Universal Basic Income in the US and Advanced Countries

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ABSTRACT:

We discuss the potential role of Universal Basic Incomes (UBIs) in advanced countries. A feature of advanced economies that distinguishes them from developing countries is the existence of well developed, if often incomplete, safety nets. We develop a framework for describing transfer programs, flexible enough to encompass most existing programs as well as UBIs, and use this framework to compare various UBIs to the existing constellation of programs. A UBI would direct much larger shares of transfers to childless, non-elderly, non-disabled households than existing programs, and much more to middle-income rather than poor households. A UBI large enough to increase transfers to low-income families would be enormously expensive. We review the labor supply literature for evidence on the likely impacts of a UBI. We argue that the ongoing UBI pilot studies will do little to resolve the major outstanding questions.

Keywords: safety net, income transfer, universal basic income, labor supply.

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I. Introduction

Universal Basic Income (UBI) proposals are getting a lot of attention in the high-income countries. A wide range of proponents, from Charles Murray, a political scientist and scholar at the American Enterprise Institute, to Andy Stern, former president of the Service Employees International Union, have backed the idea. We count six recent, high-profile trade books – including those by Murray and Stern –arguing for UBIs as solutions to problems facing first-world economies (Murray 2016; Stern 2016, Lowrey 2018, Yang 2018, Hughes 2018, Van Parijs and Vanderborght 2017). Using a metric of mentions in *New York Times* articles, "universal basic income" appears 30 times in 2017, and nearly as many in the first six months of 2018. The term never appeared before 2014; even the more expansive search term of "basic income" averaged only two uses per year from 1945 to 2014 (Figure 1).

Attention may be running ahead of actual policy development: there is little agreement or definition what exactly a UBI is. And basic questions remain unresolved: about what specific problems the program is meant to solve; about how the program relates and compares to other existing transfer programs; and about the key research questions that need to be answered.

Our paper attempts to fill this gap. We comprehensively examine the potential role of UBIs in advanced countries.[1] We take three features to define a UBI:

a) it provides a sufficiently generous cash benefit to live on, without other earnings;
b) it does not phase out or phases out only slowly as earnings rise; and
c) it is available to a large proportion of the population, rather than being targeted to a particular subset (e.g., to single mothers).

As we discuss below, many proposals and programs that use the name UBI depart from this canonical structure in important ways. Indeed, some authors would disagree with our definition – for example, Van Parijs and Vanderborght (2017) would include small transfers that meet criteria (b) and (c) but not (a) as UBIs.

We begin, in Section II, by discussing a range of problems for which a UBI might be seen as a solution. One commonly cited reason to adopt a UBI is the combination of labor-displacing technological change – journalist Annie Lowrey calls this "the robot apocalypse" (Lowrey 2018) – and rising inequality and wage stagnation. Alternatively, a UBI might be seen as a response to perceived inadequacies -- ineffectiveness, inefficiencies, unfairness, or insufficiency -- of the current social safety net. These are quite different motivations, with important implications for the prospects of a program that could represent a substantial increase in the generosity (and cost) of transfer payments relative to existing programs.

In Section III we develop a framework for comparing a wide range of transfer programs, and use this to place the UBI within the context of the canonical income support programs routinely

[1] There is also an active discussion about UBIs in poor countries, where the issues and existing infrastructure are quite different. See Banerjee et al. (this volume) for a discussion of UBIs in that context.

provided by advanced countries. Our framework is simple but general, using six parameters to nest a wide range of transfer programs including cash welfare, in-work tax based assistance, child allowances, social security retirement, negative income taxes, and UBIs. We use this framework to discuss several possible interpretations of the words "universal" and "basic income." We also discuss the various UBIs in proposal or pilot form and how they compare to a canonical UBI.

In Section IV, we discuss the distributional implications of a UBI. Focusing on the U.S., we explore the distribution of transfers received under current law. A large share of current transfer spending goes to specific populations, particularly families with children, the elderly, and the disabled, and eligibility is often heavily means tested. A UBI would substantially smooth out the currently uneven distribution, with dramatic distributional effects. If a UBI of the scale often contemplated were introduced on top of the existing transfer system, it would represent a very large downward redistribution of income. In contrast, a UBI that replaced, rather than supplemented, current programs would be less targeted, providing much less assistance to the lowest income families. Compared to the existing combination of transfer programs, a canonical UBI would also direct a much larger share of funds to younger, non-disabled workers and to families without children (and smaller shares going to the elderly, disabled, and families with children).

In section IV, and throughout the paper, we embed our discussion in the U.S. program ecosystem. While it is necessary to adopt a particular setting to provide the needed quantitative analysis, the main conclusions of the paper are qualitative and will apply in all advanced countries. It is worth pointing out, however, that the U.S. provides much less generous income transfers, with much more of a focus on work, than do most other developed countries. A UBI would thus be a larger change, both philosophically and in terms of the distribution of funds, in the U.S. than elsewhere.

Section IV also discusses the cost of a UBI, again in the U.S. context. A truly universal UBI would be enormously expensive. The kinds of UBIs often discussed would cost nearly double current total spending on the "big three" programs (Social Security, Medicare, and Medicaid). Moreover, each of these programs would likely still be necessary even if a UBI were in place, as each serves needs that would not be well served under a uniform cash transfer. Expenditures on other existing programs total only a small fraction of the cost of a meaningful UBI. This suggests that a full-scale UBI would require substantial increases in government revenue. The impacts of whatever taxes are imposed to generate this revenue are likely of first-order importance in evaluating the impact of a UBI.

In Section V, we return to our transfer program framework and use it to discuss the incentive effects of the UBI. We discuss the incentives around labor supply, human capital accumulation, and entrepreneurship as well as potential impacts on family and child wellbeing, health and life satisfaction. UBIs would represent a substantial reversal of the pro-work goals of recent U.S. income support policy. We also discuss how UBIs might affect "stigma," a prominent (and

arguably intended; see Moffitt 1983) feature of many existing transfer programs, as well as the potential general equilibrium effects of the program.

Finally, in Section VI, we consider the UBI research agenda. We discuss what we know from research on the Earned Income Tax Credit, the 1970s Income Maintenance Experiments, and cash welfare programs, as well as from studies of UBI-like policies such as the Alaska Permanent Fund and Indian tribe payments. Finally, we consider elasticities from the broader literature on labor supply. We argue that all of these are useful for evaluating the potential impact of a UBI, and that estimates of the key parameters from the literature may be more useful than impact estimates from UBI experiments for predicting the effects of an implemented UBI program. Nevertheless, there are clear limits of the existing evidence and we conclude by outlining this UBI research agenda.

II. Define the problem: What problem is the UBI trying to solve?

One motivation commonly offered for adopting a UBI is that the labor market is not delivering, or is not expected to deliver, adequate growth of wages and earnings for the lower portion of the income distribution. This is sometimes presented as the "The Robots Are Coming!" argument – we can expect, the story goes, for robots to gradually take over a large share of the jobs currently done by people, leaving severe job shortages and declining wages in the jobs that remain. In principle, the robots should increase productivity and thus dramatically increase global real incomes (Acemoglu and Restrepo 2018). But the concern is that an increasing share of income will go to a small elite (e.g., the owners of the robot patents), leaving everyone else impoverished. Thus, in the automated world, the primary economic problem will be figuring out income (re-)distribution schemes that enable the vast group of no-longer-needed workers to survive, and activities to keep them busy.

Poor labor market outcomes for workers at the median and below are not a futuristic phenomenon. Wages and earnings of lower skilled workers, particularly men, have stagnated over several decades (Autor 2014). Wage inequality within education groups has also grown. Women's real wages did not decline as dramatically, but also show evident disparities in earnings growth across education level.[2]

The lack of real growth in wages has translated to earnings and income stagnation through much of the distribution. Real median money income in the U.S. increased less than 1 percent between 2000 and 2016 (Semega et al 2017). Based on a much broader measure of national income, pretax income of the bottom half of the distribution grew by only 1 percent between 1980 and 2014 compared to 42 percent in the next four deciles (P50-P90) and 121 percent in the top decile (Piketty, Saez and Zucman forthcoming). The share of post-tax national income going to the bottom half of the population fell from a little over 25 percent in 1980 to less than 20 percent in 2014.

[2] In the five years following 2012, inflation-adjusted wages have started to increase, showing real gains for the lowest quintile of workers (Shambaugh et al., 2017).

Job opportunities have also declined, particularly since 2000 when employment growth began to slow. Between 2000 and 2016, the fraction of individuals ages 25 to 54 working or looking for work fell more than 5 percentage points for men and 3 percentage points for women. This decline represents a continuation of trends in male labor force participation since the 1960s, though the decline for women is more recent (Black and Schanzenbach 2018), and stands in stark contrast to the increases in female participation across most other developed countries (Economic Report of the President 2015).

A large literature explores the causes of these trends in inequality and wage stagnation. Technological change is one common explanation (e.g., Acemoglu and Autor 2011), but others include trade and globalization (e.g., Autor 2014; Autor, Dorn, and Hanson 2016), changes in labor market institutions (e.g., a fall in the real value of the minimum wage, Lee 1999), declines in worker mobility – both geographic and job-to-job mobility (Molloy et al. 2016) – and rising monopsony power (Azar et al. 2017).

Regardless of the root cause, it is clear that less-skilled workers are experiencing stagnation in wages and job opportunities. In that sense, the robot apocalypse scenario is already here. A UBI can be seen as a response. It would transfer a portion of national income from capital owners to workers (and non-workers), allowing them to live better lives than low market wages can support, and could even support market equilibria with higher wages.

A distinct argument for a UBI is that it could replace the current patchwork of transfer programs in the United States, thereby avoiding the high cumulative marginal tax rates implicit in many existing poverty programs, such as cash welfare (Murray 2016). These high rates are claimed to create "welfare traps," keeping people on welfare who would be better off in paid jobs.[3] A UBI, to some, would radically simplify the transfer system, reducing perverse incentives while still ensuring a minimum level of income for those who are truly unable to work.

This argument stands in contrast to the "robot apocalypse" argument: If a UBI is intended to address the disappearance of jobs due to technological change, the labor supply effects are not first order, and indeed one might hope for declines in labor supply as workers are freed to choose non-employment over poorly compensated work. But a UBI intended to avoid welfare traps has an explicit goal of increasing labor supply. We return to this below.

A third set of arguments for a UBI is, like the second, grounded in inadequacies of our current safety net, but comes more from concern with insufficient benefits. There are many holes in our current welfare system, particularly since the 1990s welfare reform, with many low-income families (particularly but not exclusively those without children) receiving no benefits at all or only very minimal benefits. For some advocates, a UBI represents a more comprehensive and

[3] In practice, with large negative tax rates through the EITC, and with the decline in cash welfare and the rationing of housing benefits, cumulative marginal tax rates are actually negative at low incomes and positive but modest in magnitude in program phase-out ranges (Kosar and Moffitt 2017).

politically defensible safety net, one that reaches all of the needy and not just a demographically targeted subset. They argue that a more universalist approach would also reduce the stigma of program participation and possibly move the conversation away from assessments of the deservingness of the poor.

III. What is a Universal Basic Income?

A number of different transfers, with quite different characteristics, have been described as UBIs. There are two important terms to define: "universal" and "basic income."

We begin with the second. Generally, a "basic income" is large enough to meet a family's basic needs all on its own, without earnings or other sources of income.[4] This is often operationalized as providing assistance to ensure family income is at or above the poverty level. Some also interpret "basic" to indicate a base that might be supplemented by other income, implying that the transfer is not reduced as earnings rise, at least over some range.

The first term, "universal," is more ambiguous. In our reading, universal refers to three distinct design features:

- Available to everyone, without targeting based on family structure, presence of children, age, or disability status.
- Paid to those without earned income, and even without any effort to find work.
- Paid to those with relatively high earned income, so not simply a program for those in deep poverty.

An idealized UBI might have all three of these universality features, but many proposals do not.

A fully implemented program with these universal and basic income elements would be extremely expensive. A universal payment of $12,000 per year to each adult U.S. resident over age 18 would cost roughly $3 trillion per year.[5] This is about 75 percent of current total federal expenditures, including all on- and off-budget items, in 2017. (If those over 65 were excluded, the cost would fall by about one-fifth.) Thus, implementing this UBI without cuts to other programs would require nearly doubling federal taxes; even eliminating all existing transfer programs – about half of federal expenditures – would make only a dent in the cost. To bring this cost down, most UBI proposals and pilots in the developed world fail to meet the conditions of the canonical program in some way, either by reducing the payment below a subsistence level or by limiting eligibility based on income or other family characteristics.

A. A Framework for Comparing Transfers

[4] Van Parijs and Vanderborght (2017) would call even a small amount a basic income. Sometimes an amount high enough to live on is called a "full basic income," with smaller amounts called "partial basic incomes" (https://basicincome.org/basic-income/).

[5] This would bring a non-elderly adult living alone nearly to the poverty line ($12,752 in 2017). The combined payments to married couples would put them somewhat above the poverty line, while single parent families would remain below it.

To understand the potential impact of a UBI, it is helpful to explore how it would compare to existing transfer programs. Some of these programs have UBI-like characteristics, while others quite clearly contrast with a UBI in their goals and design.

We propose a simple framework to capture many of the design differences among existing and proposed transfer programs. Most transfer programs in advanced countries can be approximated as:

$$B(X,Y) = E(X) * \min(G + SY, M, \max(M - T(Y - P), 0))$$

where B is the transfer (or benefit) for a family with characteristics X and earnings or income Y, and the parameters are:

- G (for "guarantee"): the transfer to a family with zero earnings.
- S (for "subsidy rate"): The rate at which the transfer grows as earnings rise above zero.
- M (for "maximum transfer"): The maximum transfer, reached at earnings of (M-G)/S.
- P (for beginning of "phase out" of the transfer): The highest earnings a family could have and still receive M.
- T (for "tax rate"): The rate at which the transfer is reduced for earnings above P, until it reaches zero when earnings equal P+M/T.
- E (for "eligibility"): A definition of which individuals or families are eligible (based on factors other than earnings/income) for the program. This is often referred to as "categorical eligibility." We can think of it as a function E(X) mapping (non-earnings) characteristics X to an indicator for eligibility.

Figure 2 shows a generic transfer program in which all of the first five parameters are non-trivial (G, S, M, and T are non-zero, and P is finite). Here, a family with zero earnings receives a benefit (G). The benefit then increases with earnings at subsidy rate S until reaching the maximum benefit M. There is a flat portion with constant benefit M, followed by a phase out for income above P at rate T.

No single program in the U.S. has a schedule like this. However, the basic features of most existing programs, including traditional cash welfare, in-work tax benefits, retirement programs, and child allowances, can be captured by varying the six parameters. (Of course, our piecewise linear framework cannot duplicate a more nonlinear schedule, but it can be seen as an approximation to it.) This framework, which can also capture both Negative Income Taxes and UBIs, clarifies what is "new" about the UBI that is not already part of a typical developed country's social safety net.

B. Existing Transfer Programs

Below, we use our framework to characterize six types of transfer programs. Parameters for several illustrative programs are presented in Table 1. We follow that with a discussion of how the canonical UBI compares to other income transfers and how proposed UBIs compare to the program in its purest form.

1. In-work programs: In-work programs, the best known of which is the U.S. Earned Income Tax Credit (EITC), are designed to transfer resources to lower income individuals while encouraging work. Typically these programs are phased in, reach a maximum, and then are phased out. Thus, the parameters M, S, P and T are non-zero; G=0, as non-workers are not eligible for the transfer.

Under the EITC, eligibility (E) is close to universal among families with children (although the generosity [S and M in particular] varies by marital status and number of children). Childless workers are eligible for a very small credit, with eligibility limited to those between 25 and 64 years old. In 2017, for a family with two children, the subsidy rate is substantial, S=40%; the maximum benefit M is over $5,500/year; the phase-out point P is quite high, close to $20,000 in annual earnings; and the tax rate on earnings above that point is about T=21%. As a result, two-child families with earnings as high as $45,000 (or $55,000 for married couple families) can get positive EITC transfers. As we will see, this is a much higher break-even point than under even the most generous welfare programs.

The Child Tax Credit (CTC) is an in-work credit with a similar aggregate cost to the EITC but with much less income targeting (see the discussion in Hoynes and Rothstein 2017): S=15% (and this only applies to earnings above $3,000), M=$1,000 per child, P=$75,000 ($110,000 for married couples), and T=5%. As with the EITC, for the CTC, G=0. The 2017 tax reform bill raised M to $2,000 per child and P to $200,000 ($400,000 for married couples).

2. Cash welfare: Cash welfare programs provide an income floor (G>0, S=0, and M=G). It is common to have zero or low earnings disregards (P) and high tax rates (T) that ensure that benefits fully phase out at relatively low earnings levels. In the U.S. (though not in all European countries), cash welfare programs have tightly restricted eligibility, and are mainly limited to single mothers, the disabled, and the elderly.

In the U.S., the cash welfare system for single parent families was dramatically reformed in 1996. Prior to 1996, Aid to Families with Dependent Children (AFDC) program provided cash welfare. The guaranteed income G varied by state, and for a family of three ranged from $190 per month in Mississippi to $1,100 in Suffolk County NY (in 2017 dollars); the median state set G=$600, or about 36 percent of the federal poverty line at the time (U.S. House of Representatives 1996). Families could only earn a small amount (P=$190/month was a typical figure) before benefits were phased out.[6] Finally, the tax rate T was very large, at least 66% with T=100% for most of the program history. The combination of the low G and P and very high T implies complete phase out of transfers at very low earnings levels – around $8,600 per year for a family of three in the median state (2017 dollars).

In 1996 AFDC was replaced by Temporary Assistance to Needy Families (TANF). All states were required to impose strict work requirements and lifetime time limits for program receipt

[6] P varied depending on how many months the individual had earned income. This figure applied apply after 8 consecutive months of earnings.

(Moffitt 2003). In our framework, this corresponds to further tightening of E. States were also given flexibility regarding the other parameters. They varied in how much they tightened E, and some states attempted to make it possible to combine work with TANF, at least temporarily, via increased P and reduced T.

Other similarly structured programs include General Assistance (GA) programs, small payments for indigent, non-disabled adults without children, and the Supplemental Nutrition Assistance Program (SNAP or food stamps). GA programs have very low M. SNAP phases out relatively slowly (T=30%) and eligibility extends to 130% of poverty.

3. Cash welfare for individuals unable to work: Most countries have separate cash welfare programs for those deemed medically unable to work, such as the disabled or low-income elderly. These programs provide an income floor and typically do not attempt to encourage work, so set G>0, S=0, and M=G. Many explicitly limit benefits to those who don't work (P=0, T is infinite), while others phase out rapidly.

In the U.S., Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) provide cash welfare to the disabled (and, for SSI, the elderly). SSI is more generous than AFDC/TANF: in 2017 the federal guarantee was G=$735/month for single individuals or $1,103/month for married couples. The program accommodates some earned income with T=50% on earned income above P=$85/month. SSDI is based on past earnings and restricted to those deemed medically unable to work, so G>0, S=0, M=G, P=0, and T is infinite (though a "trial work" period allows for short-term work with P=$850/month). Average benefits are $1,063/month.

4. Public retirement benefits: Public retirement programs can also be presented in this framework. Eligibility (E) for Social Security retirement benefits is achieved by satisfying rules for required years of work and reaching age 62. Benefits are available regardless of work status (G>0), and in the most flexible form, have no phase in (S=0, M=G) and no phase out (P infinite, T=0). As with SSDI, benefit levels (G) depend on earnings history; they average about $1,368 per month.

5. Child Allowance (CA): A child allowance provides an income floor (G>0, S=0, M=G) that is typically phased out at higher incomes and more slowly than traditional cash welfare. By design, eligibility is limited to families with children.

In 2016, Canada implemented a generous CA called the "Canada Child Benefit." The guarantee is G=$4,800/year (all figures in PPP-adjusted 2017 US dollars) per child aged 0-6 and G=$4,050/year per child aged 6-17. Phase out begins at P=$22,500 with T=7% for one-child families and 13.5% for two-child families; the rates increase at incomes above about $50,000. Thus, a family with one child age 3 and another age 7 would have a G=$8,850/year that would be phased out between annual incomes of $22,500 and $75,000. Recently, Shaefer et al (2017) proposed a $250 per month child allowance for the U.S., with no phase-out.

6. Negative Income Tax (NIT): An NIT in its pure form is advanced as a single unified transfer and tax system. In its simplest form, an NIT with a linear tax schedule provides for an income floor (G>0, S=0, M=G) that is taxed away at a rate T with any positive earnings (P=0). The marginal tax rate remains T even after income rises to the point where the benefit is entirely taxed away (at Y=P+M/T); individuals with incomes above that point are net taxpayers, and help to fund transfers to lower-income recipients.

Milton Friedman famously supported an NIT in the U.S. in the 1970s. However, there was not political support to pay benefits to non-workers, and the outcome of the debate instead was the introduction of the EITC, with G=0 (see the discussion in Nichols and Rothstein 2016).

C. The Universal Basic Income as a Transfer Program

We defined a UBI above as a transfer that pays a sufficient benefit to meet basic needs without earned income, has broad eligibility, and is available both to non-workers and to those with relatively high earned income. In our framework, this corresponds to G>0, S=0 and M=G, a high (or even infinite) P, low T, and minimal restrictions on eligibility (E).

Figure 3 compares the schedules for a canonical UBI, the EITC, and cash welfare. It shows two of the distinguishing features of the UBI: a high income floor (G), and universal income coverage (P is infinite, T=0). (The third, broad eligibility, is not shown here.) Among the policies listed above, social security comes closest to this ideal, though only for the elderly. The child allowance is also very similar in structure to a UBI, though interestingly the supporters of these two types of proposals in practice exhibit little overlap.

One can also draw comparisons to other programs. The UBI is similar to the EITC and CTC in their relatively high reach in the income distribution and near-universality, but differs in paying benefits even to non-workers and, in its pure form, in reaching even the highest-income families. Figure 3 also shows a modified UBI that phases out at high incomes, as do the EITC and CTC (at very different points). The phased-out UBI is qualitatively but not quantitatively similar to cash welfare. Given general hostility to welfare recipients in the U.S., it is difficult to imagine a welfare program being scaled up in this way.

Table 2 lists several UBI pilots and proposals, with their associated parameters. Most do not meet the canonical UBI structure, forsaking some combination of high G, broad E and/or high phase out to reduce costs. For example, Murray (2016) proposes a phase out at incomes above P=$25,000, using a tax rate of T=20%. (Murray would allow only half of the benefit to phase out; the remainder would be paid regardless of income.) YCombinator's UBI experiment limits eligibility to those between ages 21 and 40, and to households with incomes below their county's median income.

Our framework considers only payments from the government to individuals, not revenues needed to finance them. Given the first order issue of cost, a full understanding of the UBI's distributional effects must include the taxes needed to pay for it. A simple assumption is that

the UBI might be paid for by a linear income tax on income above some threshold. The combined program of a UBI with the linear tax would involve a binding phase-out point P, a positive tax rate T above that, and the continuation of that tax rate even after the transfer has gone to zero (at pre-transfer income P+M/T). The net effect would therefore be negative for high income families.[7] Among the transfers described above, only the NIT has this tax feature built in.

A linear tax is of course a simplification. Given rising inequality and the motivation of offsetting increasing income shares of capital owners, one might prefer to finance a UBI through a more progressive tax. This would lift the effective break-even point, with higher taxes at the highest incomes.

It is not clear, however, whether one should think of the combined program, or of the separate impacts of the transfer and the tax components. Separating the two may carry political benefits, by allowing even high-income taxpayers to believe that they are benefitting from the UBI.

IV. Distributional and Cost Comparisons of UBI to Current Programs

Here, we discuss the distributional implications of a UBI relative to the existing U.S. transfer system. To illustrate the demographic and income targeting in the current transfer system, we present comparisons across family types and across deciles of the income and earnings distribution.

Our distributional calculations use data from the 2017 Current Population Survey (CPS) Annual Social and Economic Supplement, representing the civilian non-institutionalized U.S. population. The CPS includes measures of individual-level 2016 receipt and amounts of most major transfer programs.[8] We group programs into four aggregates: Means tested (welfare) programs, encompassing TANF and SNAP; disability programs (SSI and SSDI); Social Security retirement; and in-work tax credits (EITC and CTC). Within the welfare category, the bulk of spending (see Table 3, below) comes from SNAP; within the tax credits, the EITC and CTC are roughly equal in size. Importantly, we exclude all in-kind programs other than SNAP, most notably public health insurance. We return to this later.

To account for economies of scale in housing and other costs, we sum income from each program across all members of the household, then divide by the OECD equivalence scale (which counts additional household members older and younger than 14 as costing 50% and

[7] See, for example, Rhodes (2017), who notes that "Although a universal basic income would be distributed to everyone regardless of income level, the benefit received by higher-income individuals would be paid back in taxes in order to fund the program" (p. 13).

[8] We simulate the EITC and CTC using NBER TAXSIM, but rely on CPS responses for other transfers. In the CPS, the aggregate amount of transfer income that households report receiving is significantly less than administrative totals (Wheaton, 2008; Meyer, Mok, and Sullivan, 2009). We do not adjust for underreporting.

30% as much, respectively, as does the first adult). We refer to the result as "equivalized transfers per person."

We divide households into four mutually exclusive demographic groups. The first is households with children, including any household with at least one person under 18. Next, if there is anyone 62 or older, but no one under 18, we assign the household to "Households with elderly."[9] Finally, households without children or elderly are separated into those with and without disabled individuals.

Figure 4 shows average transfers across the four family type groups along with the population counts represented by each group. The figure shows tremendous variation in the amount of (non-health) government transfers across groups with the average elderly household receiving $12,600 per equivalized person, disabled households receiving $8,000, and non-elderly, non-disabled households with and without children receiving $2,200 and $500, respectively.

To illustrate the distribution of benefits across the income distribution, we consider two income classifications. First, we use after tax and transfer (ATT) income.[10] Second, because ATT income is in part a function of the transfer system, we alternatively use pre-tax earned income. Earned income is a more useful proxy for family resources for non-elderly, non-disabled households, so we focus on them in our analysis of this measure. We use the equivalence scale discussed above to compare ATT income and earnings per equivalized person across households of different sizes.

Figure 5 has four panels, one for each of our demographic groups. In each panel, households are divided into deciles by equivalized ATT income per person, and we show mean transfers (per person, equivalized) by program within income decile.[11] Because mean transfers are much higher for elderly and disabled households than for others, we use different y-axis scales for these groups. Transfers to the elderly and disabled are not tightly concentrated in the lower deciles, reflecting broader income eligibility for social security and disability.[12] Transfers to families with children are lower and more targeted, though tax credit payments (the CTC, in particular) reach high into the distribution. Families without children, elderly or disabled receive very little in benefits, even at low incomes.

Figure 6 provides similar calculations, dividing households into deciles by earnings rather than ATT income and including an 11th category for those without earnings. Among families with children, transfers to those without earnings are smaller than those to those with low but

[9] We use age 62 because many claim Social Security retirement benefits as soon as permitted rather than waiting until the so-called normal retirement age.

[10] ATT income equals total money income plus near-cash transfers (SNAP, school meals) less taxes owed (which may be negative for families receiving the EITC).

[11] Appendix Figure 1 shows the distribution of families of each type across deciles.

[12] Note that households containing disabled individuals but no one over age 62 seem to receive non-trivial amounts of Social Security retirement income. This may reflect respondent mis-reporting of disability payments as retirement income.

positive earnings, reflecting the decline of cash welfare caseloads (Floyd et al. 2017) and the growth of in-work tax credits. EITC benefits are a large share of the transfers to positive-earnings households. In zero-earnings households, there is a bit more welfare income, but the bigger replacement on average is social security benefits (largely for grandparents in the household). For both, the average is very low, around $4,500 per equivalized person per year, indicating that most families with zero or low earnings are living in deep poverty.

When we examine families without children, in the right panel, the absence of welfare benefits along with the very small childless EITC dramatically reduces the income transfer at low earning deciles. The average family without earnings receives only about $2,000 in annual transfers per person, again largely from Social Security, while low-earnings families average less than half of that.

Figures 4-6 collectively show the demographic and income targeting in our current social safety net, with higher transfers to the elderly and disabled, higher transfers for those with children compared to those without children, and higher transfers for those with low earnings. This implies that were we to eliminate current income support programs and apply the funds towards a pure UBI, there would be a relative redistribution from low-earners to zero earners, but the first-order effects would be a massive distribution up the earnings distribution, along with a redistribution from the elderly and disabled towards those who are neither, primarily but not exclusively those without children.

One aspect of current transfers that is not illustrated clearly in Figures 4-6 is the substantial variation *within* demographic and income groups. Figure 7 shows the distribution of transfers within earnings decile (plus the zero-earnings group). This reveals wide disparities, even at the lowest incomes. For every group with children, median transfers total less than $3,850 per equivalized person per year, and less than $250 for those without children, elderly, or disabled members, though there are a very small number of low- and zero-earnings households with children who receive more than $10,000 per year.

Table 3 shows aggregate costs and total caseloads for the major income transfer programs. We include here some programs not included in the figures, most notably the two public health insurance programs, Medicare (for the elderly) and Medicaid (for the poor). Total expenditures across all of the listed programs are around $2.3 trillion per year, with just under one-third of this due to Social Security retirement benefits and a bit less than half due to Medicare and Medicaid.

Table 3 also shows the aggregate cost of a canonical UBI that pays $12,000 to each adult resident, without eligibility restrictions or phase-out.[13] We estimate that this would cost about

[13] One might want to incorporate family size adjustments, as in the family size equivalized calculations above. However, as in the U.S. federal income tax system, this would create marriage penalties. We are not aware of serious design efforts for UBIs that incorporate such complexities.

$3.0 trillion per year. Cost is a first-order concern for any UBI program that might expand beyond a pilot.

In the final rows of Table 3, we present two potential not-quite-universal basic income policies. One limits transfers to adults under 65, while the other is limited to adults with below median incomes. (This can be seen as an approximation to a program that phases out gradually around the median.) These reduce the cost somewhat, but each would still cost several multiples of the entire existing non-retirement, non-health insurance safety net.

Figures 4-7 indicate that replacing all existing transfers including the big three (social security retirement, Medicare, and Medicaid) with a UBI[14] would be a dramatic change, especially for seniors. The average household with a member over 65 receives $17,400 in Social Security benefits, and health care benefits through Medicaid and Medicare with an actuarial value of $12,900, much higher than proposed UBIs. Even assuming that we could create a health insurance marketplace for seniors – a large share of whom have preexisting conditions – that priced insurance at close to its actuarial cost, the average senior would see a more than one-third decline in his or her transfer income.

But while Social Security, Medicare, and Medicaid could not easily be replaced by a UBI, there are some other programs that would become redundant. In particular, a sufficiently generous UBI would reduce the need for the EITC, CTC, TANF, SNAP, and perhaps disability and unemployment insurance. But this would not be remotely budget neutral. If Social Security, Medicare, and Medicaid are preserved, the remaining programs in Table 3 together would cover only about one-fifth of the cost of the canonical UBI. The remainder would need to be funded through cuts to non-transfer government expenditures or through tax increases. Alternatively, a very small, possibly non-universal UBI could be funded, but this would not come close to making up for the loss of the existing transfers to the disabled or to low-income families with children.

In sum, a UBI would have quite substantial distributional and cost effects. A smaller proportion of UBI dollars would go to the bottom of the income distribution than under the current system, though a generous UBI, with needed revenue funded by a progressive tax, would increase the absolute size of transfers to the bottom and thus would represent a (potentially very large) downward redistribution of income. Similarly, a canonical UBI would give a larger share of transfers to the non-elderly and non-disabled than the existing programs, so any proposal to finance it through cuts in health and retirement programs – the largest sources of funds in the existing U.S. transfer system – would need to address the large declines in living standards that the elderly and disabled would experience.

[14] Murray argues that this could be roughly cost-neutral, though our estimates do not support that. The discrepancy reflects (a) his inclusion of a large number of other programs to be eliminated – including as examples federal student loans, child care and adoption programs, public hospitals, and agricultural price supports; (b) somewhat different estimates of program costs; and (c) his use of a smaller UBI that phases out and excludes those under 21.

V. Economic issues around a Universal Basic Income

Adopting a UBI would have a range of consequences. We review here some of the likely effects, focusing on labor supply, human capital, and children. We first discuss qualitative predictions, then review the empirical evidence in Section VI.

A. Static Labor Supply

We begin with labor supply, as this effect dominates discussions of the economics of means-tested transfer programs. Traditional welfare programs, with low phase-out points P and high tax rates T, unambiguously lead to reductions in labor supply through negative income and substitution effects. By contrast, the EITC, which has effectively replaced traditional cash welfare as the main income assistance program for families with children, has no transfer for non-workers (G=0) and a high phase-in rate (S), so creates strong incentives to enter work. (For those with positive earnings, the EITC creates both a negative income effect and, in the phase-out range, a negative substitution effect, so is expected to reduce hours.)

Existing program structures, the shift from AFDC to TANF, and the EITC reflect a general trend in recent decades in the U.S. toward programs that attempt to minimize labor supply disincentives. These take two forms. First, historically U.S. means tested programs have used "tagging," (Akerlof, 1978), limiting eligibility to those in exogenously defined groups who have low potential to work (or expectation to work). Second, current policies are increasingly designed to avoid punitive tax rates (lower T) and increase earnings disregards (higher P). This can also, as in the case of the EITC, include programs that use a positive S and no income floor (G=0) to create incentives toward *increased* labor supply (Nichols and Rothstein, 2016).

UBI proposals move policy in the opposite direction, and in general can be expected to *reduce* labor supply relative either to a no-transfer hypothetical baseline or to the status quo. First, the canonical UBI generates a pure income effect which would reduce work on the extensive and intensive margins. Second, many UBI proposals impose phase-outs and the added P>0 and T>0 lead to a further work disincentive through negative substitution effects.[15] Third, the high G in a UBI relative to existing cash welfare programs likely leads to larger labor supply reductions (though the higher P and lower T would arguably work in the opposite direction). Fourth, the absence of tagging means that vastly more people are exposed to these work disincentives than in our current patchwork system.

It is not clear whether negative effects on labor supply are a drawback. At least some UBI advocates support a UBI because it would eliminate the need to work for some low-skill workers who are expected to be displaced by technological change. In that case, reductions in work are a desired impact, not an unintended consequence.

[15] Further, any paid-for program will necessarily require high tax rates. These, too, will create negative substitution effects. (They may also create positive income effects, but these would be concentrated among high-income workers and we expect they would be quite small.)

A related potential impact of a UBI, much emphasized by its backers (e.g., Van Parijs and Vanderborght 2017), is to shift labor supply from unpleasant jobs to jobs that combine low pay with high amenities and/or with opportunities for human capital accumulation. This can be seen as a manifestation of the income effect. One might also get shifts toward jobs offering training if credit constraints currently prevent workers from taking these jobs. We discuss this below, under the heading of human capital effects.

A related incentive concerns entrepreneurship. It is possible that a UBI, by providing a predictable and permanent income floor, will encourage recipients to explore risky ventures. This again is best seen as reflecting an income effect and/or credit constraints.

In sum, any UBI would be expected to lead to lower labor supply, at least in the short run. Below, we explore other potentially offsetting channels that could produce a positive effect in the longer run, or at least offset the negative direct effect.

B. Pre-Tax Wages, Human Capital, and Labor Supply in the Longer Run

There are three potential channels for UBI impacts on wages. First, all other things equal, the reductions in labor supply outlined above will increase wages for those who remain in work, simply by moving up the labor demand curve (Rothstein 2010).

Second, a UBI may lead to increased human capital investments, by both young people and adults. There is extensive evidence that credit constraints are binding on many students and lead to reduced educational attainment (Lochner and Monge-Naranjo 2012). A UBI would loosen these constraints, allowing more educational investment, including on-the-job training. Effects might be particularly strong for mid-career workers who see value in retraining but cannot forgo earnings to do so. Any impact on human capital accumulation would naturally translate into higher wages in the medium to longer run.

Third, a UBI could have positive effects on child development. Transfer programs that increase families' resources when children are young have been found to have long-run effects on the children's development, health, and human capital attainment (discussed below). Impacts on early child development may translate into improved human capital accumulation and eventually higher wages. Insofar as dynamic complementarities are an important part of the child development process (Cunha and Heckman, 2007), these "two generation" effects may be an important component of the social welfare impacts of a UBI.

Human capital effects have follow-on implications for labor supply in the longer run. Higher-skilled individuals tend to work more. Thus, UBI impacts on skill imply positive impacts on long run labor supply. These may offset, to some extent, the negative short-run impacts on labor supply.

Of course, labor supply is not the only metric by which to evaluate the UBI. The UBI is expected to increase after tax income in the lower portion of the income distribution. Prior work shows that increases in government transfers that generate net increases in resources lead to improvements in health (e.g. see review by Almond et al., forthcoming). More generally, life satisfaction is the ultimate measure of welfare consequences, but is hard to measure in a useful way.

C. Universality, Take-up and Stigma

There may be political value in the universal aspect of a UBI, as a way of maintaining widespread support for the program (e.g. as with universal programs such as social security and Medicare) and as a way of signaling that everyone is valued (Lowrey 2018). If this argument has merit, it has implications for program design and the taxes needed to pay for it. A tax on non-UBI income effectively becomes a program phase-out. But separating out the program, and maintaining universality, from the taxes needed to pay for it, may be advantageous even if irrelevant from an accounting perspective.

Another implication of universality is a lack of stigma for UBI recipients. In highly means tested and eligibility-restricted programs, participation reveals information that many consider private, and thus may be stigmatized. This reduces program take-up and the potential reach and benefits of programs (Currie 2006), though may also help target the programs to those who truly need them. Take-up rates in AFDC were quite low (about 50%) with stigma cited as one of the reasons (Moffitt 1983). Interestingly, the EITC has fairly high take-up rates (80% or more, see Scholz 1994, Plueger 2009), and ethnographic research has found low stigma with recipients viewing the credit as "my work bonus" rather than a handout (Halpern-Meekin, Edin, Tach and Sykes 2015). How much this derives from the "in work" nature of the credit (G=0) or its high P relative to other U.S. means-tested programs is not known. The UBI could lead to similar results given a universal structure.

VI. What do we know from the research?

UBIs meeting the definition we laid out above – large enough to live on, without phase-out or other eligibility restrictions – have never been implemented in a rich country on a large scale or even in a pilot experiment. What we know about the likely effects of a UBI comes from analyses of policies that are similar in some way to UBIs, though different in others, and from the broader labor supply literature.

A. Universal but not basic income

We know of only two examples of universal programs without strict eligibility requirements, though in each case the transfers are too small to qualify as a basic income as we define it.

The Alaska Permanent Fund is a demogrant[16] (with varying yearly payments), financed by the state's oil revenues. Payments in recent years range from $1,000 to $2,000 per year. Jones and Marinescu (2018) use a synthetic control design to evaluate the program and find that the dividend had no effect on employment. They attribute this to a positive general equilibrium effect - the additional income leads to higher consumption, boosting labor demand – that offsets the negative income effect.

The Eastern Cherokee Native American tribe provides a demogrant to its adult members, financed out of revenues from tribal casinos. Payments, around $4,000 per person per year, do not depend on employment status, income, or residence on reservation. Several studies identify effects of the payments using difference-in-differences designs, comparing Native American children from families receiving the transfers to non-Native children from the same geographic area in North Carolina, before and after the transfers began. The payments had positive impacts on children's educational attainment and criminal arrests (Akee et al, 2010) and on children's emotional and behavioral health (Akee et al. 2018), though they increased children's body mass indices (Akee et al. 2013). Akee et al. (2010) find no impact on labor force participation, even though the payment recipients were not a large share of the local labor force so general equilibrium effects were unlikely.

There is no reason to expect that families would have felt stigmatized for receiving payments under either the Alaska or the Eastern Cherokee programs. However, in each case the payments were relatively small. It is possible that a larger payment would have had more transformative effects on labor supply. What evidence we have comes from studies of lottery winners, which do not find variation in income elasticities with payout size (Cesarini et al 2017).

B. Programs with guaranteed income and low phase-out points

There is a larger body of evidence on programs that provide government income transfers to non-workers, with phase-outs that begin at low earnings levels.

One set of evidence comes from evaluations of AFDC and TANF. The literature shows that AFDC reduced labor supply among single mothers by 10-50% relative to what would be seen without the program (see reviews by Danziger, Haveman and Plotnick 1981; Moffitt 1992, 2003; and Hoynes 1997). Labor supply for non-AFDC recipients was fairly low (averaging 20 hours / week including nonworkers), however, so the magnitude of the reduction in hours was not very large.

AFDC eligibility was largely limited to single parents, and participation was heavily stigmatized. Those who participated were likely people who highly valued the benefit (e.g., because they were truly unable to work). This suggests that the impact on labor supply was likely smaller than it would have been with a more universal program.

[16] Children and non-citizen permanent residents and refugees are eligible, but new residents of the state are not.

NITs share the basic features of cash welfare programs, but typical proposals have higher G, lower phase-out rates T and in many cases broader eligibility E. No country has implemented an NIT, but there is significant evidence from pilot programs. In the mid-1970s U.S. Income Maintenance Experiments (IMEs), low-income households in four locations were randomly assigned to various combinations of base transfers (G) and tax rates (T), in programs that phased out with the first dollar of earnings (P=0). For example, in the Seattle-Denver experiment, G ranged from $23,000 to $34,000 per year (2017 dollars), while T ranged from 50-80%.

Robins (1985) uses the various treatment arms to separately identify income and substitution elasticities. He finds substitution elasticities around 0.1-0.2 (at the low end for husbands, a bit higher for single women, and higher for married women), and income elasticities around -0.1. The IMEs lasted for just a few years, so some of the labor supply response may have reflected intertemporal substitution. Because intertemporal labor supply elasticities are generally found to be larger than responses to permanent price changes, the estimated responses may overstate the effect of a permanent program.

Around the same time as the U.S. experiments, the Canadian province of Manitoba implemented the Manitoba Basic Annual Income Experiment ("Mincome"). Despite its name, this tested an NIT: G was set to around 50% of median household income, but the transfer phased out (at a tax rate T that ranged between 35% and 75%) with the first dollar of earnings (P=0). Estimated effects on labor supply were negative but small and statistically insignificant (Hum and Simpson 1993). However, a recent non-experimental study based on the Mincome "saturation site," a rural town where all residents were eligible for payments, finds much larger negative effects on labor supply, a result that the authors attribute to community context effects (Calnitsky and Latner, 2017).

Additional, more recent evidence comes from the transition from AFDC to its successor program TANF. Prior to the federal reform, there were a number of experiments based on state waivers to the AFDC restrictions. Studies of these waiver experiments and nonexperimental evidence on the national transition found increases in labor supply, reductions in welfare participation payments, and either reductions in or little change in income (Moffitt 2003, Ziliak 2016). The findings suggest TANF increased labor supply through limiting benefits for non-workers, an aspect of the program that is at odds with the original intent of a guaranteed income program. Welfare waivers that increased work disregards (particularly those that did so without time limits and stringent work requirements) caused increases in labor supply *and* family income.

C. In-work tax credits (EITC)

An extensive literature uses variation generated from expansions in the federal EITC as well as the introduction and expansion of state EITCs and focuses on impacts on single parents, who receive about three quarters of total EITC credits. The research finds that the credit leads to increases in employment of single mothers with little evidence of reductions in earnings for

those in the labor market (Hotz and Scholz 2003; Eissa and Hoynes 2006; Nichols and Rothstein 2016).

The gains in earnings combine with the credit to increase family after-tax income and reduce poverty. For example, Hoynes and Patel (forthcoming) find that among single mothers with less than a college degree, a $1,000 increase in EITC benefits leads to a 7.4 percentage point increase in employment and an 8.4 percentage point reduction in poverty. Hoynes and Patel find that half the poverty reduction comes from increases in earnings. Additionally, there is evidence that the EITC leads to positive effects on maternal mental and general health (Evans and Garthwaite 2014).

D. Labor supply response estimates from other settings

The above discussion focuses on specific programs. Another way to gain insight into the effects of a UBI is to identify the underlying parameters that are needed to evaluate its impact. The most important parameter for understanding the impact of a pure UBI on static labor supply is the income elasticity. This has been estimated in a wide range of settings, using a range of methodologies. Blundell and MaCurdy (1999) provide a comprehensive review of the literature and conclude the income elasticity of labor supply averages about -0.05 for men and -0.20 for married women.

The income elasticity is a sufficient statistic for the impacts of a pure UBI, without a phase-out. The impacts of a UBI that includes a phase-out depends on the substitution elasticity as well. Blundell and MaCurdy (1999) find the median compensated substitution elasticity is 0.08 for men and 0.78 for married women.

We can use these estimates, which are generally consistent with the experimental and quasi-experimental literature, to provide guidance on estimated impacts of a UBI. A $12,000 per adult UBI, without a phase-out, would lead to a 33% increase in income at the mean among single adult families or a 25% increase among married couple families. Income elasticities in the range of -0.05 to -0.10 would lead to 1.6% - 3.3% reductions in hours worked.

Now consider a UBI that phases out gradually between the 50th and 75th percentiles of the family income distribution. This creates an average implicit tax rate of about 27 percent for single adult families and 55 percent for married couple families over this range. With a substitution elasticity of 0.3, aggregate labor supply would fall by approximately 3%.[17]

[17] Among those with incomes in the third quartile, labor supply is predicted to decline by 9 percent for single parents and 17 percent for married couples. Nonlinear tax models suggest that families with incomes just above the median will reduce supply by less than this, to just the median, while families with incomes above the 75th percentile might reduce their supply to below it. These effects offset, and are not likely to be quantitatively important on net relative to our simple calculation.

These calculations assume that both income and substitution elasticities are constant. It is possible that responses to large transfers, like the UBI, are not proportionate to responses to the smaller shocks used to identify these elasticities. In particular, the participation response to an income shock might be larger when G is large enough to survive on without work. As noted above the evidence on this is scant, but studies of lottery winners show income elasticities are quite stable with the payout size (Cesarini et al 2017).

E. Longer-run effects

The discussion in Section V suggests that the longer-run effect of the UBI may differ from that seen in the short run. One channel for the longer run labor supply effects operates through child health and development. Welfare waiver studies found positive impacts on achievement among young children, but only for policies that increased maternal employment and family income (Morris et al 2009). SNAP and the EITC improve health at birth (Almond, Hoynes and Schanzenbach 2011, Hoynes, Miller and Simon 2015, Strully et al 2010) and children have fewer school absences when they have greater access or larger purchasing power of SNAP (Bronchetti et al 2018; East 2017). The EITC also leads to increases in children's achievement (Dahl and Lochner 2012, Chetty et al 2011) and educational attainment (Bastian and Michelmore 2018; Manoli and Turner 2018). It is not clear whether the EITC effects reflect the value of additional financial resources – which could operate through greater consumption or through improved parenting behavior due to reduced stress (Mullainathan and Shafir 2013) – or the impact of increased maternal employment. The former would likely generalize to a UBI, but the latter would work in the opposite direction in the UBI (at least in the short run) so would not generalize.

In the longer run, access to cash welfare in childhood leads to increases in health, educational attainment, and age at death (Aizer et al 2016). SNAP in early childhood leads to improvements in adult health and, for men, economic outcomes (Hoynes et al 2016). These effects more clearly reflect the impact of additional resources, so generalize more readily to a UBI. While we have much more to learn, the work to date shows that "two-generation" benefits may be an important and until recently largely overlooked part of the benefits of these transfer programs (Hoynes and Schanzenbach 2018).

VII. Ongoing UBI pilots and the research agenda going forward

As we've seen, we have a good deal of evidence from a range of settings that substitution effects on short-run labor supply are moderate and income effects are small. There is also clear evidence that additional family resources improve children's outcomes, including health and school achievement.

The major open questions about UBIs, in our view, relate to longer-run effects, which are much harder to study using randomized and natural experiments. We do know that more resources in childhood have long-run effects on child development and health. But do more resources in adolescence and early adulthood lead to greater human capital investment, translating into

increased labor supply later? Does greater income in periods of joblessness lead to training or other investments that improve outcomes in the longer run? Does financial stability affect willingness to take risks or long-term planning? We know little about these.

Second, do large transfers have qualitatively different impacts than smaller transfers? The available evidence comes from studies of lottery winners and it is unclear whether this applies to a UBI.

Third, we know little about the role of universality. Does a universal program meaningfully reduce stigma, so that UBI receipt will be seen as an indication that the recipient is valued by society? Are there important general equilibrium effects, operating either through changes in wages due to supply shifts or to the additional demand created by consumers with more money to spend? We have very few studies of universal programs that use credible research designs, so we know little about this.

Finally, as our discussion in Section IV indicates, a crucial part of the design of any UBI policy is the need to finance it. As we have emphasized throughout this review, funding a program that is both universal and provides a basic income will require raising enormous new revenues. The financing mechanism is, therefore, likely to have quite important effects on its own, both in terms of labor supply impacts of new taxes as well as the political economy aspects of this change. The existing labor supply literature provides useful evidence for understanding the labor supply effects. But the political economy effects are harder to predict. A crucial question is whether the (perceived) benefits of universality can be maintained in the presence of substantial new taxes levied on a small share of the population.

The renewed interest in UBIs in recent years has led to an explosion of policy development and research effort. In particular, there are several ongoing pilots and experimental studies, and others in the planning stage, that will test programs billed as UBIs.

The highest profile study is one being financed by the Silicon Valley venture capital firm Y Combinator, with a commitment of $100 million in funding. A pilot study is providing payments to a few dozen families, and a larger, randomized study is planned in which 1,000 people will receive a UBI of $1,000 per month for three or five years. As currently planned (see Rhodes 2017), eligibility will be based on age (21-40), and pre-enrollment income less than the county median. Planning documents indicate that this is meant to be informative about a more universal program, and that the researchers expect program effects to be larger for low-income families. Researchers plan to negotiate waivers from eligibility requirements for other means-tested programs, enabling the UBI payments to supplement rather than replace existing transfers. As discussed above, any large-scale UBI would probably be financed in part by eliminating most other means-tested transfers, so it is not clear whether the effect of a UBI supplement is the parameter of interest.

Key research questions for the Y Combinator study concern the effects of the UBI on time use (including but not limited to labor supply), objective health and subjective well-being, financial

health, risk and time preferences, political and social attitudes, and crime, as well as spillovers to recipients' families and social networks.

A second high-profile study is in planning stages in Stockton, California. This study, funded by the Economic Security Project, will provide payments of $500 per month to approximately 100 families, for approximately 12-18 months. As of this writing, eligibility requirements and the research design have not been finalized, though the study seems likely to focus on health and subjective well-being impacts.

We are also aware of early-stage conversations about similar pilots in a number of other U.S. locations, including New York City (Balakrishnan et al., 2018).

In Europe, discussions seem to center around using UBIs as replacements for existing transfer programs, which compared to those in the U.S. tend to be more generous, with wider eligibility, and create larger disincentives to work. UBIs are seen as attractive because they make it feasible to return to work. Only one study has come to fruition to our knowledge, however, in Finland. There, the program was restricted to people aged 25-58 already receiving a labor market subsidy or unemployment allowance. 2,000 were randomly selected to receive a basic income payment of 560 Euros per month; there was no option not to participate. Recipients remain eligible for other programs, but the basic income is deducted so that participants get the maximum of the basic income or what they would otherwise receive. Payments began in 2017 and are scheduled to continue through the end of 2018. The study will focus on labor supply as an outcome. In April 2018 the government declined to fund a planned extension of the experiment to the broader population.

A final pilot study enrolled participants in April 2018 in three sites in Ontario, Canada. Only low-income (under $34,000 CAN for singles or $48,000 CAN for couples) people were eligible, and participants were randomly selected from among applicants within these sites. (In one site, the study is testing community-level outcomes, so there is no comparison group.) The payment is structured as an NIT: A guarantee of G=$16,989 CAN for a single person or G=$24,027 CAN for a married couple that begins phasing out immediately with earnings (P=0) at a T=50% rate. The program does not displace child benefits, but it does replace employment insurance, pension, welfare, and disability program payments.

These pilot studies will provide valuable proofs-of-concept about the administration of UBIs, and about labor supply. However, we do not anticipate that they will dramatically add to our knowledge about the key unresolved questions that we outline above. This is in part because the samples are quite small, a function of the high cost of providing a UBI (and a cautionary tale about the feasibility of implementing a UBI at a large scale). But even with larger samples, the designs are quite similar to those of earlier studies. They will generate estimates of short-run income elasticities on labor supply, exactly the parameter that is well identified by the NIT experiments and many other studies in the literature. They will allow tests of the extrapolation from smaller programs that we used above to assess UBI labor supply effects based on the existing literature (though statistical power is a major concern). But they will shed little or no

light on any long-term effects, such as those operating through human capital accumulation, or on the psychological and political effects of universality.

VIII. Conclusion

Interest in universal basic income is on the rise in the U.S. and other advanced countries. Decades of wage stagnation and concerns about automation, robots, and job destruction, as well as discontent with the current social safety net, provide the foundation for interest in this area. Support for UBIs has led to several pilot programs and policy proposals in the U.S., Canada, Finland and Switzerland. Despite all of this, there is a lack of clarity on what makes a UBI, what problem it is meant to solve, whether the social safety net can or is providing these benefits, and what (if anything) can be learned from the pilot programs that we don't already know from the decades of existing research on individual and household responses to the social safety net, and wages and income opportunities more broadly. Our paper seeks to fill this gap.

A "pure" UBI (providing a set benefit to all regardless of income, age, etc.) funded to meet basic needs for a household without earnings would be extremely expensive, about twice the cost of all existing transfers in the U.S. Funding this would require substantial new revenue. The source of the new funds is a first order issue, and will have substantial impacts on the distributional effects of the policy and its ability to target those most in need of assistance. In particular, replacing existing anti-poverty programs with a UBI would be highly regressive, unless substantial additional funds were put in.

Much about the effects of a UBI, on labor supply, income and family wellbeing, can be gleaned from the existing research, which we briefly review here. We identify a few outstanding questions, such as the impact of a truly universal program (presumably without stigma) as well as the effects on human capital and, hence, labor supply in the longer run. Unfortunately, the planned and ongoing pilots are not well suited to answer these questions.

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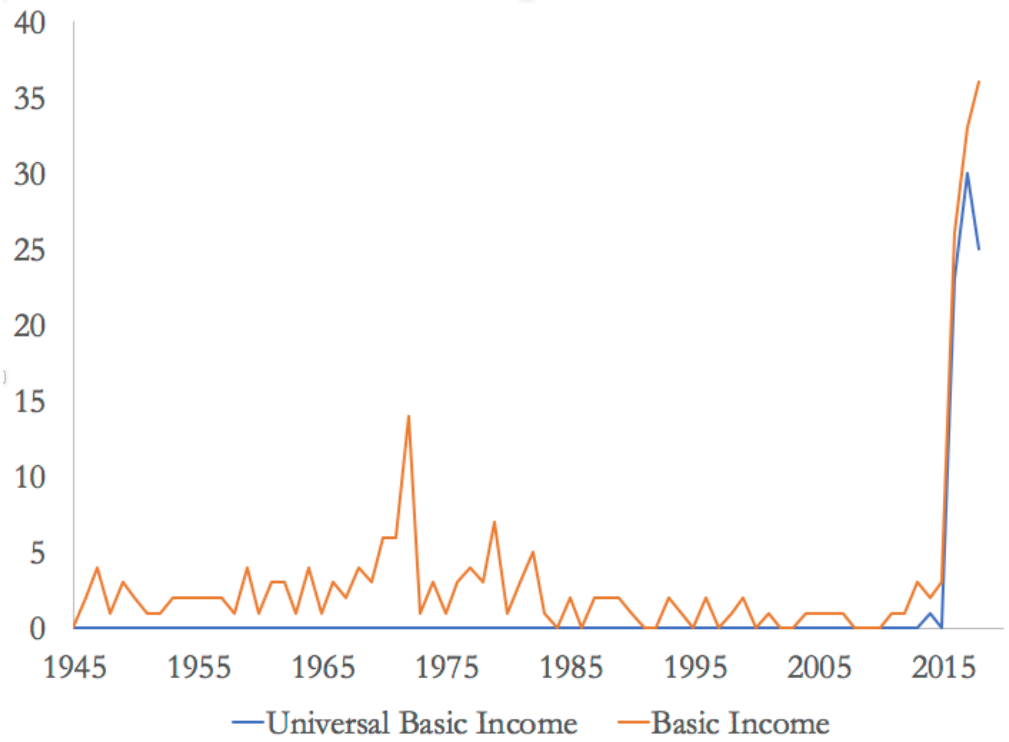
Figure 1. Growing interest in Universal Basic Incomes is evidenced in newspaper usage



Note: Figure shows annual uses of the terms “Universal Basic Income” and “Basic Income” in the New York Times.

Figure 2. An illustrative, hypothetical transfer program

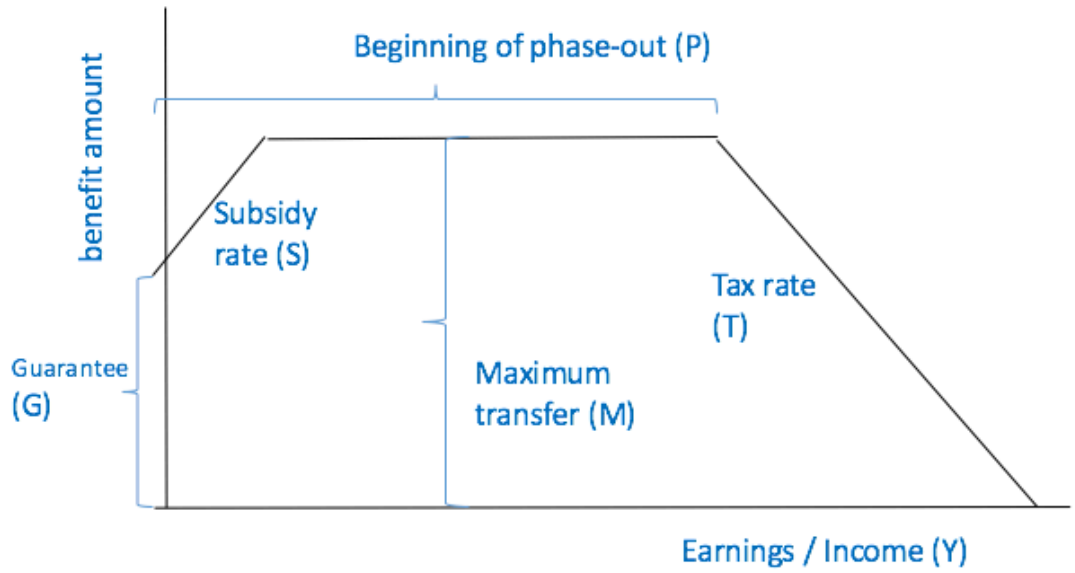


Figure 3. Comparing a UBI to other existing programs

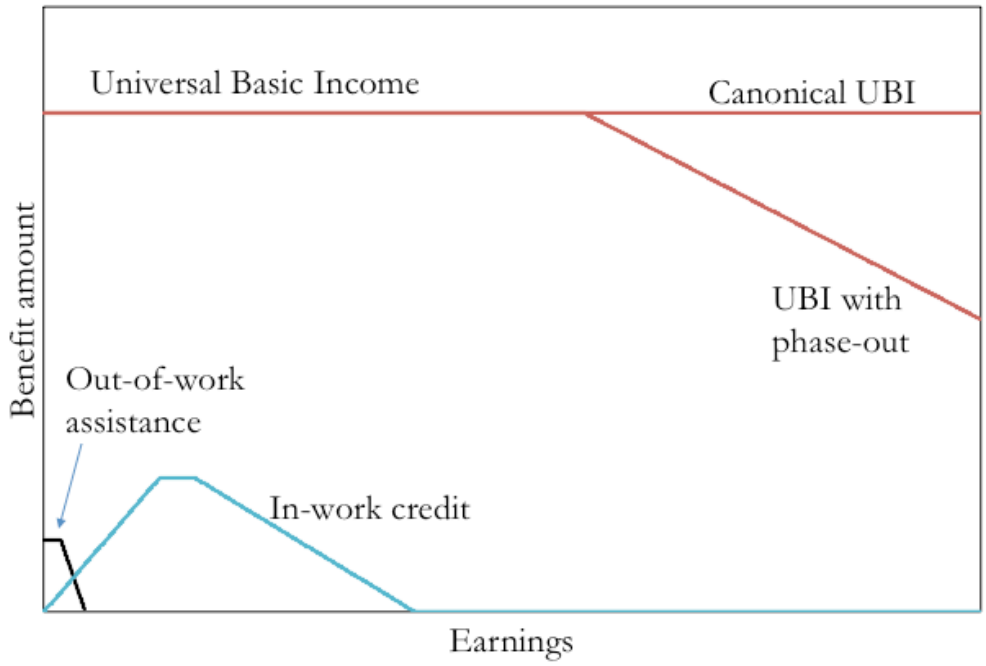
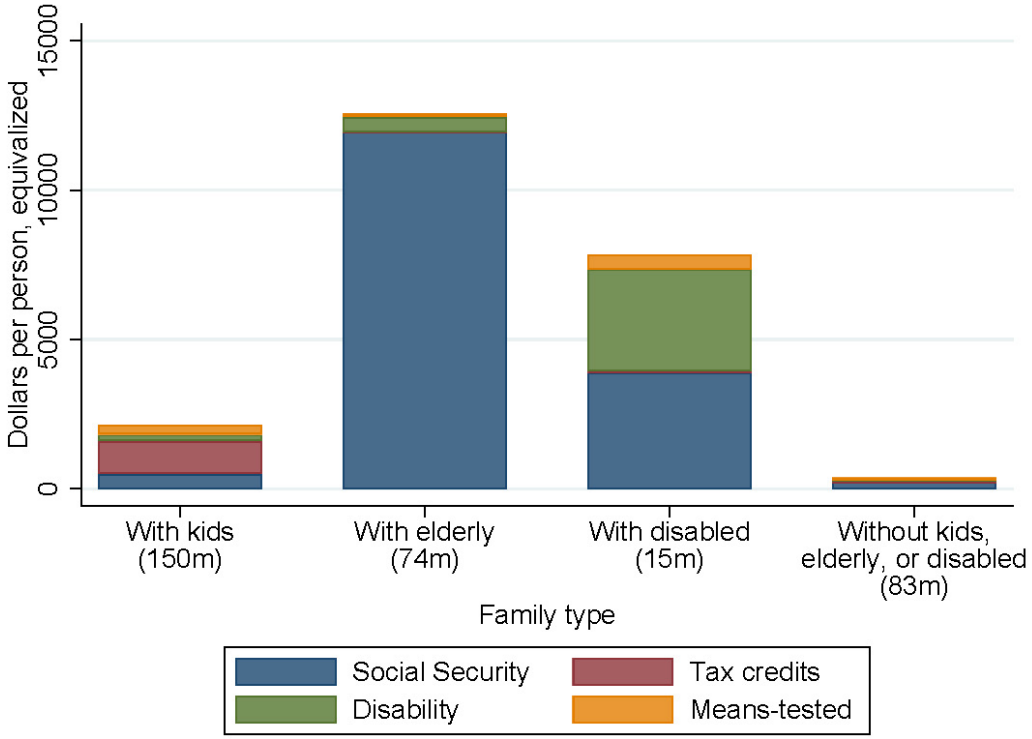
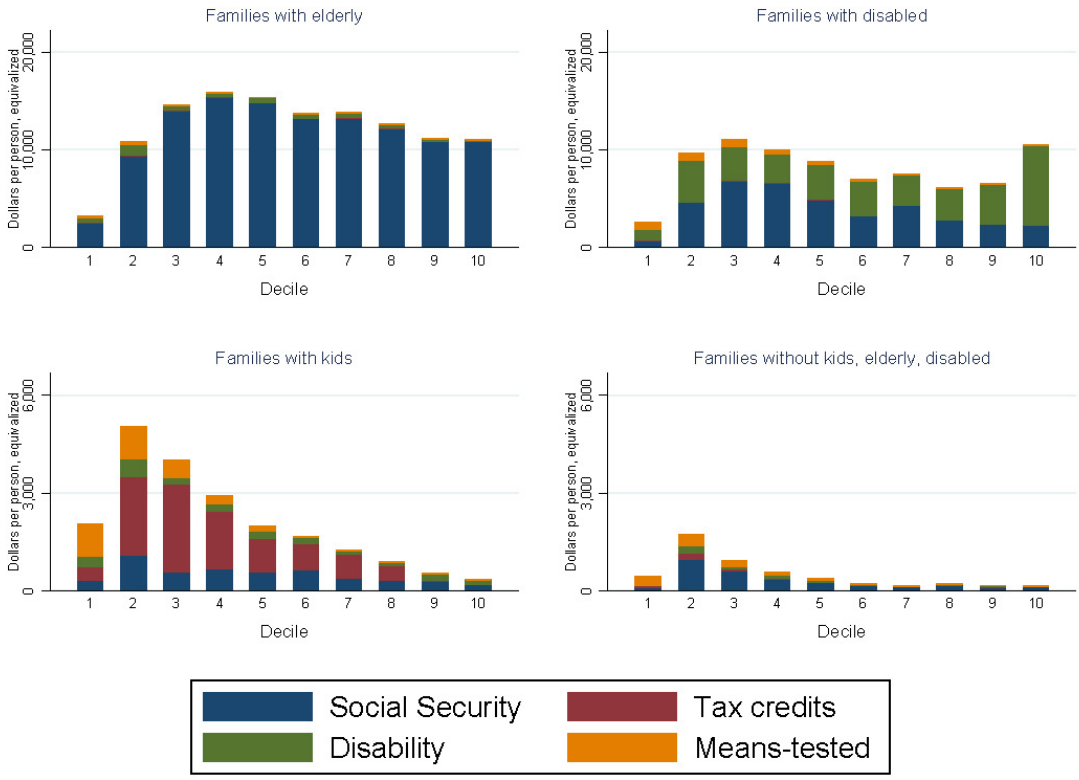


Figure 4. Average household transfers, by family type and program



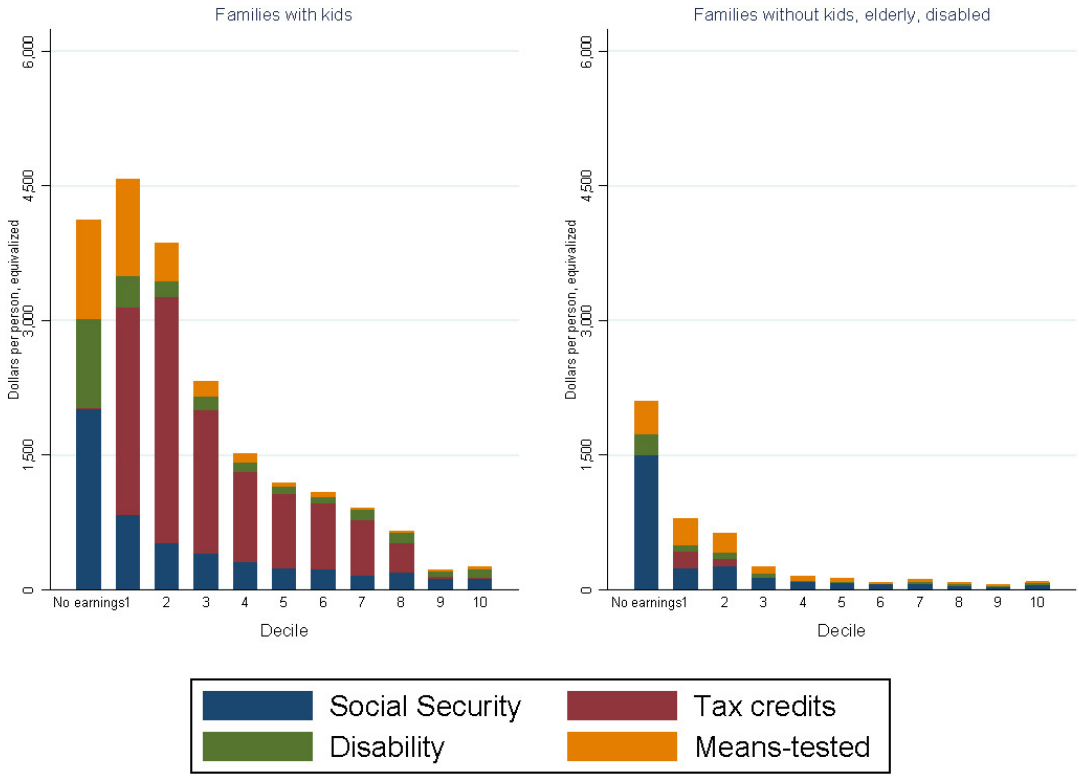
Source: Authors' tabulations of the 2017 Current Population Survey Annual Social and Economic Supplement.

Figure 5. Average household transfers, by family type, and decile of after-tax and transfer income



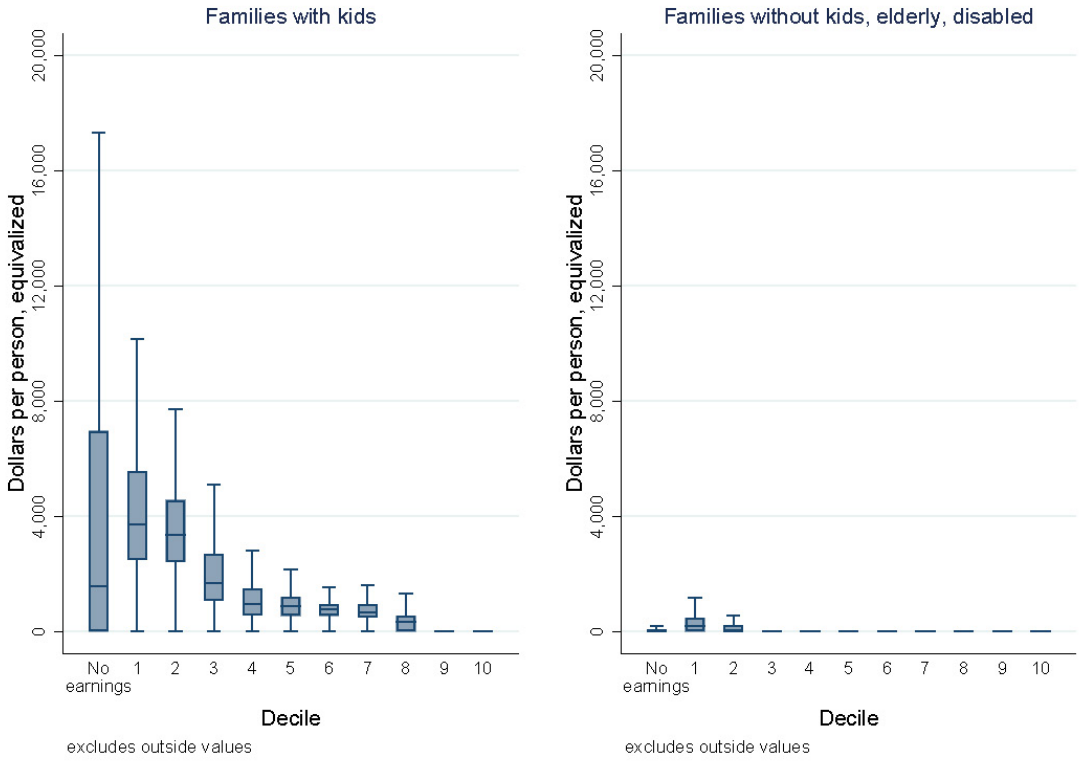
Source: Authors' tabulations of the 2017 Current Population Survey Annual Social and Economic Supplement.

Figure 6. Average household transfers, by family type, and earnings decile



Source: Authors' tabulations of the 2017 Current Population Survey Annual Social and Economic Supplement.

Figure 7. Distribution of household transfers, by family type, and earnings decile



Source: Authors' tabulations of 2017 Current Population Survey Annual Social and Economic Supplement.

Table 1. Parameters of selected transfer programs

	Program Type	Cash welfare	In-work benefits	Disability benefits	Retirement	Child allowance	NIT	UBI
	Example Program	AFDC	EITC	SSI	Social Security	Shaefer et al (2016)	Ex of Canonical	Ex of Canonical
Guarantee (G)		$7,285/yr	$0	$8,820/yr	$16,392/yr	$3,000/yr	$5000/yr	$12,000/yr
Subsidy rate (S)		0%	40%	0%	0%	0%	0%	0%
Maximum transfer (M)		$7,285/yr	$5,616/yr	$8,820/yr	$16,392/yr	$3,000/yr	$5000/yr	$12,000/yr
Beginning of phase-out of transfer (P)		$90/mo	$18,340/yr	$85/mo	$0	$0	$0	infinite
Tax rate in phase-out (T)		100%	21%	50%	0%	0%	50%	0%
Eligibility restrictions (E)		Single parents	Must be 25-64; and there is only a small credit for those without children	Documented disability	Over 62 with sufficient work history	All families with children	All families	All adults

Notes: Several programs have additional eligibility criteria (e.g., asset limits) not shown here. AFDC benefits are based on the 1996 schedule for a single parent with two children in the median state, and are in 2017 dollars. P and T reflect the policy after 12 months of work; earlier, P is higher and T is lower. EITC benefits are for an unmarried parent with two children in 2017, and reflect only the federal credit. SSI amount is for an individual without dependents in 2017. Social Security parameters are for the average retirement amount in 2018, and ignore the earnings test, which reduces current benefits but recycles them into higher later benefits.

Table 2. UBI proposals and pilots

	Proposals		Pilots				
	Murray (2016)	Stern (2016)	Switzerland	Stockton	Finland	Ontario	Y Combinator
Guarentee (G)	$10,000	$12,000	$31,938	$6,000	$6,000	$9,848	$12,000
Subsidy rate (S)	0%	0%	0%	0%	0%	0%	0%
Maximum transfer (M)	$10,000	$12,000	$31,938	$6,000	$6,000	$9,848	$12,000
Beginning of phase-out of transfer (P)	$25,000	infinite	infinite	infinite	infinite	$0	Area median income
Tax rate in phase-out (T)	20%	0%	0%	0%	0%	50%	Infinite
Eligibility restrictions (E)	U.S. citizen, age 21+	Age 18+.	None	None	Age 25-58. Receipt of unemployment payments prior to pilot	Age 18-64 with low income <$48,000/yr for couples	Ages 21-40

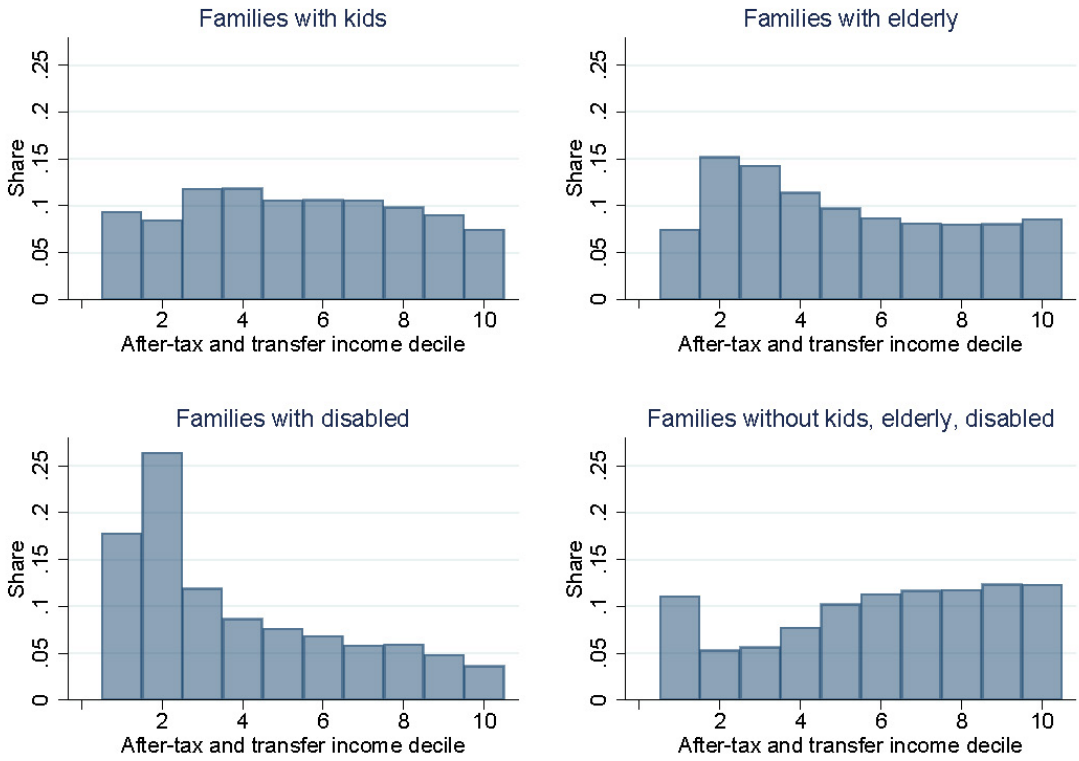
Notes: Table does not reflect all complexities of proposals and pilots. For example, under the Murray proposal, the transfer would phase out only to $5,000 per adult per year. Under the Stern proposal, the program differs for seniors. Swiss proposal parameters are based on suggestions advanced by supporters of the referendum, and apply to a family with two adults and one child. Ontario parameters are for a couple. Non-U.S. programs are converted to U.S. dollars using purchasing power parity.

Table 3. Number of recipients and total expenditures from selected transfer programs and potential UBIs

Program	Eligibility [E]	Total expenditures (billions)	Number of recipients (millions)
Cash welfare			
TANF	Single parent, work requirements	7.4	2.8
SSI /Elderly	65+	5.4	1.2
SSI children	under age 18, blind or disabled	9.3	1.2
In-kind, near-cash welfare			
SNAP	near universal	63.6	42.1
School Lunch	K-12 children	12.3	22.0
School Breakfast	K-12 children	4.5	12.5
WIC	pregnant, postnatal women & children<5	5.6	7.3
Section 8 & Public Housing	universal, but rationed	26.9	9.4
In-work tax credits			
EITC	Earners 25-64 for childless	69.8	69.7
CTC	Families with children with earned income	52.8	105.9
Disability programs			
SSDI	Documented work limiting disability	142.7	10.4
SSI/Disability	Documented work limiting disability	39.6	5.9
Social Insurance			
Social Security retirement	Retirement age, with work history	680.2	45.5
Social Security survivors		118.3	6.0
Unemployment insurance	Work history, actively looking for work	29.9	5.7
Health insurance			
Medicare	65+, Disabled	689.0	57.0
Medicaid	Low income	368.0	82.2
CHIP	Children	14.3	9.2
TOTAL COST	**ALL PROGRAMS**	$2,340	
	EXCLUDE HEALTH	$1,268	
	EXCLUDE HEALTH & SS RETIREMENT	$588	
Potential UBIs			
Canonical	Ages 18+	$3,025	252.1
Phased out around median Y	Ages 18+	$1,512	126.0
Age-limited	Ages 18-64	$2,414	201.2

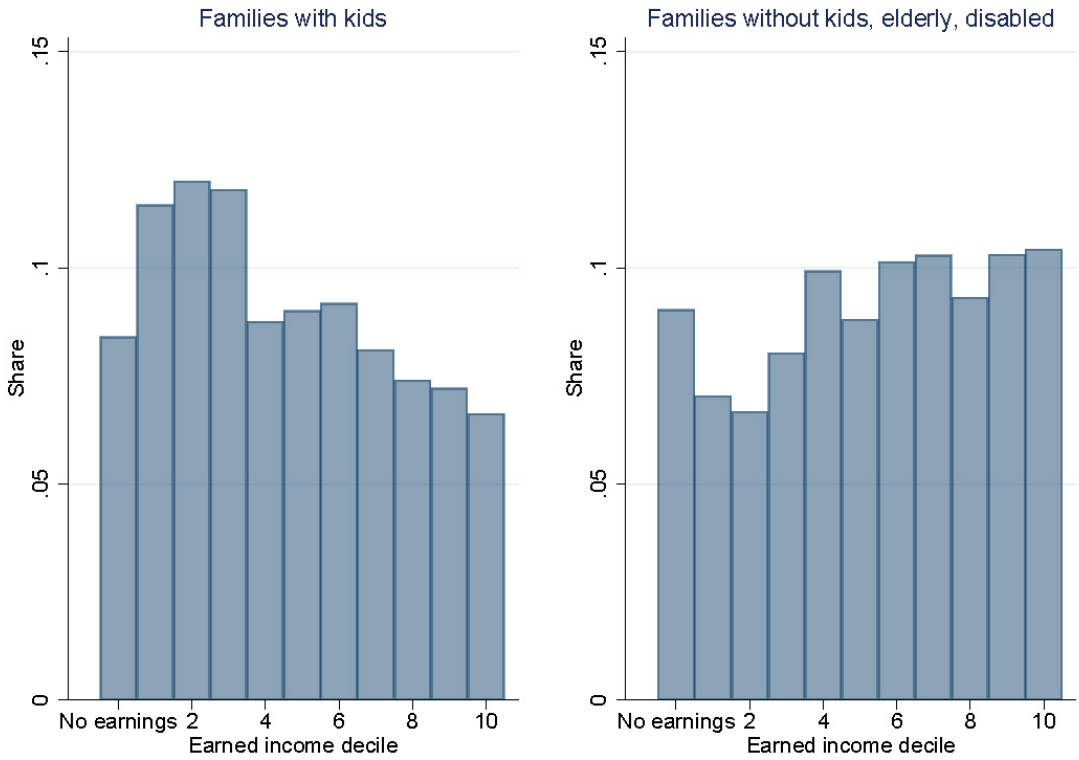
Sources: TANF recipients and expenditures from the U.S. Department of Health and Human Services, Administration for Children and Families program reports for 2016; SSI information from the Social Security Administration's (SSA) 2017 Annual Report of the Supplemental Security Income Program; SNAP and WIC receipt and expenditure, and school meal receipt, data from the USDA Food and Nutrition Service (FNS) program reports for 2017; school meal enrollment data from the FNS Congressional Justification for 2018; EITC and CTC enrollment and expenditure data from the Internal Revenue Service Statistics of Income 2016 preliminary data release; Social Security enrollment and expenditures from the SSA beneficiary statistics and payment summary tables for 2017; Medicare enrollment data from the Centers for Medicare and Medicaid Services for 2016, and expenditure data from the Congressional Budget Office's (CBO) June 2017 baseline; Medicaid and CHIP enrollment from MACPAC's Medicaid and CHIP Data Book for 2016; Medicaid expenditure data (both federal and state shares) from Kaiser Family Foundation; and CHIP expenditure from CBO's 2017 baseline.

Appendix figure 1: Distribution of families across after-tax and transfer income deciles, by family type



Source: Authors' tabulations of 2017 Current Population Survey Annual Social and Economic Supplement.

Appendix figure 2: Distribution of families across earnings deciles, by family type



Source: Authors' tabulations of 2017 Current Population Survey Annual Social and Economic Supplement.