate of the poverty gap reduction effected by the EITC is also almost certainly depressed as a result. If one assumes that the level of depression for the program cost estimate is roughly the same as it is for the poverty gap reduction estimate, then one can also assume that the errors would effectively "cancel each other out" in the calculation of the cost-effectiveness ratio. Please refer to the Technical Appendix for a more thorough treatment the under-reporting of income and government benefits in the CPS.

Benefit Levels. The maximum benefit level for a family with two or more children is currently $3,756 (in 1998 dollars). For a worker earning a little under $10,000, this represents a 40 percent increase in income, or the equivalent of almost $2 more per hour for a full-time, minimum-wage worker. Raising the benefit level is clearly a good way to boost the incomes of low-income families, but it requires either that the phase-out rate be increased (which could discourage work among those in the phase-out range) or that benefits be extended up the income scale with commensurate increases in the cost of the program. One increasingly popular way of raising EITC benefit levels is through state supplements to the federal credit. Many states have implemented their own EITC programs that "piggyback" on the federal program by providing workers with an additional amount that is based on the credit they receive from the federal government. Thirteen states, the District of Columbia, and one local government (Montgomery County, MD) had such programs in tax year 2000. (Two other states – Indiana and Minnesota – have also enacted state EITCs, but they are not linked as closely to the federal program).[31]

Adjustments for Family Size. A major issue revolves around how much to adjust benefit levels to reflect the size of the family or the number of children in the household. Current law includes a huge differential (666 percent) between no-child and one-child families, and a sizeable differential (65 percent) between one-child and two-child (or larger) families. The Clinton administration proposed adding a fourth and still more generous tier for families with three or more children. The arguments in favor of this type of adjustment are that larger families are more expensive to maintain, that

[31] Johnson (2000).

poverty rates among these families are higher than they are among smaller ones, and that welfare programs (and income taxes) have always been adjusted for family size.

One counter argument is that poverty rates do not accurately reflect the actual economies of scale reaped by larger families, which leads to an overestimation of the rates of poverty within this group.[32] In addition, the taxpaying public may resent having to pay higher benefits to larger families when they themselves may have limited their own family size according to what they believed was affordable.[33] Indeed, attempts to reintroduce such welfare elements into the EITC could create a backlash against the program similar to the one that led to the reform of AFDC in 1996. Although there is no evidence that higher benefits encourage people to have more children, over time these rules could end up exercising some effect on behavior, and might take on a normative significance that would be politically salient.

A related issue has to do with what we should do about benefits for childless individuals. The very small benefits they receive under current law (a maximum of $341 in 1998 dollars) hardly seem worth the administrative burden they generate. On the other hand, many of these households may be very deserving of assistance, especially to the extent that they contain the fathers of children on welfare. This suggests that benefits for childless individuals and families should either be increased substantially, or that they should be eliminated altogether. We simulate both options below.

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[32] As noted by the National Research Council (Citro and Michael, 1995) and Ruggles (1990), the family size adjustments embedded in the current poverty thresholds are not only arbitrary, but are, in many instances, nonsensical. Ruggles suggests a more transparent and straightforward scale that raises each additional person in the family (whether an adult or a child) to the power of .5. Such an approach would show that a family consisting of a mother and three children needs only 16 percent more income than a family consisting of a mother and two children. By contrast, official poverty thresholds imply that the larger family in this example would need 28 percent more income.

[33] It is true that some nonpoor families receive additional assistance via personal exemptions and child credits.

Encouraging Marriage. The EITC as currently structured may either reward or penalize married couples, depending upon individual circumstances. This unintended feature is a result of the fact that the EITC is calculated based on family earnings, rather than individual earnings. When two people marry, their earnings are, for the purposes of the EITC, combined. A couple incurs a *marriage penalty* if the sum of the benefits that they would have collected had they remained single exceeds the benefit that they do collect once that they are married. A *marriage bonus* is incurred if the opposite is true.

Marriage penalties can be relatively substantial for low-income families. For instance, marriage can lead to a loss of over $3,000 in EITC benefits for a couple in which both people earn $15,000. At the same time, if a nonworking mother marries a man who has a low-income job, the couple will incur a substantial marriage bonus.[34] Studies tend to find that couples face marriage penalties more often than they do marriage bonuses.[35] Although the evidence suggests that the EITC's marriage effects are minimal at best[36], many people believe that government policy ought to encourage – or, at the very least, ought to avoid discouraging – marriage among poor people. One way of fixing the marriage penalty in the EITC would be to extend the "maximum-benefit plateau" for married couples. Under such a proposal, the phase-out of benefits would begin and end at a higher income level for married couples than for singles. In a recent paper comparing five different proposals for reducing the marriage penalty in the EITC,

[34] Sawhill and Ellwood (2000).
[35] Ellwood (2000) finds that, among people who married between 1983 and 1991, 16 percent would have incurred penalties, while 11percent would have received bonuses. The rest of marriages would have been unaffected.
[36] Ellwood (2000).

Ellwood and Sawhill assess the pros and cons of each proposal, and conclude that such an extension of the plateau has considerable merit.[37]

Benefit Phase-In. In some respects, the EITC functions like a negative income tax program. The major parameters of a negative income tax are the basic benefit or income guarantee and the phase-out rate or marginal tax rate on earnings. The major difference between the EITC and a negative income tax is that EITC benefits are conditional on work. Thus, if one has no earnings, one receives no benefit. But the question remains as to how much work should be required before one qualifies for benefits. The EITC solves this problem by phasing in benefits smoothly as earnings increase up to some set level. To the extent that an increase in earnings signals that an individual is working more, this attribute of the program does indeed reward work.

However, because the EITC is based on annual earnings, some people who have relatively high wages will receive greater benefits than those who make lower wages but work more hours. Furthermore, despite the emphasis in the EITC on "making work pay," those who work full-time at a low-wage job do not necessarily qualify for more benefits than do those who work less than full-time. Specifically, the current phase-in range extends to an income of $6,680 for families with one child and $9,390 for families with two children. (These are 1998 figures that inflate to $7,140 and $10,020 in 2001.) However, full-time work at a minimum wage job yields an income of $10,712 – a figure that would increase to $12,972 if the minimum wage were increased to $6.15. Moreover, most family heads earn more than the minimum wage. Even former welfare recipients

[37] Sawhill and Ellwood (2000).

earned an average of $6.61 an hour in 1997, according to a study by the Urban Institute.[38] Full-time earnings at this wage are $13,749 – or almost twice as high as the earnings level at which the phase-in ends for a one-child family. This suggests that the phase-in range ought to be extended in keeping with the program's goal of "making work pay."

Benefit Phase-Out. Under current law, the EITC begins to phase out at an earnings level of $12,260 for families with at least one child (1998 figures). This is lower than the income level corresponding with the poverty threshold for a family of three in that year ($13,003), and it is much lower than the poverty line for a family of four ($16,660). It is also lower than what most full-time workers earn – even those with low wages. The phase out of the EITC at relatively low income levels also adds to the cumulative tax rate faced by low-income families from the loss of Food Stamp or housing benefits. The burden is quite high for many low-income workers. Studies indicate that they may face cumulative tax rates of somewhere between 50 and 60 percent – and the EITC (whose phase-out rate ranges from 7.65 percent to 21 percent) is one of the key factors contributing to this problem.[39] For all of these reasons, it might make sense to "extend the end of the plateau" to a higher income level, and/or reduce the phase-out.

Five Options for Expanding the EITC

With all of the aforementioned considerations in mind, we have modeled and analyzed five options for changing the structure of the EITC. These options are

[38] Loprest (1999).
[39] For more information on cumulative marginal tax rates facing poor and near-poor families, see Giannarelli and Steuerle (1995) and Suyderhound, Loudat, and Pollock (1994).

graphically depicted in Charts 17 through 21, and they are outlined in considerable detail in Chart 16 (a "Quick-Reference Guide" to our EITC options). The top portion of Chart 16 lists all of the program parameters for the EITC in 1998. (By statute, the income thresholds for the program are adjusted annually for inflation; 1998 is the most recent year for which all necessary data are available. All other figures used in Chart 16 have been expressed in 1998 dollars in order to facilitate comparisons between various proposals.) The rest of the chart details the parameters for our five options. The following are brief descriptions of each of the five options:

The Fourth-Tier Plan: *Similar to a plan proposed by the Clinton administration. Key features include a fourth tier for families with 3 or more children; slightly higher phase-in rates for the new tier; a plateau extension for two-earner couples in all tiers; and reduced phase-out rates for families with two or more children.*

Marriage Penalty Reduction: *Alleviates the marriage penalty by extending the plateau by $6,000 for married couples. Otherwise, the parameters for this option are identical to those under current law.*

The Single-Tier: *Eliminates benefits for families with no children, and sets the parameters for families with one child equal to the current-law parameters for families with two or more children (thus, there is only one tier of benefits for all EITC recipients).*

25% Increase: *This option generally mimics current policy, but it increases the benefits of current EITC recipients by a factor of 1.25. It is similar to many state EITCs that piggyback on the federal program.*

Make-Work-Pay: *MWP "shrinks" the plateaus for all three tiers in order to allow the phase-in range to extend to an earnings level of $10,712 (the level corresponding with a full-time, minimum-wage salary). Maximum benefit levels for all tiers are increased. The tier for families with no children is expanded considerably. Most phase-in rates are the same as under current law. Most phase-out rates are increased in order to: 1) accommodate the parameters of the plateaus, and 2) allow benefits to phase out at the same income level as is the case under current law.*

Labor Supply and the EITC

As has already been alluded to, the EITC can create strong work incentives or disincentives for its recipients. Theory tells us that, in terms of the decision as to whether or not to enter the labor force, the effect of the EITC is unambiguously positive, since, at a minimum, one would be no worse off joining the labor force *with* an EITC than *without* one, and, at best, the credit can provide workers with a substantial supplement to their earnings that they would not otherwise have received.[40] In terms of hours worked, however, the EITC is assumed to have varying effects, depending upon where one is with

[40] This is assuming that only one person per family works, or might work. Incentives are assumed to be different for secondary earners than they are for primary earners.

respect to the program's benefit structure. Chart 22 illustrates these effects for a single mother with one child earning $6.00 an hour. In the phase-in range, the impact is ambiguous, as there are countervailing negative income and positive substitution effects. Within the maximum-benefit range, there is a negative income effect and no substitution effect, resulting in a net disincentive with respect to hours worked. And, within the phase-out range, there are negative income and substitution effects, resulting once more in a net negative impact on hours worked.

Existing empirical research suggests that the EITC has strong positive effects on primary earners' decisions to work. Since the mid-1980s, the labor force participation rates among single mothers have risen dramatically, and a number of researchers, including Dickert, Hauser, and Scholz (1995); Eissa and Liebman (1996); and Meyer and Rosenbaum (1999) have found that expansions in the EITC accounted for somewhere between 20 and 60 percent of this increase. This effect may have been offset by a tendency among those already working – especially those in two-parent families – to reduce their hours of work. Eissa and Hoynes (1998) find that expansions of the EITC lowered the labor force participation rates of married women and reduced hours worked by both married men and women.[41] However, Eissa and Liebman (1996) find that, among single parents, EITC expansions have a positive effect on labor force participation, and no discernible effects on hours worked.[42]

The question as to what sorts of work incentives are generated by expansions of the EITC is more than academic. When the government provides an additional dollar of

[41] Ellwood (2000) also suggests that the EITC has caused married mothers to reduce their labor force participation.

[42] For excellent reviews of the literature on the labor supply effects of the EITC, see Dickert-Conlin and Holtz-Easkin (1999) and Greenstein and Shapiro (1998).

income to a low-income family, it may increase that family's income by more or less than a dollar, depending upon whether and how the members of that family change their work behavior in response to the increased income. Specifically, if a program succeeds in encouraging work, it will become a more cost-effective tool for reducing poverty. Conversely, if in the process of providing people with more income or phasing down benefits as earned income increases, the EITC were to discourage work, some of the additional income assistance it provided would be offset by lower earnings with the result that a dollar of government assistance would be delivering less than a dollar of extra income to low-income families.[43]

Keeping all of this in mind, we simulate a modest labor supply response among family heads to the EITC options analyzed in this paper. For the sake of simplicity – and because we view the evidence on these points to be somewhat inconclusive – we do not model changes in labor supply among secondary earners, or in hours worked among primary earners.[44] Our simulation is based on a logistic regression model that estimates a probability of working for all able-bodied family heads. We assume that heads have a participation elasticity of .7. This estimate is taken from the results of a 1999 study of single mothers conducted by Meyer and Rosenbaum.[45] The use of other reasonable estimates from the literature does not change the results of the analysis in a substantial

[43] Berlin (2000) conducts thorough examinations of the ways in which different designs can affect labor supply, and thus the cost-effectiveness of different antipoverty strategies.

[44] Thus, the reader should bear in mind that, to the extent that expansions in work-support policy would cause workers to reduce their work effort – or to neglect seeking higher-paying jobs – in order to increase their means-tested benefits or avoid having them phased out, our simulations may overstate the beneficial labor supply effects of the initiatives in question.

[45] Meyer and Rosenbaum (1999). The authors actually find an elasticity of the participation rate with respect to the return to work of .69; we simply round this number up for the sake of simplicity. Moreover, Michalopoulos (1999) reports that, in simulating the labor supply effects of existing demonstration work-subsidy programs, studies using a .7 elasticity yielded results that tracked the programs' actual outcomes most closely.

way. We take this elasticity to imply that a ten percent increase in a head's after-tax wage (or in the potential after-tax wage of a head that is not working) will increase his/her probability of working by seven percent.[46] For each simulated change to the EITC, we use this measure in conjunction with the changes to heads' actual or potential after-tax wages to calculate the extent to which their probabilities of working change. We take the change in the average of these newly-calculated probabilities to represent the change in the participation rate, and we proceed at that point to "select into the labor force" the appropriate number of additional family heads.

Our model also allows for the removal from the labor force of certain heads whose net wage *decreases* as a result either of having their EITC amount reduced, or of losing their benefits altogether (this is pertinent primarily to the Single Tier option, in which benefits for childless families are eliminated altogether). We estimate the annual number of hours worked by new labor force entrants using a simple OLS model. Overall, our labor supply simulations result in relatively moderate increases in the labor force participation of family heads. The option yielding the largest increase in the participation rate – MWP – drew almost 600,000 new workers into the labor force (this number was over twice as large as that of any other option).[47] The average estimated wage of the new labor force entrants was $7.98, and the average estimated annual hours worked among this group was 1,012. For a more detailed discussion of the labor force participation

[46] We also assume the average probability of working to be the equal to the participation rate.

[47] Our analysis is flawed in one respect. On the whole, our findings are rather robust to the selection of elasticity estimate used in the labor supply simulations. However, our results for MWP are more sensitive than many of our other findings. A substantial proportion of the increases under MWP goes to childless individuals. The Meyer and Rosenbaum elasticity estimate we use refers specifically to the labor supply of single mothers. One could argue that a different elasticity ought to be used for childless individuals in simulating this option (and perhaps some of the other EITC expansions considered here, as well). For the sake of simplicity, however, we have used the same elasticity for all heads.

simulations, and for additional details on the labor supply effects of each EITC option, please refer to the Technical Appendix.

Costs and Impacts of our EITC Options

Chart 23 reflects the effects of our five EITC options and the simulated labor supply responses to them (for the reader's reference and for purposes of comparison, we have also included in the Technical Appendix a series of "static" estimates that do not take into account our simulated labor supply responses). The marginal reduction in the poverty rate ranges from two tenths of a percentage point (the Single-Tier option) to six tenths of a percentage point (MWP and the 25% Increase; these are also the most expensive of the options examined here). These rates imply, respectively, that approximately 500,000 people, and 1.7 million people, would be lifted out of poverty.

Chart 24 shows that "Make Work Pay" is by far the most expensive of the proposals, but that it is also the most effective at reducing the 200 percent poverty gap. The initial cost-effectiveness estimates in this chart (contained in the third row of data) are calculated as the ratio of the marginal reduction in the adjusted 200 percent poverty gap (which reflects changes in families' adjusted incomes) to the marginal cost of the proposal (which reflects the difference between the cost of the current EITC and the cost of the proposal).[48] As was discussed above, the effects of changes in policy are enhanced to the extent that those changes induce increased labor force participation. In this case, for instance, the reduction in the 200 percent poverty gap is in part a function of the fact that the EITC has been increased, but it also reflects the fact that more people in the

bottom third are working, which further reduces the poverty gap at no additional expense to the government. Therefore, the cost-effectiveness ratios discussed here indicate both the initial target efficiency of each proposal and any additional benefits generated by labor supply responses to that proposal. Thus, for most of our EITC options, the cost-effectiveness ratios actually exceed 100 percent, due to the fact that the poverty gap is reduced by more than the amount that was originally spent on the EITC expansion.

Besides earning additional income as they enter the workforce, new labor force entrants will also begin to pay federal taxes, and, in may cases, their means-tested benefits (such as Food Stamps and family assistance) will be reduced. Because of these additional tax payments and lowered benefit levels, these new workers will help to generate additional savings for the government. The fourth line of data in Table 24 shows the level of such "program and revenue offsets" that we estimate would be generated under each option. The fifth and final line shows the recalculated cost-effectiveness ratio for each proposal after these offsets are taken into account.[49] The inclusion of offsets in our analysis causes the cost-effectiveness ratios to rise by as much as 24 percentage points. The highest ratio remains that of the 25% increase, which rises to 147% after offsets are included.[50]

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[48] "Current" being defined in this context as the cost of the EITC in 1998.

[49] Offsets are defined here as the sum of tax savings, welfare payment savings, and Food Stamp savings resulting from labor supply responses to each proposal. Tax savings are a function of payroll taxes and income taxes paid on labor force entrants' new earnings. Food Stamp benefits are reduced by 24 cents for each new dollar of earnings, and welfare benefits are reduced by a dollar for each new dollar of earnings. Food Stamp and welfare savings simply equal the amount by which these benefits are reduced. For additional discussion of the methodology underlying our changes to income adjustments, please refer to the Technical Appendix.

[50] The "cost-effectiveness ratio with offsets" estimates are calculated as each option's marginal poverty gap reduction divided by the difference between the marginal program cost and the offset amount.

A key lesson to be gleaned from our EITC analyses is that well-crafted policy can transform what might otherwise have been a "leaky bucket" into an "overflowing" one – that a dollar spent on work support programs may translate into more than a one-dollar increase in income among the target population, if those programs are structured in such a way as to bring new workers into the labor force. Among the barriers to full labor force participation confronting those in the bottom third, one of the most imposing is the cost of child care, which can create particularly acute dilemmas for single-parent families. The next section will take up this issue, focusing on the burden that child care expenses can create for poor and lower middle income working families, and analyzing a variety of policy proposals to help alleviate this burden.

Child Care Policy

The last 50 years have witnessed a dramatic increase in the labor force participation of mothers. As Chart 25 illustrates, the proportion of mothers who work grew from a little more than 21 percent in 1950 to 70 percent by the late 1990s. As the proportion of mothers who work has increased, so, too, has the significance of child care as a work-related expense. CPS data do not contain any direct information on child care, so we impute out-of-pocket child care expenses to families with children under the age of twelve.

Our imputations are based on a two-step process. First, we use a logistic regression model to estimate the probability that a family will incur any expense, and we then use an OLS model to estimate the amount spent among those who have incurred

expenses. The parameters for these models were estimated by the Census Bureau using 1992 data from the Survey of Income and Program Participation. We have inflated our estimates of the cost of care to 1998 dollars. Expense estimates are topcoded such that they cannot exceed 50 percent of the earnings of the single parent, or of the lowest-earning parent in two-parent families. We consider a family a candidate for incurring child care expenses only if the single parent or both married parents work(s). For further information on our child care expense estimation process, please refer to the Technical Appendix.

Chart 26 disaggregates our estimates of child care expenses among working families with children along a variety of dimensions. The left-hand-column of data indicates the percent of families in each category estimated to have paid for care, while the right-hand column specifies, among those families paying for care, the average amount per family estimated to have been paid. We find that 43 percent of all working families with children pay for child care, and that these families pay an average of $5,044 annually. The variation in our estimates is substantial; depending upon the group, the amount paid for care ranges from $1,958 to $6,587, while the percent paying for care ranges from about 22 percent to 77 percent. As one might expect, the cost of care rises with the number of young children in the family, and also with family income and the number of hours worked by a single parent or working spouse.

How onerous are these expenses for the families that have to cover them? Chart 27 examines the marginal impact that child care expenses have on the incidence of poverty. We find that, when income is adjusted for child care expenses, 1.9 million additional people – of whom more than one million are children – are "thrown into

poverty." And among those who can least afford it, child care poses a particularly heavy burden: Chart 28 shows that those in the bottom third who pay for child care spend a substantially larger proportion of their incomes on it than do middle income and affluent families.

Child Care Policy Options

Given that many parents have no choice but to pay for child care in order to be able to hold down a job – and since, on average, child care payments eat up close to a fifth of the incomes of poor and lower middle income working families paying for care – we model a variety of policy options designed to assist parents in their efforts simultaneously to meet their obligations to their jobs and their families. Here is a quick summary of each of them:

The Dependent Care Tax Credit (DCTC): *This is not actually a child care "proposal," as this policy is already in place. However, in order to establish an appropriate baseline against which to measure the effectiveness of other policies, we simulate receipt of the DCTC. The DCTC is a nonrefundable tax credit available to families that pay for child care. The credit for which a family qualifies is calculated by taking the product of a credit rate (which varies according to family income) and the family's amount of qualifying work-related child care expenses. We assume that our estimates of child care expenses represent families' "qualifying expenses." Qualifying expenses are capped at $2,400 for a family with one qualifying child, and at $4,800 for families with two*

or more qualifying children. The maximum credit rate for which a family can qualify is 30 percent. In theory, families with incomes of $10,000 or less qualify for the maximum rate. However, in practice, these families have no income tax liability against which to use the credit. For every $2,000 by which income exceeds $10,000, the credit rate is reduced by a percentage point until it reaches its minimum level of 20 percent. The credit rate for all families whose incomes exceed $28,000 is 20 percent.[51]

Universal Pre-K Access: *During his presidential campaign, Al Gore proposed universal access to pre-kindergarten for all four-year-olds. We simulate this proposal in the following way: if a family does not have a four-year-old, or if it has not been imputed to have paid for care, then the Pre-K plan does not affect its adjusted income. Among families that were imputed to have paid for care, and that do have a four-year-old(s), we subtract from family child care expenses the proportion of total expenses that is equal to the proportion of children in the family that are four years old. This is only a very rough method for simulating this policy, and, since the cost of caring for and educating preschoolers tends to exceed the cost of caring for school-age children, it is likely that it will underestimate both the costs and the effects of the plan. Nonetheless, we hope that this approach will at least provide a general idea as to the program's potential distributional effects.*

[51] Our initial estimates overstate receipt of the DCTC – in terms of the number of families claiming the credit, and of the amount claimed per family. We correct for this overestimation via a process described in

DCTC Expansion: *Democrats have proposed expanding the DCTC such that the maximum credit rate would be raised to 50 percent for families with incomes up to $30,000. They propose phasing the credit down to 20 percent for families with incomes between $30,000 and $60,000. All families with incomes above $60,000 would be eligible for the 20 percent rate.*

DCTC Refundability: *The DCTC is a nonrefundable credit. Some have argued that it should be made fully refundable, so that families with lower levels of income (and therefore small or nonexistent tax liabilities) would also be able to benefit from the credit.*

Phased-Out Child Care Subsidy: *We also construct and simulate our own child care subsidy. It would cover the full amount of poor families' estimated child care expenses up to the point that their 100 percent poverty gap is reduced to zero. Families' subsidy amounts would be reduced by twenty cents for every dollar by which their subsidy-enhanced income exceeds the poverty line, until such point as the subsidy phases down to zero (in this respect, our simulated child care subsidy mimics some aspects of the EITC). The subsidy could take the form of a refundable tax credit, or of a voucher provided to families through the existing Child Care and Development Block Grant.*

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the Technical Appendix.

DCTC Expansion & Refundability: *We combine the DCTC expansion and refundability proposals in order to estimate the effect of implementing these policies simultaneously.*

Labor Supply and Child Care

As was the case with our EITC analyses, we take labor supply responses into account when analyzing our child care policy options. There is some reason to believe that a change in the cost of child care (via policies of the sort discussed above) would affect labor supply in a different fashion than would a straightforward change in the after-tax wage (via an EITC expansion, for instance). One of the principal bases for this line of thought is the fact that, as we have seen, parents often use unpaid care (unpaid care is typically provided by a spouse or other relative). The widespread use of unpaid care may indicate that a change in the price of paid care would cause some parents simply to substitute paid care for unpaid care, rather than fundamentally alter their labor force behavior. Thus, some studies of the effect of child care on labor supply (Averett et al. 1997, Ribar 1995, Council of Economic Advisers 1997) consider the availability and quality of unpaid care in the course of their analyses.

However, for the sake of consistency, we have adopted a methodology for estimating labor supply responses to changes in child care policy that mimics the one that we used in estimating responses to EITC expansions. The reader should bear in mind, though, that this may overstate labor supply responses in some cases. The Technical Appendix contains additional information regarding the methodology we used in

conducting this simulation, as well as precise estimates of the labor supply responses to each policy. Generally speaking, the simulated labor supply responses to our child care policies are smaller than the responses to our EITC options (largely because the child care proposals analyzed here tend to be less expansive than – and are generally not as well-targeted as – our EITC proposals). The policy that elicited the strongest labor supply response is the Phased-Out Subsidy, which drew over 270,000 new workers into the labor force. The proposal with the smallest effect was the DCTC expansion, which drew about 25,000 workers into the labor force.

Costs and Impacts of our Child Care Options

Chart 29 reviews the impacts of our simulated child care policy options (after having taken labor supply responses into account) on the poverty rate. Since some of the proposals considered here would expand the DCTC, we initially add to families' incomes an estimate of the regular, non-refundable DCTC. [52] We estimate that receipt of this credit lowers the overall poverty rate by one tenth of a percentage point. The 12.1% overall poverty rate and the 17.4% child poverty rate are the appropriate baseline estimates against which to assess the impacts of the policy options examined in this chart.

The child care policy that would have the greatest impact – both in terms of the overall poverty rate and the child poverty rate – is the Phased-Out Subsidy. Our estimates imply that this proposal would reduce the overall poverty rate by seven tenths of a percentage point, and that it would reduce the child poverty rate by more than one

[52] As was the case with the EITC simulations, we have also included in the Technical Appendix a series of static estimates that do not take into account labor supply responses to changes in policy.

and a half percentage points. This translates into lifting roughly 2.2 million people – and about 1.3 million children – out of poverty. The comparatively large antipoverty effects produced by the subsidy proposal are not particularly surprising, since it is designed specifically to relieve the child care burden of the poor, and of the near-poor, to a somewhat lesser extent.

Chart 30 analyzes the cost-effectiveness of these proposals, focusing on the extent to which each option would reduce the 200 percent poverty gap as a ratio of its marginal cost.[53] The Phased-Out Subsidy is the most expensive; we estimate its cost to be about $14.2 billion.[54] The other policy options would cost substantially less. Generally speaking, these proposals do not yield the sorts of consistently high initial cost-effectiveness ratios that we found in our EITC simulations. Nonetheless, the initial ratios are still quite large for the DCTC expansion, DCTC refundability, and combined expansion and refundability options, with the ratio barely exceeding 100 percent for the DCTC expansion, and exceeding the 100 percent mark by a wider margin for the other two DCTC options. Moreover, when offsets are included, these ratios rise even higher.[55] Like most of our EITC options, then, these initiatives represent examples of "overflowing buckets." At the same time, however, the Pre-K proposal appears to be poorly targeted

[53] It is likely that, as the government expands the provision of child care subsidies and/or services, some families will substitute paid care for unpaid care, and that families already paying for care will substitute more-expensive care for the services that they are currently receiving. Because our analysis does not take into account the possibility of such monetization, our estimates of program cost for these options may be too low.

[54] Program cost estimates for child care subsidy initiatives vary widely in the literature. For instance, Bergman (forthcoming) estimates a program cost substantially higher than ours for an initiative that is structured similarly to our Phased-Out Subsidy program. Such discrepancies are often attributable to differences in assumptions as to the per-child cost of care. Our analysis takes the amount currently being spent by families out of pocket to represent this cost; other studies (such as Bergman's) use estimates of the cost of "high-quality" or "average-quality" care, which tend to be much higher.

[55] The offsets shown here reflect not only tax, Food Stamp, and welfare savings, but also EITC "losses." That is to say, the amount of new EITC benefits claimed by labor force entrants is subtracted from their

toward the bottom third. This is to be expected, given that this proposal, as we have simulated it, has no means-tested component to it. [56]

Overall, the findings here reinforce those from our EITC analyses. They suggest: 1) that well-targeted policy can be effective in helping to ameliorate the conditions faced by those in the bottom third, and 2) that this goal can be achieved in a cost-effective fashion if the policy also draws new entrants into the workforce. The next section will build upon our findings thus far, examining the estimated effect of implementing the Phased-Out Subsidy in tandem with expansions in other work support policies.

The Aggregate Effect of Complementary Work Support Policies

We have focused in this study on the minimum wage, the Earned Income Tax Credit, and various forms of child care subsidies. We now draw on our research in each of these areas in order to simulate a combination of policy changes and estimate their joint effects. Specifically, we simulate a $1.00 increase in the minimum wage, the MWP EITC Option,

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offset amount. This was not done in the EITC analyses because the cost of new EITC benefits was already taken into account in the "marginal cost" portions of the ratios calculated for Table 24.

[56] It is important to keep in mind that the proposal in question would only make *access* to Pre-K universal. It does not involve implementation of a mandatory additional year of school for all children. Thus, it is difficult to know which families would avail themselves of this opportunity. It could be that those families least able to afford high-quality care for their children would be the most likely to enroll them in such a program. If this were the case, then the distributional implications for this initiative could be quite different than they appear to be from our analysis, since we assume take-up of the program only among working families already paying for child care. The reader should also bear in mind that our "program cost" estimates for the Pre-K proposal are based on our per-family estimates of child care expenses. It could be that such a program would spend more per child than a family would spend on the same basis. If this were

and the Phased-Out Subsidy child care option (we take into account disemployment effects under the minimum wage increase, and labor supply responses to the EITC and child care policy changes). Overall, we estimate that these initiatives would draw more than 800,000 family heads into the workforce.[57] Our analyses indicate that these initiatives would provide more than 20 million families in the bottom third with some sort of assistance, which would average roughly $1500 per family. As Chart 31 shows, we estimate that this combination of policies would reduce the poverty rate by more than one and a half percentage points, and that it would simultaneously increase the size of every other income-to-needs group. We estimate that the three policies would, in combination, lift 4.6 million people – including 1.9 million children – out of poverty.

Chart 32 assesses the cost-effectiveness of this combination of policies.[58] We estimate that the total marginal cost to government of this package would be $25.8 billion.[59] These initiatives would also have a relatively large impact, however: even before taking into account labor supply effects, they would reduce the 200 percent poverty gap by over $19 billion. After having taken labor supply responses into account, we estimate that they would reduce the 200 percent poverty gap by $34.1 billion. We also estimate that they would generate greater than $3 billion in revenue offsets. On balance, then, we estimate the cost-effectiveness ratio of this package to be more than 150 percent.

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true, then the costs of the program could be higher – indeed, considerably so – than we have shown to be the case.

[57] This figure reflects *net* gains in employment; it accounts for all disemployment effects associated with our policy simulations.

[58] One might consider adopting a "balanced budget assumption" for this analysis by estimating the amount by which other government programs would have to be cut – or taxes would have to be raised – in order to finance these initiatives. That exercise is beyond the scope of this paper.

[59] If one were to assume that the increases in wages brought about by the raised minimum wage were a "cost to business," then this additional cost would be about $16.4 billion.

A New Generation of Work Support Initiatives

All of the policies examined in this paper have, in one way or another, been designed to encourage and support work. However, there is another work support strategy that we have not yet discussed, but that may harbor even greater potential to speak to these goals: the requirement of a certain *amount* of work as a condition of receiving benefits. Such a requirement has been introduced in several demonstration programs. For example, the Canadian Self-Sufficiency Program (SSP) requires that recipients of wage supplements work at least 30 hours a week. Studies suggest that it has been one of the most cost-effective antipoverty policies ever implemented because every dollar of government assistance produces several additional dollars of earnings within the target population as a result of the strong work requirements embedded in the program.[60]

One appealing aspect of small demonstration programs such as SSP is that they lend themselves to direct, random-assignment evaluations of their effects. The SSP evaluation – which was conducted by the Manpower Demonstration Research Corporation, and which employed random assignment techniques – found that the program generated increases in employment of as much as fourteen percentage points, and that it increased recipients' incomes by as much as 35 percent. Overall, the evaluators wrote, "SSP simultaneously achieved all four of (the) reformers' goals: 1) increased employment and earnings; 2) reduced welfare dependency; 3) reduced poverty and narrowing of the poverty gap; and 4) accomplishment of these goals without increasing total costs."[61]

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[60] Berlin (2000).
[61] Ibid., p. 28.

Applied to a program such as the EITC, the SSP experience suggests that if recipients were required to work a certain number of hours in order to claim a credit, the cost-effectiveness of the program could be even greater. This is the way that the British system already works. Eligibility for the British equivalent of the EITC – the Working Families Tax Credit (WFTC) – is partially based on hours worked. In order for a family to be able to claim the WFTC, its head must work an average of at least 16 hours per week. The amount of the credit is then boosted substantially if the head works an average of at least 30 hours per week.[62] Some argue that in order for such a system to be fair, eligibility for benefits would have to be computed not over an entire year, as is the case with the EITC, but every few weeks, as is the case with the British system. Otherwise, someone who left welfare to start a job in, say, July, and who worked 40 hours a week every week until the end of the year would still not qualify for benefits.

An obvious stumbling block to such a system in the United States is the fact that the IRS would need to know how many hours people had worked. In the U.S., there is no mechanism in place for gathering hours-worked information at the federal level, and such arrangements are also quite rare at the state level: there are presently only two states that collect hours-worked data (Washington and Oregon), and one of them (Washington) is considering dropping its reporting requirement altogether.[63] Assuming that these administrative problems could be resolved, however, we would suggest that receipt of the EITC might be conditioned on a requirement that family heads work a minimum number of hours per week. Alternatively, the EITC or expansions to it could be conditioned on

[62] Strickland (1998), Holtzblatt and Liebman (1999).

[63] Both states collect this information in support of their unemployment insurance programs. For more information on the hours-worked reporting requirement in Washington, see Maryland Information

an annual earnings threshold that represents – at least crudely – the equivalent of full-time work.

We also believe that it would be valuable to be able to model such a program and simulate it in a study like ours. However, in order for us to do so, we would had to have incorporated an hours-worked component into our labor supply simulations. If an analysis were to focus solely on labor force participation and ignore any effects on hours worked, it would fail to capture the real value of a program such as the ones described here – that many people working relatively few hours would be provided with an incentive to increase their hours worked to some threshold level in order to qualify for benefits. An hours-worked labor supply simulation is beyond the scope of this report, but others are engaged in such research.[64]

Conclusion

A necessary – but certainly not a sufficient – criterion against which to measure the success of any program such as SSP is the extent to which it reduces poverty and hardship. It is therefore noteworthy that the program was found to have substantially reduced both the poverty rate and the average poverty gap among its recipient population.[65] Perhaps even more important, though, is the way that these results were achieved. Rather than reducing poverty simply by redistributing income, the program

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Technology Support Center (2000). For additional information on Oregon's requirement, see Oregon Employment Department (1999).

[64] See, for instance, Robins, Michalopoulos, and Pan (forthcoming). The authors simulate an SSP-like program and find that it would increase full-time employment.

[65] Berlin (2000).

instead accomplished its objective by increasing employment levels among its target population. Such an approach is, in our opinion, more likely than any credible alternative to create sustainable reductions in poverty.

Indeed, this is the basic premise of our paper. We begin from the position that the most powerful antidote to poverty is work. We have focused on the question of what sorts of incentives can be provided to potential low-wage entrants to the workforce such that employment becomes a more viable alternative to a life on welfare, or in poverty. In keeping with this principle, our analyses focus on initiatives that have the potential to assist working families whose incomes place them among the roughly one-third of Americans living below 200 percent of the poverty line.

We find that policies targeted at this group can have a significant impact on poverty. We also find that many of these initiatives have the potential to generate increases in income as large as – or even larger than – their marginal cost. The key to creating these "overflowing buckets" is coaxing new workers into the labor force. Such an approach has the merit not only of being remarkably cost-effective, but also of having secured broad public support: solid majorities of Americans have agreed in recent surveys that we have an obligation to ensure that working families are kept out of poverty and off of the welfare rolls.[66] Thus, an agenda of work supports for the bottom third would seem to present an opportunity for policymakers simultaneously to pursue good politics and good policy.

It is worth noting that the employment effects discussed in this study will remain relevant only so long as there are jobs to be had. Much of our paper focuses on the dynamics of labor supply, while implicitly making the assumption that there is strong

demand for labor among employers. This assumption may be only marginally inaccurate today, but it will almost certainly prove problematic in a time of economic downturn. Thus, in the event of a recession, our assessment of programs such as the ones discussed or simulated in this paper would undoubtedly take on new dimensions. More research and thinking needs to be done about the way that the new work-oriented system of welfare – and the network of work-support programs that has sprung up around it – would operate in a context in which jobs were less plentiful.

[66] Hart (2001), Lake (2000).

Technical Appendix

This appendix discusses the data utilized in our analyses, the ways in which income is adjusted, the methods by which hourly wages are estimated, the way that benefit levels and program costs are measured, and the methodology according to which the labor supply, minimum wage, and full-time work simulations are performed.

The Data and Target Population

The analyses in this report were performed on data gathered by the Bureau of the Census during the March 1999 administration of the Current Population Survey (CPS). The March CPS consists of a Basic Monthly Survey (BMS), which is conducted each month, and an Annual Demographic Study, which asks March BMS respondents a number of additional questions relating to their income and work experience from the previous calendar year (in this case, 1998). Our sample has been mathematically inflated by applying individual-level weights provided by the CPS. This process is intended to create a weighted sample that replicates the population from which it was drawn – both in terms of its size, and of the particular characteristics of that population.

The Definition and Treatment of Families

For purposes of poverty measurement, the Census Bureau considers primary families and related subfamilies living within the same household to be members of the same family.[67] Thus, when assessing a family's poverty status, the resources of primary and related subfamilies within the same household are combined in order to estimate total family income, and the number of adults and children are summed across primary and related subfamilies in order to assign the appropriate poverty threshold. Unless it is otherwise indicated, the use of the term "family" in this paper implies that members of primary and related subfamilies living in the same household are considered to be members of the same family.[68]

The exception to this rule is in the calculation of income adjustments. We calculate most adjustments separately for primary and related subfamilies. We take this approach chiefly because we consider primary families and related subfamilies to constitute distinct tax filing units, and we therefore calculate their tax liabilities and EITC benefits separately. However, when we adjust income in order to assign adjusted poverty status, we adjust the incomes of primary and related subfamilies by taking the sum of our adjustments (EITC benefits, tax liabilities, and Food Stamp benefits, specifically) across primary and related subfamilies living within the same household.

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[67] The Census Bureau defines a family as "two persons or more…residing together and related by birth, marriage, or adoption" (United States Census Bureau, Glossary of Subject Concepts, p. 2). A related subfamily is defined as "a married couple with or without children, or one parent with one or more own single (never married) children under 18 years old, living in a household and related to, but not including, the householder or spouse" (ibid., p. 12). An unrelated subfamily is defined as "a family that does not include among its members the householder and relatives of the householder" (ibid., page 14).

[68] Unrelated individuals and unrelated subfamilies, however, are always considered to constitute distinct family units.

The only income adjustment *not* calculated separately is the one for child care expenses. The Census Bureau's methodology for estimating child care expenses – which we employ in our analyses – imputes a single expense to primary and related subfamilies within the same household. As a result, our child care policy simulations calculate a single benefit amount for primary and related subfamilies. Therefore, in a household containing a primary family and a related subfamily, a single DCTC amount is estimated based on those families' single child care expense estimate, and on the primary family's tax liability (the DCTC is a nonrefundable estimate, and it cannot therefore exceed a family's tax liability).[69]

Official and Adjusted Poverty Measurements

A family's poverty status is a function of its income and of the poverty standard against which that income is compared. Unrelated individuals are considered to constitute their own family unit. If the family's income is below the poverty line (which varies depending upon family size and composition), it is deemed to be poor.[70] The official measure of family income includes wages and salaries; self-employment income; farm income; income from investments; income from unemployment and retirement benefits; income from public assistance programs; and income from other assorted sources.[71] Before making any adjustments to income, we initially estimate the number of people who are poor according to official standards. Our estimate of the number of officially

[69] In light of these considerations, we also exclude related subfamily heads from the simulations of labor supply responses to our child care policy initiatives.

poor people in 1998 – 34.476 million – is identical to that of the Census Bureau (as is our estimate of the number of poor children – roughly 13.5 million).

We adjust income for a variety of factors (tax liability, tax credits, cashlike benefits such as Food Stamps, and work-related child care expenses) that affect the amount of a family's disposable income. The following is a discussion of the manner in which each of these adjustments is made:

Payroll and Income Tax Adjustments

Estimates of federal income and payroll tax liability are subtracted from income. As was discussed above, we take the family to be the basic tax filing unit. Current income tax rates are applied to taxable income using 1998 tax parameters, and a 7.65 percent payroll tax rate is applied to family earnings. Every tax filing unit is assigned a set of personal exemptions that is equal to the 1998 exemption level of $2,700 multiplied by the number of people in the family. Families are also granted a standard tax deduction based upon marital status. Married couples are assigned a deduction of $7,100. Filers who are single, divorced, separated, or widowed are assigned a "single" deduction of $4,250 if they do not have any children, or a "head of household" deduction of $6,250 if they provide for at least one related child under the age of eighteen.[72]

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[70] In order for the poverty status of an observation to be considered in the calculation of poverty rates and gaps, it must be considered to be a part of the "poverty universe." A small number of individuals are excluded from this "universe." An individual is excluded if he/she is 1) younger than age fifteen, and 2) classified as an "unrelated secondary individual" by the Census Bureau. All other observations are counted in the calculation of poverty rates. Observations are considered in the calculation of child poverty rates if they meet the above-listed criteria and are under the age of eighteen.

[71] Both self-employment income and farm income can take on negative values.

Tax Credit Adjustments

In addition to subtracting taxes owed from family income, we also assign to those who are eligible a Child Tax Credit (CTC), a Dependent Care Tax Credit (DCTC) and an Earned Income Tax Credit (EITC). The method by which we estimate the DCTC is addressed in the body of the paper. The CTC is generally non-refundable. The amount of the credit in 1998 was $400 per dependent child under seventeen years of age.[73] We subtract from each tax filing unit's tax liability our estimate of the CTC for which it qualifies.

A taxpayer's eligibility for the EITC is dependent upon his/her family earnings and the number of dependents under the age of nineteen that he/she can claim.[74] Our analyses use 1998 tax code parameters to estimate EITC awards for eligible families based upon the aforementioned criteria. Since the EITC is completely refundable, the full amount of the credit is added to taxpayers' incomes.

The Food Stamp Adjustment

We use the CPS-estimated value of Food Stamps reported for each family and add this amount to their income. The Bureau of the Census estimates food stamp benefits using

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[72] Please note that this approach may result in a slight undercounting of individuals who are eligible to claim the "head of household" deduction, since some unmarried people may, for tax purposes, be able to claim certain dependents who are not counted as "related children" in the CPS.

[73] For the sake of simplicity, we do not model those exceptional cases in which the credit becomes refundable for families with two or more children.

[74] EITC rules also allow taxpayers to claim a credit for dependents over the age of nineteen if they are permanently disabled, or for children up to the age of twenty-four if they are full-time students. Childless filers are allowed to claim the credit only if they are between the ages of 24 and 65. Another provision states that families with a certain amount of income from investments are ineligible to receive the EITC (this amount was $2300 in 1998). There is also a rule stating that, if a family has a modified adjusted gross income (AGI) in excess of the beginning of its phase-out range, the EITC will be calculated based either on modified AGI or earned income, whichever is higher (Committee on Ways and Means, 1998, p. 868). We incorporate all of these rules into our estimation process.

data from the United States Department of Agriculture, the Health Care Financing Administration, and the Department of Housing and Urban Development. This process is designed to mimic the procedure by which the federal government determines families' food stamp eligibility.

The Estimation of Out-of-Pocket Child Care Expenses

The CPS does not contain direct survey data on out-of-pocket child care expenses. We estimate these expenses using a two-step process. The first step is comprised of a logistic regression analysis that imputes the incurrence of child care expenses, while the second step uses an OLS model to estimate the level of weekly expenses for those families imputed to have incurred them. This procedure is almost identical to the one undertaken by the Bureau of the Census in its calculation of child care expenses for its reports on Experimental Poverty Measures. Both regression equations employ the same set of independent variables. These variables include: 1) a series of race dummies; 2) a series of variables accounting for the number of children of varying ages in the family; 3) a series of regional dummies; 4) the log of family income; and 5) the percent of family income that is earned by the lowest-paid spouse.

The equations were estimated by the Census Bureau using the 1992 Survey of Income and Program Participation (SIPP), which contains data on weekly child care expenses based on a direct survey question. Separate equations were estimated for single-parent and two-parent families. Families are assumed to have incurred child care expenses if the probability yielded by the logit analysis is greater than a randomly-generated number. Weekly expenses are converted into annual expenses by multiplying

the weekly expense amount by the number of weeks worked by the single parent, or by the lower-earning spouse in two-parent families. The random component of the analysis is designed such that the proportion of all families imputed to have incurred out-of-pocket expenses is identical to the proportion of such families in the SIPP (12.6 percent).

Expense estimates are corrected for inflation using a "Child Care and Nursery School" conversion factor generated by the Bureau of Labor Statistics (the conversion factor for 1992 to 1998 is approximately 1.3).[75] Families are considered candidates for incurring out-of-pocket child care expenses only if all parents in the household work, and if there is at least one child under the age of twelve in the family. Imputed child care expenses are constrained such that they cannot exceed 50 percent of the earnings of the single parent, or of the lower-earning spouse in a two-parent family.[76]

The Measurement of Wages and Income

Our analysis requires that we make use of information relating to workers' hourly wages. However, the March CPS does not contain an hourly wage variable for the sample as a whole. It is therefore necessary that we construct one. We do so by dividing each individual's (self-reported) annual earnings by the product of his/her (self-reported)

[75] Because child care subsidies have expanded since 1992, it is possible that we are overestimating out-of-pocket expenses.

[76] We topcode our expense estimates differently than the Census Bureau. Whereas we cap expenses at 50 percent of the earnings of the single parent or lowest-earning spouse in two-parent families, the Census Bureau topcodes expenses at $2400 for families with one child, and at $4,800 for families with multiple children. Their estimates are further constrained such that they cannot exceed 100 percent of the earnings of the single or lowest-paid parent.

number of weeks worked per year and his/her (self-reported) usual number of hours worked per week [77] This is a relatively common method for estimating hourly wages.[78]

However, comparisons of a distribution of hourly wages estimated in this fashion to distributions based on direct survey questions (from other data sources, such as the SIPP) indicate that we overestimate the number of workers earning less than the minimum wage.[79] Assuming that the direct survey data are more reliable, there are two possible sources of error that could help to explain this discrepancy: underreporting of annual earnings, or over-reporting of hours worked. While both are probably at least in part responsible, we suspect that the latter is the primary culprit. We correct for this problem by assessing the percentage of workers who *ought* to be working for less than the minimum wage (under the assumption that the SIPP estimates are accurate). We then randomly select (out of the pool of workers whom we originally estimate to be working for less than the minimum wage) the appropriate number of workers such that our proportion of subminimum workers is consistent with SIPP estimates. We assume that any worker not selected as a subminimum wage earner has misreported his/her hours worked and/or annual earnings. We re-assign these workers an hourly wage of $5.15 (the current minimum wage). We then make the simplifying assumption that these workers' annual earnings were accurately reported, and that they over-reported their annual hours worked. In keeping with this assumption, we "re-calculate" the number of hours that

[77] The "hours usually worked per week" variable does not take paid vacations into account. Thus, if, in the course of a normal week, an employee worked 35 hours and took 5 hours of paid vacation, he/she would be reported in the CPS as having worked only 35 hours per week. However, the "weeks worked last year" variable *does* include paid vacations. In other words, if an employee worked 49 weeks last year and took 2 weeks of paid vacation, he/she would be reported as having worked 51 weeks.
[78] Bound et al. (1989); Freeman (1990); Kosters (1998); Pryor and Schaffer (1999); Rodgers et al. (1993).
[79] One would expect there to be a small number of subminimum workers, since some small businesses are exempted from having to pay their employees the minimum wage, and since certain types of employees do

these individuals "actually" worked by taking the quotient of annual earnings and the new hourly wage of $5.15.

Having corrected our wage estimates in this fashion, we find, upon comparing our data to SIPP targets, that we are overestimating the number of people earning exactly $5.15 an hour. However, we do not appear to be overestimating the number of people earning less than $6.15 an hour. Thus, it appears that most of the "extra" minimum wage earners in our dataset may actually earn wages of somewhere between $5.15 and $6.15 an hour. Thus, while our sample of minimum-wage earners may not reflect the actual minimum-wage-earning population with total accuracy, our data for those earning between $5.15 and $6.15 appear to be credible.

The Minimum Wage Simulation

In simulating the minimum wage increase, we assume that the wages of the small proportion of workers now designated as subminimum earners will not be affected by the increase. The wages of anyone estimated to be earning between $5.15 and $6.14 an hour (inclusive) are recoded to $6.15 an hour, and the necessary adjustments are made to family income, family earnings, and the assorted income adjustment variables discussed above.[80]

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not qualify for the minimum (U.S. Department of Labor, Questions and Answers About the Minimum Wage).

[80] The recalculation of tax liabilities and credits is relatively straightforward. Because earnings and income variables are utilized in our child care expense imputations, we also recalculate these expenses as part of the minimum wage simulation. Food Stamp benefits are reduced by twenty-four cents for every dollar by which the new predicted income estimate exceeds observed income. (This calculation is premised on the fact that, in rough terms, food stamp benefits are reduced by thirty cents for each one-dollar increase in income. However, recipients are usually also allowed a twenty percent deduction on their earned income to compensate for tax liabilities and work-related expenses. Thus, if added earnings = AE, then the new food stamp benefit level = old benefit level – .3(AE - .2AE), which is equivalent to reducing the old benefit level

In order to simulate the disemployment effects of the minimum wage, we assume that a 10 percent increase in the minimum will lead to a 3 percent reduction in teenage employment. Roughly speaking, the increase of the minimum wage from $5.15 to $6.15 represents a 20 percent increase. We therefore assume that it will produce about a 6 percent reduction in the number of teenage workers. As such, we randomly select the appropriate number of workers under the age of 20 (about 500,000) out of the workforce, and make the necessary changes to family income, family earnings, and income adjustment variables.

Predicted Full-Time Wages

One of our simulations assumes that all able-bodied family heads work full time.[81] This necessitates that a full-time salary be imputed to two groups of people: those who work, but not full time; and those who do not work at all (i.e., those with zero or missing wages). For individuals in the former category, we simply multiply their estimated hourly wage by a factor of 2080 (which we assume to constitute the number of hours worked per year that corresponds with full-time employment). Those in the latter category (i.e., those with either zero or missing wages) must first be assigned a predicted hourly wage. Predicted wages are computed via an OLS regression model. Separate equations are estimated for men and women. The models are derived using that part of the sample for which a wage rate is observed. To the extent that the unobserved

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by .3(.8AE), or .24 AE.). Income is adjusted in a similar fashion under the full-time work and labor-supply-response simulations.

[81] We assume the "family head" to be the adult who is the primary wage earner in a family. If no adult in the family has any earnings, we take the family head to be the individual designated by the Census Bureau as the head. We assume that a family head is able-bodied so long as he/she is not a) younger than 18 or older than 64; or b) collecting disability insurance.

characteristics of the two groups (those with and without an observed wage) differ, our estimate of predicted wages will be biased, probably in an upward direction. The following independent variables are included in the wage regressions: 1) age, 2) an age-quadratic term, 3) race, and 4) a series of dummy variables accounting for level of education. In order to create a more accurate distribution of predicted wages, we add a randomly-selected residual to each value of our predicted wage variable.[82] After full-time predicted wages are estimated, appropriate adjustments are made to family income and earnings, and to the various income adjustment variables employed in our analyses.[83]

The Estimation of Government Benefits and Program Costs

Current Population Survey respondents are, for the most part, not asked direct questions about receipt of benefits from the programs analyzed in this paper. Thus, these benefits have had to be estimated using other data. Since there is no direct survey question in the CPS pertaining to EITC benefits, the Census Bureau estimates EITC receipt using data on family composition and income. In order to estimate the effects of various changes to the structure of the EITC, we also simulate this program by modeling its specifications in much the same way that the CPS does. Our estimate of the sum of EITC benefits across

[82] The squared residuals from the predicted wage regression are regressed on predicted hourly wages in order to correct for heteroskedasticity. The square roots of the predicted values from that regression are then multiplied by a number selected at random from a standard normal distribution, and this product is added to the original predicted wage.

[83] In addition to adjusting income for tax liabilities and credits, as well as changes in the value of Food Stamps and child care expenses, we also assume that any welfare payment received by new workers will be reduced by $1.00 for every additional dollar of earnings. This is, in fact, a simplifying measure; in practice,

all tax filing units within the CPS matches the Census Bureau's CPS-based figure relatively closely – ours shows the total amount of EITC benefits paid out to be $21.6 billion, while Census Bureau estimates show the total amount to be roughly $22.7 billion. However, both estimates are substantially smaller than the $31.3 billion that IRS data indicate were actually paid in EITC benefits for tax year 1998.[84]

This discrepancy is probably the result of at least three factors. First, a family's EITC benefit depends in part upon its income, which, as we have already seen, may sometimes be underreported in the CPS. Second, among the other factors that determine a taxpayer's eligibility for the EITC are the number of children that he/she can claim as dependents and his/her marital status. Family relationships among the populations served by the EITC are often complex, and this complexity can make it difficult to assess the true extent of a family's eligibility for the EITC. A third probable reason for this disparity is the fact that a substantial proportion of EITC benefits are paid out in error. Recent IRS estimates indicate that roughly 26 percent of EITC claims for tax year 1994 were erroneous or fraudulent, and that almost 21 percent of benefits were actually paid out in error.[85] These findings thus imply that any estimates premised upon the assumption (as ours are) that the EITC is always paid out accurately will underestimate the costs of the program.[86] Census Bureau officials believe that, among these factors, the

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families may retain a greater proportion of welfare benefits once their head is employed full-time, but the amounts vary by state and these disregards are usually temporary.

[84] Office of Management and Budget (1999).

[85] In other words, the IRS "catches" some erroneous EITC claims before they are paid out. See Greenstein and Shapiro (1998) for a thorough treatment of this issue.

[86] It should also be noted that many people who are eligible for the EITC do not actually receive it. Recent estimates indicate that only 75 to 85 percent of eligible EITC recipients file for the credit (O'Connor, The Earned Income Tax Credit: Families at Risk of Losing Benefits). Thus, the "over-payment" phenomenon is probably at least in part canceled out by non-payments. Nonetheless, it appears that the magnitude of over-payments is larger than is that of non-payments.

difficulty of accurately assessing family relationships – and thus of correctly simulating tax filing units – is the most critical.[87]

We are presented with a problem of the opposite nature in the form of the Dependent Care Tax Credit. We initially estimate the total amount of DCTC benefits claimed in 1998 to have been $4.4 billion. IRS estimates indicate, however, that the actual figure is closer to $2.8 billion.[88] This apparent overestimation can probably be attributed to several factors. First, our data do not allow us to model receipt of employer-based dependent care benefits; depending on their amount, these benefits can reduce – or completely eliminate – DCTC eligibility.[89] Second, DCTC filing forms require that the filer be quite specific about the provider of the care being claimed. In the case of center-based care, the employer identification number must be listed. In the case of at-home care, the social security number of the caretaker must be provided.[90] Because this level of specificity is required, many families using more informal types of care (such as babysitters, for instance) would probably not think it worth their while to go to the trouble of filing for the credit. We estimate that informal child care arrangements comprise more than one-third of all paid arrangements.[91]

We correct for over-estimation of DCTC receipt via a two-step process. First, we reduce the number of families receiving the credit by randomly selecting a certain number of observations out of the pool of initially-estimated recipients. Then, among the remaining recipients, we reduce the amount of the credit received using a series of ratio

[87] Based on the authors' communications with analysts at the Bureau of the Census.
[88] Committee on Ways and Means (1998), p. 274.
[89] Under the dependent care benefit program, employees are allowed to set aside a certain portion of their paychecks before taxes, and then spend these monies on child care expenses over the course of the tax year.
[90] Information on the rules governing DCTC eligibility was taken from *Schedule 2, Form 1040A: Child and Dependent Care Expenses for Form 1040A Filers.*
[91] Based on the authors' calculations using data from Casper (1996).

scaling factors. This procedure is designed to ensure that the number of families claiming the credit – and the average credit claimed per family – are consistent with what IRS data indicate should be the case. Our correction process is also calibrated such that the distribution of benefits across income groups is consistent with IRS targets.

Food Stamp estimates in the CPS can also be unreliable; the Census Bureau noted in a 1999 report that CPS-based estimates of Food Stamp program costs are lower than the actual costs of the program.[92] Thus, there is reason to believe that CPS-based estimates of a variety of benefits incorporated into our analyses may be at least somewhat incorrect. This is potentially problematic for two reasons. First, faulty estimates of government benefits could lead to inaccurate assessments of the extent to which these programs affect families' disposable incomes. And, second, they could lead to incorrect estimates of the costs of expanding these programs.

As a general principle, however, we are more concerned with estimating *changes* in the costs of these programs than we are with estimating their *absolute levels*, and we presume that the extent of underestimation at the margins will be smaller than for the basic program. Moreover, we assume that there will be some amount of offsetting errors when we compare the cost of expanding a given program to the effect that its expansion would have on the distribution of income, or on some specific measure of material well-being (such the 200 percent poverty gap).

[92] Short et al. (1999).

Labor Supply Simulation Methodology

Our labor supply simulations model the changes in labor force participation among family heads that would be elicited by increases in the Earned Income Tax Credit and child care subsidies. There is evidence that, in addition to affecting labor force participation, expansions in work support programs may also have the effect of reducing hours worked – particularly among secondary earners in two-parent families.[93] However, studies consistently find that labor force participation is more sensitive to changes in after-tax wages than hours worked,[94] and, with respect to single parents, there is now evidence that EITC expansions have increased participation, but have had no meaningful effect on hours worked.[95] We have therefore elected to focus solely on labor force participation, rather than split our attention between participation and hours. For the sake of simplicity, we have also chosen not to model potential changes in the labor supply of secondary earners, but to focus instead solely on family heads.[96] The reader should keep in mind, then, that our labor supply simulations may not capture the entirety of the effect of the work support expansions that we are examining. However, we believe that they will, at a minimum, capture the most important portion of it.

The methods we use to simulate labor supply responses to expansions in the EITC and in child care subsidies are essentially identical. In both cases, we select a certain number of new labor force entrants out of the pool of nonworking family heads whose potential after-tax earnings increase as a result of the policy initiative in question. We do

[93] Eissa and Hoynes (1998).
[94] Mroz (1987), Zabel (1994), and Triest (1992).
[95] Eissa and Leibman (1995).

so using an elasticity estimate of .7. As a first step in this process, we estimate how the policy in question would affect family heads' after-tax earnings. Among working heads, we use observed after-tax earnings as the baseline for this assessment. Among nonworking heads, we predict the level of after-tax earnings they would have if they were to enter the workforce. This requires that we predict an hourly wage and annual number of hours worked for these heads. The process by which we estimate predicted wages is discussed earlier in this appendix. Hours worked are predicted via a straightforward OLS analysis. The predicted-hours equation includes the following explanatory variables: 1) age, 2) an age-quadratic term, 3) a series of dummy variables accounting for race, 4) a series of dummy variables accounting for level of education, 5) marital status and 6) a series of variables reflecting the number of children of assorted ages in the family. Separate equations are estimated for men and women.

As we did with predicted wages, we enhance the variance of the predicted-hours-worked distribution by adding a randomized residual to each fitted value. For nonworking heads, we use the predicted number of hours worked, in conjunction with the predicted hourly wage, to estimate predicted annual income and earnings figures. We use these estimates, in turn, to compute tax liability, EITC benefits, Food Stamp benefits, and child care expenses.[97] We are thus able to calculate the extent to which family heads' after-tax earnings (predicted earnings for nonworking heads, observed earnings for working heads) would change, given a particular policy initiative.

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[96] There is evidence that the most important impacts of changes in potential after-tax wages are on family heads. Dickert et al. (1995), for instance, find that labor force participation effects brought about by changes in tax rates are larger among primary earners than they are among spouses.

[97] Our child care estimates are based on weekly expense amounts. We multiply this amount by the parent's number of annual weeks worked in order to estimate annual expense levels. However, our predicted hours-worked equations model annual hours worked only. In order to generate a predicted number of weeks worked for nonworking heads, we divide predicted annual hours worked by 40.

We then assign to all heads a probability of working. This probability is estimated via a logistic regression model that employs the same set of explanatory variables as the hours-worked model. Having calculated the percent change in after-tax earnings brought about by the simulated policy change, we then use the elasticity estimate of .7 to recalculate each head's probability of working. This estimate is taken from Meyer and Rosenbaum's 1999 NBER study (#7363).[98] We chose this particular elasticity primarily because it was derived in the course of an analysis that focused specifically on the labor supply effects of expansions in the EITC. (As was discussed in the text of the report, we take the simplifying step of using the same elasticity in our child care analyses as in our EITC analyses.) Most studies find that elasticities vary by sex and marital status.[99] On the whole, however, our results are not highly sensitive to the use of differing sets of elasticity assumptions. We therefore use the same elasticity for all heads.

After estimating new probabilities of working, we calculate the new average probability. We assume the average probability of working to be equal to the participation rate, and we therefore take the change in the average probability to represent the change in the participation rate. Given this change, we calculate the number of additional family heads that a particular policy initiative should draw into employment, and we randomly select the appropriate number of heads into the workforce.

Some of our EITC options reduce or eliminate benefits for certain recipients – either because the proposal eliminates an entire tier of the benefit structure (as is the case

[98] Meyer and Rosenbaum's estimate – which reflects the elasticity of the labor force participation rate with respect to the return to work – is actually .69; we simply round this number up. We tested the sensitivity of our findings by using elasticities with lower values, and found that the choice of elasticity does not have a strong effect on our results.

with the Single Tier option), or because, due to an anomaly associated with what is known as the "modified AGI rule," a small number of recipients may actually have their benefits reduced, even in the event of an overall expansion of the EITC. Given these considerations, we allow some family heads to exit the labor force under our EITC simulations (family heads' earnings are never reduced under the child care policy simulations, so this step is unnecessary to our child care analyses). We simulate this disemployment effect by dividing family heads into three groups: those who are unaffected by the policy change, those whose after-tax earnings (observed or potential) increase as a result of the change, and those whose after-tax earnings (observed or potential) decrease as a result of the change.

For each group, we use the elasticity estimate to calculate the change in that group's average probability of working. Among those whose after-tax earnings increase, the average probability goes up, and, among those whose after-tax earnings decrease, the average probability goes down. Within each group, we then select the appropriate number of cases into – or out of – the labor force, and make the necessary changes to family income and earnings, and to the various income adjustment variables used in our analyses. The only proposal that has a notable negative effect on labor supply is the Single Tier option, which would cause more than 100,000 family heads to leave the workforce. However, a sufficient number of heads are *added* to the labor force – in this and all other instances – that the *net* participation effect is still estimated to be positive.

Chart A-1 shows the net number of family heads that we estimate would be added to the labor force under each child care and EITC policy option, and under the combination of the EITC, child care, and minimum wage expansions. We estimate that

[99] Pencavel (1997), Schultze (1997), Triest (1996), Kimmel and Kniesner (1996).

the MWP EITC option would add nearly 600,000 family heads to the workforce, and we further estimate that this initiative, in conjunction with the Phased-Out Subsidy child care proposal, would, on net, draw more than 800,000 heads into the labor force. (The latter estimate takes into account the disemployment effects associated with the minimum wage increase.)

As was discussed in the text, we have also included in this appendix a series of static "baseline estimates" for our EITC and child care policy proposals. These estimates can be found in charts A-2 through A-5. The charts show our estimates of the effects of these policy options before labor supply responses are taken into account. (What were referred to as "cost-effectiveness ratios" in the dynamic simulations are referred to as "target-efficiency ratios" in Charts A-3 and A-5. Cost-effectiveness, as we have defined it, reflects both the initial target efficiency of a proposal, and the effects of any labor supply responses to it. These "static" estimates only reflect the former.) A comparison of these estimates to the ones that include simulated labor supply responses shows that the labor supply component of our analysis does not have a dramatic effect on our results in all cases, but that the target-efficiency ratios for the static simulations are always lower than the cost-effectiveness ratios in the dynamic simulations – and substantially so, in some instances.

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