# Can Equity and Efficiency Complement Each Other?

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## Abstract

Economists tend to assume that redistributive transfers increase equity but cause a loss in efficiency, the so-called "leaky bucket" effect. This paper explores situations where efficiency losses are small or where equity and efficiency might even complement each other. A simple model identifies key parameters that cause leaky buckets and which policy can affect. Three situations are discussed where the equity/efficiency tradeoff may be low: When transfers go to populations with no capacity to change their behavior; when transfers go to programs that limit efficiency losses through behavioral requirements; and when commodities are subsidized that function as long-term investments and create future income gains.

A concern for equity has long been an important aspect of economic analysis. Adam Smith himself speaks harshly of the costs of poverty, claiming "No society can surely be flourishing and happy, of which the greater part of the members are poor and miserable. It is but equity, besides, that they who feed, cloath and lodge the whole body of the people, should have such a share of the produce of their own labour as to be themselves tolerably well fed, cloathed, and lodged" (Smith, 1976 reprint, Book I, chapter 8, page 88). Most policy analysis done by economists, however, has focused on efficiency rather than equity, dealing with such issues as the cost of government regulations, the deadweight loss of taxation, or the labor supply effects of government transfers.

Most economists take for granted the idea that equity and efficiency cannot be achieved together – that greater equity must come at the inevitable cost of a loss of efficiency. In this lecture I explore this efficiency/equity tradeoff. I am particularly interested in identifying those circumstances under which equity and efficiency may not trade off against each other. I want to identify policy situations that promote greater equity but have little effect on efficiency or – even better – policy situations where equity and efficiency complement each other and where government transfers from richer to poorer individuals may perhaps even produce an more efficient society than would occur in the absence of those transfers.

## I. The Case for a Trade-off

The best-known discussion of the tradeoffs between equity and efficiency is in the much-read book by economist Arthur Okun, Equity and Efficiency: The Big Tradeoff, published in the late 1970s. This book has been highly influential. It is the Brookings

Institution's best-selling volume ever, and continues to be used in undergraduate economics classes throughout the U.S. Okun declares "…the conflict between equality and economic efficiency is inescapable" (Okun, 1975, p120). He describes his famous "leaky bucket experiment" in which he asserts that any dollar transferred from a richer individual to a poorer individual, will result in less than a dollar increase in income for the recipient.

Okun identifies four reasons for leaky buckets: Administrative costs of redistribution, changes in work effort induced by redistribution, changes in savings and investment behavior induced by redistribution, and changes in attitudes (for instance, motivation to acquire human capital) induced by redistribution. The result is that government efforts to achieve equity inevitably result in a smaller level of total income and less efficient use of resources. The policy question becomes how much leakage a society is willing to accept in order to achieve a certain level of equity. Surprisingly, Okun spends no time discussing how one might minimize the leaks in the bucket, the topic of this lecture.

There is substantial empirical evidence that suggests government transfers, designed to create greater equity, can lead to inefficiencies. For instance, in the 1970s the U.S. funded a series of experiments to test the effects of welfare program design on labor supply and well-being of recipients, known as the negative income tax experiments.[1] Summarizing the results, Burtless (1986) notes that in general the government had to spend almost $2 in order to increase family incomes by $1 – a leaky bucket that lost half of its contents in the process of transfers. Most of this was due to the fact that higher transfers induced reductions in labor supply.

[1] The two parameters most of these experiments focused on were cash guarantee levels to nonworkers and the benefit reduction rate, that is, the rate at which benefits were reduced as a recipient went to work and received earnings.

In another well-known example, economists have attempted to measure the inefficiency costs of unemployment insurance (UI). Designed to raise incomes among the unemployed, UI also increases the length of unemployment spells and hence reduces earnings. Katz and Meyer (1990) estimate that each additional week of benefit availability increases the duration of unemployment spells among UI recipients by 0.16 to 0.20 weeks. A wide variety of other examples can be cited, from the research that suggests social security transfers reduce savings and investment, to the research that argues disability insurance induces early retirement and a higher share of reported injuries.

No economist will deny the presence of many leaky buckets and inefficiencies in the operation of government tax and transfer programs. My question for today is whether government efforts to produce greater equity must *inevitably* produce greater inefficiency, or whether there are policies and circumstances in which equity-increasing transfers can occur without seriously reducing efficiency. I suggest that there are three general circumstances in which this can occur. Before turning to a discussion of these three situations, however, thinking about this question in the context of a simple conceptual framework is useful.

## II. A Conceptual Framework

My main goal in this section is to identify some of the key parameters that are likely to cause leaky buckets and which policy can affect. To do this, I must make a substantial number of simplifying assumptions to clarify exactly what issues I am focusing on.

To provide a starting definition: I take efficiency to be related to the total economic resources available to a society. A more efficient society can produce more with the same

amount of resources.[2] This leads me to focus this simple model solely on aggregate income, rather than on some larger measure of social utility or social welfare. (At several points below I note where one could monetize certain non-income benefits or losses to extend this definition, if desired.) Most policy discussions focus primarily on income losses or gains; to the extent that I am deeply interested in policy implications, looking only at income is reasonable.

Let there be two groups in the population: Taxpayers and benefit recipients. The recipients are the "poor" to whom society wants to provide income supplements of some sort. Initially, let us assume a simple one period model, so there are no investment-related issues. In this one period, the rich and poor are fixed groups with no switching between them.[3] For simplicity, I am going to focus only on means-tested transfers, which go from the rich to the poor.[4]

*One-period framework*. Table 1 provides an outline of the framework that I propose to think about equity and efficiency tradeoffs. In the absence of any redistributive transfers, assume taxpayers have an aggregate income equal to $Y_t$, while recipients have an aggregate income equal to $Y_r$. Each of these is dependent upon level of effort among taxpayers and recipients, $e_t$ and $e_r$. Hence, total income, Y, can be defined as

(1) $\quad Y(e_t, e_r) = Y_t(e_t) + Y_r(e_r).$

In the presence of redistributive transfers, total income (Y*) is equal to the post-transfer income of both taxpayers ($Y^*_t$) and recipients ($Y^*_r$). Level of effort in the presence

[2] Okun uses a similar definition.
[3] This is an important assumption and ignores the possibility of people positioning themselves in advance to be transfer recipients.
[4] This sets aside social insurance programs, which are broadly available throughout the population, but may have some redistributive aspects. At least in the U.S., means tested programs generate more political controversy (in part because their benefits are not broadly shared) and are the programs where "leakage" and perverse behavioral responses raise the most public concern.

of redistributive transfers is denoted as $e^*_t$ and $e^*_r$ among taxpayers and recipients respectively. Hence, in a world with redistributive transfers

(2) $Y^*(e^*_t,e^*_r) = Y^*_t(e^*_t) + Y^*_r(e^*_r)$.

Assume that the government seeks a total tax payment, T, from the taxpayers, in order to provide redistributive transfers. I assume T is fixed, that is, the government taxes at a level necessary to produce total tax revenues of T. If there is a behavioral response to these additional taxes (say, lower labor supply) there may be a further loss of income $L_t(e^*_t-e_t)$ among taxpayers, where I assume this loss is a function of the difference in effort with and without redistributive taxation.[5]

I also allow for the possibility that taxpayers might gain from these transfers, denoted by G. Since I am focusing on income changes, this gain must be some monetized measure of taxpayer gains. For instance, this could be income gains due to reduced crime brought about by redistributive transfers (I give further examples below). G could be fixed for a given level of T, or it could be a function of the income received by recipients, $Y^*_r$. In this case, the gains to taxpayers are affected by inefficiencies caused by the transfer.

Assume that the income received by taxpayers in the presence of redistributive transfers is a simple function of these variables, so

(3) $Y^*_t(e^*_t) = Y_t(e_t) - T - L_t(e^*_t - e_t) + G$.

Recipients of transfers are also likely to experience gains and losses relative to a world with no transfers. Recipients receive benefits B in transfers, where I assume that $B = T - C$, where C is the administrative cost associated with making transfers. Note that if a society has a tax system in place in order to support (non-redistributive) social needs, the marginal

administrative costs of redistributive taxation are likely to be small. Assuming $B = T - C$ is equivalent to assuming that tax money is spent on either transfer benefits among the poor or tax administration, hence no taxpayers receive any direct benefits.[6]

These transfers may induce behavioral changes among recipients that cause an income loss of $L_r(e^*_r - e_r)$. As with taxpayers, this loss is a function of the difference in effort with and without transfers. Hence,

$$(4) \qquad Y^*_r(e^*_r) = Y_r(e_r) + B - L_r(e^*_r - e_r).$$

A comparison of the efficiency costs of redistributive taxation is a comparison between Y and Y*. Y is greater than Y* (and transfers cause an efficiency loss) when

$$(5) \qquad Y_t + Y_r > Y^*_t + Y^*_r$$

Substituting terms, this is a question of whether

$$(6) \qquad T + L_t + L_r > B + G$$

Substituting for B, this can also be written

$$(6') \qquad Lt + Lr + C > G$$

First, assume G is small or zero. It should be immediately obvious that if there are any induced income losses ($L_t$ or $L_r$) as a result of redistributive transfers, there will be an efficiency loss. Only if the induced income losses ($L_t$ and $L_r$) are zero and if administrative costs C are minimal is there no leaky bucket. In this world, a dollar from the rich is directly transferred as a dollar received by the poor (T = B) and transfers are costless. The transfer scheme simply rearranges who holds the income.

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[5] Because I am focusing only on income as an outcome, I do not allow for any offsetting gains to taxpayers due to the change in their leisure time. One could monetize this so that the induced income losses included in the model are net of any leisure gains.

[6] Questions about leakages in the targeting of transfers are interesting, but not the focus of this paper.

Because I want to assume that costless income redistribution is desirable, I will assume that $G > 0$. That is to say, in the absence of efficiency losses and with small administrative costs, I will assume that equity-enhancing transfers should be undertaken. I make this assumption, without specifying exactly what the nature of these gains might be.[7] This could occur because taxpayers are altruistic and value the income gains of the poor, so that better housing, education, and health among the poor add to the well-being of taxpayers. They may value equity or prefer a society in which nobody is poor or hungry. As evidence for this effect, Alesina, et. al. (2001) indicate that there is a large, negative, and significant effect of social inquality on the level of happiness expressed by citizens of Europe. Perhaps not surprisingly, this effect is not present in U. S. data. There also may be externalities related to less poverty (such as lower crime) that directly benefit taxpayers.

The framework laid out above makes clear what the factors are that determine the level of inefficiency loss induced by redistributive transfers. There will be a lower efficiency cost to redistributive taxation the greater are the gains to taxpayers (G), the smaller are the administrative costs (C), and the smaller are induced losses to taxpayers and recipients ($L_t$ and $L_r$). As noted above, I assume G is positive but say nothing more about this variable. I also largely ignore issues relating to administrative costs (C); if a tax system is necessary for other purposes, the marginal administrative cost of redistributive transfers is likely to be small.

With perhaps less justification, I am also going to ignore induced income losses among taxpayers, largely because this is not my focus in this paper. There is a substantial literature documenting the deadweight loss of taxation. For instance, Ballard, et. al. (1985)

[7] I also make no claims about the size of G. Clearly, if G is large, even quite inefficient transfer policies will become worthwhile. An alternative paper could explore how to make redistributive taxation more attractive by selecting policies that maximize the gains to taxpayers as a result of that taxation. For instance, certain types of

suggest that losses induced by the U.S. system were approximately $0.13 to $0.24 for every dollar raised. In my framework, $L_t$ is the additional deadweight loss due to redistributive transfers, that is, the marginal income loss associated with the additional taxes necessary to make redistributive transfers. One might argue that $L_t$ is small for two reasons: First, if the number of taxpayers is large and the number of recipients is relatively small then the additional tax payment per taxpayer for redistributive taxation is small and hence the behavioral response of taxpayers to redistributive taxation is likely to be small.[8] In this situation, the behavioral response of recipients may dominate the loss calculation. Second, we are discussing only the behavioral response of taxpayers induced by the marginal taxation focused on redistribution. If the majority of government budgets go for non-redistributive purposes (defense, infrastructure, foreign aid, etc), then the additional behavioral response due to the marginal taxes that go to redistribution is likely to be a relatively small component of the overall deadweight loss caused by the taxation. Not everyone will be convinced by these arguments[9], however, and in some nations levels of redistributive taxation may be quite high. Hence I recognize that $L_t$ is almost surely greater than zero, but I take it as a fixed cost associated with redistribution and focus on other variables.[10]

This leaves the induced income losses among the recipients ($L_r$). In sections III and IV, below, I suggest policy situations in which $L_r$ is likely to be small and argue that these situations are likely to produce greater equity without major efficiency tradeoffs.

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transfers may produce greater taxpayer satisfaction. This may be one reason for in-kind transfers programs focused on food, housing or medical care, rather than cash transfers.

[8] Of course, small per-person losses among a large population can add up to large total losses.

[9] For instance, see the recent article by Feldstein (1999), where he argues that the deadweight loss of increasing tax rates within the U.S. system is extremely high.

[10] One could, of course, discuss ways to design tax systems to minimize deadweight loss. See the discussion of tax structure and efficiency in Auerbach and Hines (2001).

*Two-period framework.* Limiting the discussion to one period prevents any discussion of the longer-term effects that might result from redistributive transfers. In particular, many people argue that certain types of transfers should be considered investments, because they produce positive future effects. This argument is most frequently made regarding transfers to poor children, where better health care, better nutrition or better schooling might result in lower future government costs and greater future employment and earnings among transfer recipients.

To see how such investment effects might occur, let me think about what might happen if the one-period framework is expanded in the simplest possible way to allow for long-term effects. Assume redistributive transfers occur only in the first period, but may have future effects. Thus there may be a second period that is a substantial time into the future, perhaps as long as 5 to 15 years later. I assume that one-period tax payments affect taxpayers only in the period in which they are paid, so that the calculation among taxpayers does not change. (One could easily allow for two periods of losses to taxpayers, if higher current taxes reduce labor supply or savings in future periods. Similarly, one could easily allow for two periods of gains to taxpayers, if they value the income gains in the second period among recipients. But since taxpayers are not at the center of my concern, I ignore these issues.) [11]

Among recipients, assume that there is a change in behavior in the second period that is induced by first-period transfers. Denote the second period income effect of this change in behavior $I^2(B^1)$, where superscripts index period and $I^2$ is dependent upon the magnitude and the type of the first-period transfer, $B^1$. $I^2$ will be positive if the transfer functions as an

[11] I deal with multi-period models in which the transfer occurs only once. A multi-period model in which transfers recur would open up a variety of other interesting issues. For instance, people who are among the taxpayers in the starting period might be "at risk" of being a recipient in some future period. This could create political support for a transfer program in a way not allowed in my model.

investment. For instance, there may be a change in effort due to learned behavior induced by the transfer program (such as better money management or better job-search skills). Or there may be a change in ability induced by the transfer program (perhaps due to greater education or training received in the first period.)

The benefits that result from the transfer may now substantially exceed the direct cost of the transfers, that is, if $B^1 = T^1 - C^1$ then $B^1 + \delta I^2 > T^1 - C^1$ (where $\delta$ is a discount factor). The calculation in equation (6), which determines whether redistributive transfers create an efficiency loss, is amended to

$$(7) \quad T^1 + L^1_t + L^1_r > B^1 + G^1 + \delta I^2$$

The additional positive term on the right-hand side of the inequality makes it less likely to hold. If the behavioral changes induced by the transfer are large and positive, redistributive taxation could actually raise total income. In this case, the transfers can produce *both* greater equity and greater efficiency.

It is important to note that $I^2$, the second period income changes among recipients induced by first period transfers, need not be positive. There has been a substantial U.S. policy discussion around the possibility that cash welfare transfers induce less work effort and greater fertility over time.[12] Both of these could lead to reduced future earnings and work effort. So-called "welfare dependency" arguments claim that the long-term effects of redistributive transfers on behavior are negative. While recognizing this possibility, my interest is in identifying policies where the long-term income effects of transfers are likely to be positive, that is, policies that function as investments. In Section V, I discuss policy situations where transfers are likely to have long-term positive benefits.

## III. Case 1: A Lack of Recipient Agency

I am focusing on the costs associated with redistribution that occur because of behavioral responses to transfers on the part of recipients. For instance, policymakers are concerned about reductions in labor supply caused by cash support for the poor, increases in non-marital childbearing caused by assistance to single mothers, or changes in the timing of retirement caused by public pension plans. All of these examples reflect a concern about the size of $L_r$ – the induced income losses among recipients that are generated by the transfer.

If there is no individual agency, however, there can be little induced income loss. If individuals have no control over their life outcomes or no capacity to respond, then the behavior changes among recipients that create leaky buckets for government transfers will not occur (i.e., $L_r = 0$).

The most common lack of agency occurs in situations where an individual has no capacity for response. This may be true of disabled individuals, of the elderly who can no longer work, or of children. If these groups are not working and not expected to work, additional income will not cause an offsetting change in labor supply. If these groups are not now saving, then additional income cannot cause a reduction in saving. That is to say, because these individuals cannot act effectively, they would not behave in any less acceptable manner if provided with additional transfers. They are poor because of circumstances outside their control and they have no ability to affect that poverty by their own behavior.[13]

An alternative reason for lack of agency may be institutional constraints that prevent individual effort from affecting outcomes. For example, this might occur in a highly stratified

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[12] For instance, see Murray (1994).

[13] Blank (2000) indicates that a lack of agency may also affect the way in which government assistance can best be delivered. Of course, if lack of agency is foreseeable in some earlier period, the presence of future expected transfers could cause behavioral changes.

society where one's position is entirely determined by family background or race or ethnicity. If jobs, wages, and housing opportunities are limited by the color of one's skin, one's gender, or one's ethnic background, then the level of effort exerted by these groups will not matter and income will be largely predetermined.

In a paper focusing on the role of income mobility, Picketty (1995) develops a model that makes this point. He has a simple scheme in which the expected income of an agent is equal to $\pi_k + \theta e$, where $e$ is effort and $\pi_k$ is the expectation of one's future income based on family background k (for instance, k may signify parental race or parental income.) If $\theta = 0$, then one's future income is entirely determined by one's family background and there is no return to effort. When effort no longer matters, then induced losses among transfer recipients are zero, since there is no incentive to behave differently when transfers are received (in the framework laid out in Section II, $e^*_r = e_r$ and hence $L_r$ equals zero.) This suggests that transfers to individuals without agency are likely to generate few efficiency tradeoffs.

What does this mean from a policy standpoint? It suggests that transfers to those without agency may produce few leaky bucket effects. This may explain why certain types of transfers are politically more acceptable than others. Within the U.S., the distinction between the "deserving" and the "undeserving" poor is often based on whether poor individuals are viewed as behaving in ways that contribute to their poverty. Those without agency are typically considered the more deserving. Hence, U.S. transfer programs for the elderly or the disabled are more generous than for able-bodied.

More perversely, this argument also suggests that if a society maintains strong limits on economic opportunity for a particular group, then it can better afford to transfer some assistance to this group. Hence, those who are culpable in maintaining the institutional

structures that promote racial or ethnic exclusion can feel "good" about helping the poor, at a relatively low cost.

But the neo-Okuns in the audience will immediately find an objection to this discussion about agency. Even transfers to individuals who have no personal agency may still have offsetting efficiency costs if they affect the behavior of other family members. For instance, if supporting the poor elderly with public money induces fewer children to feel they must support their parents, there may be efficiency costs. Or if guaranteeing college scholarships for children leads parents to work less and save less then there may be efficiency costs. Although the empirical evidence on these effects is limited, Cox and Jakubson (1995) estimate that cash welfare payments have a small but measurable effect on interfamily private transfers. Schoeni (1996) finds somewhat larger effects and also finds that public welfare transfers reduce the time given to help other family members.

In short, an individual must be both without agency *and* socially isolated in order for transfers to truly involve no efficiency losses. What does this mean for policy? This is an argument for providing orphans with higher degrees of government support than one provides other children. Or for distinguishing in program generosity between elderly and disabled individuals who have no family versus those who do.

Transfer policy tends not to make this distinction relating to social isolation very frequently. I suspect this is because of the difficulty in determining who might have private family assistance available. Not all families provide interfamily transfers and a policy that helped only childless widows would create difficulties for the elderly widow whose children refused to help. If the policy was designed to help only childless widows or widows not helped by their families, this would create strong incentives for families to refuse assistance.

In short, among all poor individuals, society should be more willing to redistribute to those without agency of their own, who can neither escape their poverty nor behave differently if given additional income. Society should be even more willing to redistribute to those without agency and without family. In these circumstances, the efficiency costs of redistribution are limited to the pure administrative costs or the costs imposed on taxpayers and the efficiency arguments against redistribution are relatively weak.

## IV. Case 2: Policies that Impose Behavioral Requirements

In Case 1, it is a lack of responsiveness on the part of recipients that limits the inefficiency of transfers. In this example, I discuss a situation where it is the nature of the transfer program that limits inefficiency.

In more recent years, a variety of government programs have begun to combine income transfers with behavioral requirements. The most discussed example of this may be welfare-to-work programs, which provide assistance to poor families but demand that they participate in job search and job placement programs. Other examples include services to teens that are conditional upon staying in school; enforcement of job search requirements in unemployment insurance programs; or work assistance programs for unemployed males that are conditional upon staying off drugs and out of trouble with the law. These programs have the potential to substantially reduce the inefficiencies that may be associated with a transfer, because they condition the transfer upon a behavioral response that reduces the costs.[14]

An excellent example of this type of transfer can be observed in some of the welfare-to-work programs that have been run experimentally in the United States and Canada. Known

[14] In a somewhat different context, this point was made by Nichols and Zeckhauser (1982), who argue that constraining transfers can help target them on the neediest population.

as "financial incentive programs" these policies provide significant cash support to families, but condition the cash payments on work behavior. Hence, these programs subsidize family income but also encourage labor supply.[15] Because of their particularly strong results, let me describe two of these programs in a bit more detail.

The Minnesota Family Investment Program (MFIP) was implemented in Minnesota in 1994 and aimed at moving women on welfare into employment. MFIP provided a high earnings disregard that allowed women to continue to receive some cash assistance as they went to work, until their earnings were about 140 percent of the poverty line.[16] At the same time, participants were also required to take part in mandatory job search and job placement programs. Participants were randomly assigned to the MFIP program, so that a control group of women continued to take part in more traditional welfare programs. The random assignment methodology resulted in an evaluation of MFIP that is considered highly credible.

The Self-Sufficiency Project (SSP) was implemented in 1992 in two provinces in Canada (New Brunswick and British Columbia.)[17] It offered a randomly chosen group of women on welfare (known as Income Assistance in Canada) an alternative: If they agreed to leave welfare, they could receive an earnings supplement in every month when they worked 30 hours per week or more. The supplement was large and roughly doubled the earnings of most participants. It was calculated as half the difference between a participant's earnings and an "earnings benchmark" set at $30,000 in New Brunswick and $37,000 in British Columbia (Canadian dollars). The supplement was reduced by 50 cents for every dollar of earnings. In this program, the 30-hour rule provided the work mandate; women working less

[15] For a more detailed discussion of these programs, see Blank, et. al. (2000) or Michalopoulos and Berlin (2001).

than this could not collect a supplement. As in MFIP, participants were randomly assigned to the SSP program or the traditional welfare program in the province, and the results of the evaluation are considered highly credible.[18]

The impact of these two programs is shown in Table 2, which shows the gains among program recipients versus the treatment group for both of these experimental programs. Employment increased by 7.2 percent among SSP recipients and by 11.5 percent among MFIP recipients, relative to the treatment group. Earnings increases were significant, as were increases in annual income. In both experiments, poverty declined as well by a substantial amount. Because these programs continued to provide generous earnings supplements to workers, they also cost the government more money. But the increased costs were more than offset by the income gains.

In SSP, for every dollar spent by the government in transfers, recipients gained $1.95 in income. In MFIP, for every dollar in transfer income, recipients gained $2.48.[19] These are markedly different results than the negative income tax results cited above (Burtless, 1986), where a dollar in government expenditures resulted in only a $0.53 gain in recipient incomes.

It is worth noting that the generous working family tax credits enacted in the U.S. and in Great Britain in recent years can be considered variants on this type of program. The

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[16] For more information on MFIP, see Miller, et. al. (2000). In contrast, in the Aid to Families with Dependent Children (AFDC) program that was available to women who did not participate in MFIP, an additional dollar of earnings resulted in a dollar of benefit loss for most women.

[17] For more information on SSP, see Michalopoulos, et. al. (2000).

[18] A key difference between MFIP and SSP is that those assigned to the MFIP "treatment" had to participate in that program and were subject to sanctions if they did not participate in mandatory job search. Being assigned to the SSP "treatment" meant having the choice between accepting SSP or staying in the traditional welfare program. (If they voluntarily entered SPP they were not eligible for traditional welfare for the next three years.) Hence, the SPP results test the incentive effects of a large subsidy to work and whether women will voluntarily accept a 30-hour-per-week mandate in exchange for greater benefits. The treatment results in SSP include all women given this choice, that is, both those who entered SSP and those who did not respond to the incentive.

[19] For both SSP and MFIP these are the numbers for long-term welfare recipients who entered the experimental program. The results are somewhat lower for more recent applicants, and there are no gains for two-parent families in MFIP. See Blank (forthcoming) for more information on these benefit/cost numbers.

Earned Income Tax Credit (EITC) in the U.S. pays nothing to non-workers, but provides substantial supplements to the earnings of low-wage workers in low-income families. The result, documented in a growing number of studies, is greater labor supply among single mothers.[20]

In short, generous transfers need not mean labor supply reductions. When combined with strong work requirements, it is possible that transfer programs can provide additional income to low-income families at the same time as they increase labor supply and earnings. This is a very different result than occurs in traditional cash welfare programs, which pay the largest amount to nonworkers and hence encourage reductions in labor supply. I find these results from the MFIP and SSP programs to be among the most interesting findings coming out of the U.S. welfare reform research. They suggest how to design future policies to reduce efficiency costs.[21]

An alternative example of experimental policies that combine subsidies with behavioral incentives comes from the unemployment insurance experiments run in a variety of states in the U.S. in the 1980s.[22] These experiments tried to reduce the effect of unemployment insurance on the length of unemployment spells by providing financial bonuses to individuals who found a job quickly. While the exact nature of these experiments varied across states, they sought to move people into jobs more quickly and even reduce government spending if the bonus paid was less than the unemployment insurance that would have been collected in a longer unemployment spell. While some experiments were less successful, the results in one state – Illinois -- were particularly strong. The bonus payments

[20] See Eissa and Liebman (1996), Meyer and Rosenbaum (1999), or Ellwood (2000).
[21] Programs with behavioral requirements may have higher administrative costs (i.e., high C), since they require more services and monitoring on the part of the government agency overseeing the program.
[22] The information in this paragraph is taken from Meyer (1995).

resulted in shorter unemployment spells, earnings increases, a reduction in UI payments and only a moderate level of bonus payments. Other experiments have sought to enforce job search among UI recipients, and in several locations also produced significant improvements in earnings and a reduction in UI payments.

What does this mean for policy? I believe these policy examples suggest that we need to explore additional opportunities to link redistributive subsidies with behavioral mandates or behavioral incentives. Such programs may take a greater degree of management skill and design attention than simple transfer programs, but they may also significantly reduce the induced income losses that are imbedded in more traditional transfer programs and thereby limit the leaky bucket effect produced by these programs.

## V. Case 3: Transfers as Investments

Both cases 1 and 2 involve transfer situations in which efficiency costs are minimized. The transfers themselves do not increase aggregate income in the society, but they occur relatively costlessly and hence they involve little loss of efficiency.

An alternative situation can occur if transfers subsidize the provision of services that function as investments; that is, if they not only increase resources in the period in which they occur, but they also change behavior or opportunities in such a way that they increase income in future periods as well. The appeal to transfers as an "investment in the future" is frequently made, especially for programs aimed at poor children.

In fact, the possibility of investment returns may be one reason to publicly subsidize a particular commodity. Traditionally, economists would argue that utility is maximized with greater choice, hence, cash transfers produce more benefits than in-kind transfers. But if

certain types of in-kind transfers have long-term investment properties, that is a reason to prefer them to more general cash transfers. This may be particularly true of school-related transfers or health-related transfers.[23] Let me indicate three policy areas where current transfers seem to produce future gains.

First, transfers that provide health assistance may be viewed as an investment if they reduce future health problems. Public campaigns to immunize children, for instance, appear to have substantial long-term benefits in terms of lower future health expenditures. (These could be public or private gains; in either case, they increase total income available for other purposes.) For instance, the Centers for Disease Control (1999) note that "…every dollar spent to administer oral poliovirus vaccine saved $3.40 in direct medical costs and $2.74 in indirect societal costs" and "…every dollar spent to purchase measles-containing vaccine saved $10.30 in direct medical costs and $3.20 in indirect societal costs."

Prenatal and infant health care also appears to produce long-term benefits. The General Accounting Office (1992) reviewed 17 evaluation studies of the Special Supplemental Food Program for Women, Infants and Children (WIC), a program that provides health and nutritional assistance to low-income mothers and their children. On average, these studies suggest that every dollar invested in WIC returns an estimated $3.50 over 18 years (discounted present value) to government and to private insurers. Clearly, public expenditure programs focused on poor children's health appear to produce substantial future returns.

[23] A classic economist's question is "if these expenditures have such large returns, why didn't people undertake them on their own?" One answer may be income or information constraints. In some cases the decision-maker (the parent or caretaker) is not the same as the individual who will reap the gains (the child). In both the health and education area, there are also significant positive externalities to these transfers and a substantial part of the gain may be received by others than those who directly receive the transfer.

Second, human capital expenditures may have similar investment-type properties. Indeed, many transfer programs to subsidize child care or education are supported because they are considered investments in the future. The evidence on the long-term gains from many of these programs is not as extensive as the evidence from health-related programs. But in many cases, it is difficult to credibly evaluate the gains from education programs. For instance, when all children are in mandatory public schooling it is hard to measure the effects relative to a world with no public schooling, to determine the long-term returns on public school dollars.

One preschool program in the U.S. has attracted a particularly large amount of research attention. Head Start is a program designed to provide enriched pre-school training to low-income children in poor neighborhoods. A cohort of head-start children from the 1960s shows continued benefits 20 years later relative to a randomly selected control group (Schweinert, et. al., 1993). A recent study by Garces, et. al. (2000) investigates Head Start's effects using data from a national longitudinal sample of children. They estimate that Head Start enrollment between the ages of 3 and 5 results in long-term benefits, including increased high school graduation and college enrollment rates. These studies do not do actual cost-benefit calculations, so one cannot conclude that the gains from Head Start actually exceeded the dollars spent. But the magnitude and long-term nature of the measured effects suggests that benefit-cost ratios for the program are likely to be quite high.

While many job training programs aimed at disadvantaged adults or teens appear to not have significant long-term effects on work behavior or earnings, there are exceptions. For instance, the Job Corps program in the United States, which provides special educational and career services for disadvantaged teens, is estimated to generate over $2 in future benefits for

every $1 of program expenditures (Burghardt, et. al., 2001, Table 3). Some U.S. welfare-to-work programs appear to create long-term earnings increases as well. Indeed, if one believes that wages should grow with labor market experience, programs that mandate work should lead to earnings growth as a result of their additional work experience. Gladden and Taber (2000) indicate that wages among less-skilled women do increase with experience. Hotz, et. al. (2000) indicate that a California welfare-to-work program resulted in gains up to nine years later.[24]

As discussed in Section II, welfare-to-work programs with strong financial incentives have also resulted in high benefit/cost ratios. In fact, these programs may be an example of more efficient transfer policies that combine elements of both cases 2 and 3. On the one hand, because of their behavioral mandates, they lessen the induced income losses of recipients at the time of the transfer. On the other hand, because of the increase in employment that they generate, they may produce long-term gains in earnings if current labor market experience induces greater future labor force participation and higher future earnings.

In addition to health and human capital investments, a final (but less documented) example of how transfer programs might induce long-term efficiency gains could be in the area of attitudinal change. It is often argued that anti-discrimination programs – in the workplace or the housing market – produce substantial gains to minority populations. Some of this may occur through human capital avenues, if such programs open up new training and job opportunities. But some of this may occur if such programs reduce discriminatory behavior by the majority population over time. That is, if enforcing anti-discrimination laws today reduces the taste for discrimination throughout society in the future, then there could be

[24] Both the Job Corps and the California welfare-to-work results are based on evaluation studies involving randomly selected treatment and control groups and are considered highly credible.

beneficial income and productivity gains in the minority population that more than outweigh the costs of the program. This is an area where quantitative research is more limited.

It is not obvious how many opportunities there are to make investment-based transfers which lead to larger future incomes among the poor. While I have tried to cite a few examples where I think there is evidence that such an effect might be occurring, it is worth emphasizing that many programs are not likely to produce such long-term gains. Going back to the simple conceptual framework discussed above, increases in income among the poor over multiple time periods must be substantial in order to actually enhance efficiency. There may be induced income losses in the first period generated by behavioral changes among the poor (increased subsidies for children's schooling or health may reduce parental labor supply or savings); in addition it is not enough that a program simply have positive benefits in order to argue that efficiency is enhanced. Its benefits must outweigh all of the costs associated with its required level of transfers. My guess is that fewer programs actually enhance efficiency than many advocates would like to claim. The "investment" argument is used broadly for a wide range of child and school-related transfers; only long-term and serious program evaluation studies can prove which policies actually do function as investments.

What does this mean for policy? Even if large positive gains from transfer programs are not frequently available, they do appear more likely to occur in certain program areas, most notably those related to children's health and education. This argues for focusing more public subsidies on those services that provide ongoing future income gains and less on policies that simply provide one-period benefits. It would also be useful to do more comparative evaluations of policies intended to generate investment returns, so that

policymakers can more effectively determine what specific policy design attributes are most likely to produce the largest long-term income gains.

## VI. Conclusion

Despite extensive attention in the economics literature to the efficiency costs of transfer programs, there has been little attention focused on ways to minimize such costs. This paper has tried to investigate policy situations in which equity and efficiency need not trade off against each other. My review of the evidence suggests that the equity/efficiency tradeoff may be low in at least three situations: when public assistance goes to particular populations that have no capacity to change their behavior; when it goes to particular programs that combine behavioral mandates along with transfer payments; and when it subsidizes access to particular commodities that function as long-term investments.

This review also suggests that economists should potentially pay more attention to populations that have been less studied in the economics literature. While many existing articles focus on the effects of transfer programs on able-bodied adults, a larger share of the poor – at least in the U.S. -- are children, elderly, or disabled. We would benefit from a richer research literature that analyzes the effects of alternative transfer schemes on these groups. It is possible that the general distaste for redistributive transfers that characterizes the opinion of many economists may be the result of a highly selected set of research studies, which have focused on populations where the costs of redistributive transfers are likely to be highest.

While Okun's leaky bucket is a reality for many transfers programs, the level of leakage can vary substantially across programs. Average estimates of the inefficiencies

induced by redistributive social policies do not adequately characterize the diversity of efficiency costs across individual policies. In a number of real-world policy situations, equity and efficiency are not inevitably in conflict with each other.

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Table 1

## A Framework for Evaluating Efficiency/Equity Tradeoffs

### I. No Redistributive Transfers

*Taxpayers*: $Y_t(e_t)$ = Income in the absence of redistributive transfers
$e_t$ = Effort in the absence of redistributive transfers

*Recipients*: $Y_r(e_r)$ = Income in the absence of redistributive transfers
$e_r$ = Effort in the absence of redistributive transfers

*Total income*: $Y = Y_t + Y_r$

### II. With Redistributive Transfers

*Taxpayers*: $Y^*_t(e^*_t)$ = Income in the presence of redistributive transfers
$e^*_t$ = Effort in the presence of redistributive transfers

T = Amount of tax dollars government seeks to raise
G = Gains to taxpayers from redistributive transfers
$L_t(e^*_t - e_t)$ = Induced income losses to taxpayers from redistributive taxation

$$Y^*_t(e^*_t) \approx Y_t(e_t) - T - L_t(e^*_t - e_t) + G$$

*Recipients*: $Y_r(e_r)$ = Income in the presence of redistributive transfers
$e_r$ = Effort in the presence of redistributive transfers

B = Transfer benefits received by recipients, where B = T – C, and
C = Administrative costs of redistributive transfers
$L_r(e^*_r - e_r)$ = Induced income losses to recipients from redistributive transfers

$$Y^*_r(e^*_r) \approx Y_r(e_r) + B - L_r(e^*_r - e_r)$$

*Total income*: $Y^* = Y^*_t + Y^*_r$

Redistributive transfers involve efficiency costs if

$$Y^*_t + Y^*_r < Y_t + Y_r$$

or

$$T + L_t + L_r > B + G$$

or

$$L_t + L_r + C > G$$

Table 2

## Effects of Two Financial Incentive Programs Tested Using Random Assignment

(Shown is the difference in outcomes between experimentals and controls in third year after program start)

| Outcome | Self-Sufficiency Project (SSP), Canada | Minnesota Family Investment Project (MFIP) |
|---|---|---|
| Employment (%) | 7.2*** | 11.5*** |
| Annual Earnings ($) | 649*** | 571* |
| Annual Cash Transfers ($) | 800*** | 614*** |
| Annual Income ($) | 1449*** | 1185*** |
| Poverty (%) | -9.4*** | -12.4*** |
| Estimated income gains per recipient for each dollar of transfers | 1.95 | 2.48 |

***Significant at 1 percent level.
* Significant at 10 percent level.

Sources: Employment, earnings, cash transfers, and annual income for both programs come from Bloom and Michalopoulos (2001, Appendix Tables C.2 and C.3). The MFIP program included a variety of components. Reported here are the results for the full program, that is, the program that included financial incentives with a mandatory work program.

Poverty data for MFIP comes from Miller et al (2000, Table 4.5). Poverty data for SSP comes from Michalopoulos et al (2000, Table ES.2).

Income gains per recipient for each dollar of transfers is shown for long-term welfare recipients in SSP and MFIP. The equivalent ratios among recent single-parent applicants in MFIP is 0.97, and among two-parent applicants is 0.40. These benefit/cost ratios are found in Blank (forthcoming, Table 8) and are explained in more detail there.