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THE DISTRIBUTION OF FEDERAL EXPENDITURES**

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Introduction

AFTER a decade or more of relative quiescence, it appears that once again issues of income distribution and redistribution—now referred to as the "fairness issue"—have moved to center stage in political and policy circles. This phenomenon is due in part to the combination of growing wage rate and household income inequality and stagnation over the last twenty years (see e.g. Juin, Murphy and Pierce 1989) and evidence of a less progressive federal tax structure (Pechman 1990).

The principal battleground has been the distribution of tax burdens not expenditure benefits. This is due, in part, to the continuing capital gains tax wars, but not solely so. Looking back at research on income distribution in the public finance literature, I am struck by the relative imbalance between tax and expenditure. Measured by dollars taxed or expended, the latter should certainly merit more space, but the opposite is the case by a wide margin.[1] I do not know why this is so (perhaps it is the same reason that analysts mention tax but rarely benefit capitalization, or the reason there exists a National Tax Association and Journal but not one for expenditures). One simple reason is the lack of data. If people continued to pay their tax obligations in pigs or chickens as in the eighteenth or early nineteenth century, research parity might exist. However tax payments made in cash, while benefits received in-kind, or in public goods, may be part of the reason. Analysis of the distribution of expenditure benefits has all of the problems tax burden analysis has and much more. Analysts in both areas face thorny questions of economic incidence, debates about the appropriate accounting period (one year, one lifetime, an infinitely lived family dynasty), unresolved issues about the proper unit (the household, the person, the household equivalent unit) but in addition government-provided goods and services must be valued. It is no wonder that the last attempts to comprehensively value federal expenditures are twenty years old![2]

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Problems in Determining the Distribution of Expenditures

Quite a lot has changed in twenty years. The share expended on goods and services and physical investment has fallen, while the share transferred to households in cash or in-kind has grown.

Determining the distribution of the benefits of transfer programs appears the simplest job, e.g., simply observe the income of the recipient of the payment. There are several problems with this approach. First, even if the transfers were of the "lump sum" variety so revered by economists, the fact that leisure is a normal good implies that recipients would reduce work effort and therefore labor earnings in response to the transfer. Second, most transfer payments are not in the form of the idealized lump sum, but rather are conditioned upon economic behavior, behavior that need not be invariant to the receipt of the transfer. Consequently, the resulting incentive effects would also tend to alter pre-transfer income positions.

Finally changing economic behavior, e.g. labor supply or saving decisions, would also imply altering factor prices and might therefore alter economic incidence. The possible shifting of benefit incidence as well as changes in factor payments could significantly complicate an analysis of the distribution of expenditure benefits.

Many examples of behavior being changed by public expenditure programs come to mind. If it is possible that the prospect of Social Security payments have something to do with the fact that 62 is the modal retirement age when 30 years ago it wasn't, or that the duration of unemployment is linked to the length of the unemployment compensation coverage

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period, then classification of transfer recipients into mechanically-computed "pre-transfer" income groups is a risky business with a predictable bias. Although the same can be said of tax burden analysis, I think financial incentives to change real behavior are much stronger on the expenditure side. After all, there no longer exist 100 percent marginal tax rates, but benefit reduction rates, e.g. for AFDC recipients, routinely are that high or even higher.

Having said that, I meekly follow past precedent and assume away the shifting of benefits. I also classify transfer recipients by their observed annual income (Official Census Income) less cash transfers received. The difficulty is that we don't observe the counterfactual; we do not know how much income a transfer recipient would earn in the no-government state.

Accounting Period

Needy persons are not always needy, and although poverty may always be with us, the identity of those who are poor changes constantly. For this reason, the receipt of income has a stochastic component; measured inequality tends to be higher the shorter the accounting period. For the same reason, a one-year accounting period would tend to show that need-related transfer payments are more "pro-poor"[3] than would be observed over a longer accounting period. In addition, programs that are intentionally designed to redistribute across the life-cycle, such as Social Security, are better understood when the analysis employs a long accounting period. (Indeed, some believe that even a *lifetime* is too short a time period to analyze Social Security). It is certainly the case that Social Security appears as pro-poor as it does because its presence allows recipients to enjoy their retirement more, e.g. consume more leisure, than they otherwise could in its absence. More on this point later.

Although I am quite sympathetic to the lifetime accounting period—having used a lifetime accounting period in some of my own work—I am discomforted by one consideration. The lifetime accounting period may be appropriate for the middle class and the wealthy, but is less appropriate for poor people. Liquidity constrained individuals do not have the luxury of borrowing against future income streams to even out lifetime consumption paths, and can face severe temporary distress, in spite of the teachings of the life-cycle model. For some of these people, even an annual accounting period may be too long. Since many of those receiving transfer payments are low income, the lifetime accounting period—while sensible in tax analysis—is less appropriate on the expenditure side.

Distribution of Federal Expenditures—CPS Transfer Payments

In this paper, results from several sources are presented. First, I present the distribution of transfer payments as revealed in the March 1989 Current Population Survey of the US Census. Next I present estimates of the distribution of a range of other expenditure programs, estimates made employing information obtained from a number of sources—from analysts both at the Office of Management and Budget and at other government agencies. Finally, I present several allocations of the benefits of public goods.

Table 1 presents the distribution of transfers by pre cash-transfer disposable (after income and payroll tax) household income. The purpose of excluding cash transfers is to not double-count the transfer and to observe the difference between market and transfer income. The income measure includes one form of non-wage compensation—Census' estimate of the value of private health insurance, if relevant.

A transfer program proportional to market income would contain cell entries similar to those in the top row, a distribution not found for any CPS transfer program. Clearly, these results show transfers to be very "pro-poor" with 48.7 percent of the benefits going to the poorest 20 percent of households. It should be noted that "in-kind" programs, health care, nutrition, and housing, are valued at

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TABLE 1
INCOME DISTRIBUTION AND TRANSFER PAYMENTS

	SHARE OF INCOME BY HOUSEHOLD QUINTILE					
DISTRIBUTION OF DISPOSABLE PRE-TRANSFER INCOME 1989 (Including health ins.)	1 .0136	2 .0941	3 .1741	4 .2622	5 .4528	
OUTLAY CATEGORY						
CPS PROGRAMS	EXPENDITURES BY QUINTILE					1989 EXPENDITURES $ (millions)
OASDI	.436	.274	.144	.078	.068	233627
WORKERS COMP	.227	.253	.203	.173	.145	298
VETERAN COMP/PENSIONS	.400	.202	.163	.134	.101	15671
UNEMP. COMP	.096	.265	.241	.230	.167	18730
RLRD RETIREMENT	.623	.218	.084	.06	.015	12373
MEDICARE	.472	.257	.133	.073	.066	96452
AFDC	.770	.134	.054	.020	.011	11165
SSI	.725	.125	.074	.050	.027	12554
EITC -- Refundable Share	.144	.660	.123	.048	.025	4002
MEDICAID	.678	.178	.077	.041	.026	34603
FOOD STAMPS	.767	.188	.036	.060	.030	13725
OTHER NUTRITION PROGRAMS	.608	.200	.091	.055	.045	7049
HOUSING ASSISTANCE	.834	.125	.029	.011	.001	12505
TOTAL	.487	.248	.129	.077	.062	472754

SOURCE: March 1989 Current Population Survey of the Bureau of the Census and Expenditure totals from the Office of Management and Budget.

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market cost, e.g. the so-called insurance value of health care. This procedure avoids the conundrum of declaring seriously ill people to be wealthy because they receive many expensive health services. This also means that all of those eligible for such a program, e.g. Medicare, are treated as if they received a subsidy of constant dollar value, even though willingness to pay for the program may vary tremendously among the population. The strongly pro-poor distribution of Medicare, albeit not as pro-poor as Medicaid, is due to relatively low market incomes of the elderly and not due to targeting or means testing by income.

Social Security—An Important Qualification

While this static analysis shows Social Security to be highly pro-poor, lifetime analysis of the distributional effects of Social Security would show a very different picture. Although it has been asserted that the system substantially redistributes from rich to poor on a lifetime basis, this may not be the case for one important reason, the value of your Social Security annuity is longevity based—it depends upon how long you live. Evidence is building that that indicates a strong positive association between economic position and longevity, e.g. the rich die old while the poor die young. (Among men aged 45 to 59, the 15-year death rate was three times higher for those in the bottom quintile of initial wealth than those inhabiting the top decile). A study by Hurd and Shoven (1985) finds the personal lifetime internal rate of return to the system to be uniform across wealth classes. Work that shows Social Security to be lifetime pro-poor employs ex-post analysis when ex-ante analysis is the fair experiment. Differential mortality would tend to make all programs in which lifetime benefits are longevity-based, e.g. Medicare, less pro-poor on a lifetime basis than would be inferred from static ex-post analysis.

Table 2 presents estimates of the distribution of non-CPS transfers and Table 3 gives a detailed reconciliation of federal expenditure items. The income definition used to classify households into income groups is the official census definition, cash income (excluding capital gains) before taxes.[4]

Since many of the non-CPS items have income tests or restrictions associated with them, these programs are pro-poor as well, although not as pro-poor as the CPS programs. Examples of these include energy assistance grants, training and employment programs e.g. Job Corps, and several school aid programs. Some programs are pro-poor not because of means testing but because they target lower income groups, such as health programs for Native Americans and programs for elderly people. Some expenditure programs appear to be pro-rich, like farm subsidies—Commodity Credit Corporation expenditures. The pro-rich aspect of this is probably understated, since only the household's farm income was used in classifying the farm-owning household by income. Some transportation expenditures are pro-rich as well benefiting recreational boat users, airline passengers, and private plane owners.

In allocating the benefits of programs to income classes, I used a plethora of sources—my personal favorite is the use of surveys of National Park use coupled with estimates of the income distribution of fish and wildlife enthusiasts. These allocations, in part, reflect the judgement of analysts—people who know the most about their particular programs.

Not all programs that are "allocable"—programs closer to the private good than the public good pole—that could be allocated have been. Category 3 in Table 3 contains such programs. These expenditure items—composed mostly of civilian and military pensions—would tend to be less pro-poor than items in categories 1 and 2, since these payments vary directly not inversely with one's income.

Categories 4 and 5 contain the large amount expended upon items in which the technique of allocation across the income distribution is not obvious. Category 4 contains expenditures that might arguably be allocated, such as interest payments on the national debt or expenditures by the Security and Exchange

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TABLE 2
DISTRIBUTION OF NON CPS PROGRAMS—1989

	MONEY HOUSEHOLD INCOME BY QUINTILE GROUPS					
	I	II	III	IV	V	1989 EXPENDITURE
SHARE OF HOUSEHOLD INCOME	.038	.095	.158	.24	.468	(In $ Millions)
SHARE OF NON CPS PROGRAMS	.357	.184	.106	.124	.216	$86,246
Selected Programs						
AGRICULTURE	I	II	III	IV	V	
Farmers Home Administration Rural Housing Insurance Fund	.75	.25	0	0	0	7608
National Forest System	.10	.20	.25	.23	.22	1606
Commodity Credit Corporation Direct payment by net cash income on farms, not total HH income	.04	.06	.08	.22	.71	10582
EDUCATION						
Student financial aid Post Secondary By Student Income	.46	.22	.14	.16	.02	5859
Higher Education to Schools with Low Income Students	.67	.25	.08	0	0	607
Special Services for Disadvantaged Students	.50	.45	.05	0	0	237
ENERGY						
Energy Assistance Grants for Weatherization Assistance	.50	.35	.10	.05	0	233
HEALTH & HUMAN SERVICES						
Foster Care and Adoption Assistance	1.0	0	0	0	0	1344
HOUSING AND URBAN DEVELOPMENT						
FHA – Mortgage Insurance Fund	.04	.08	.35	.42	.13	975
INTERIOR						
Fish and Wildlife Service	.20	.18	.19	.19	.24	760
Bureau of Indian Affairs	.35	.25	.25	.10	.05	1355
LABOR						
Community Service Employment For Older Americans	1.0	0	0	0	0	323
Training and Employment Services	1.0	0	0	0	0	3758
Black Lung Disability	.80	.20	0	0	0	627
TRANSPORTATION						
FAA Commercial Air Carrier	.03	.05	.10	.14	.52	4822
FAA General Aviation	0	0	.05	.10	.85	1664
Recreational Boating	.07	.15	.19	.27	.32	59
Amtrak Subsidies	.11	.12	.17	.22	.39	580
Urban Mass Transit	.271	.244	.203	.175	.107	3541
Federal Highway Administration	.12	.18	.24	.25	.21	13483
VETERANS AFFAIRS						
Medical Care	.89	.08	.02	.01	0	10514
LEGAL SERVICES CORPORATION	.95	.05	0	0	0	307

SOURCE: The author.

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TABLE 3
RECONCILIATION OF 1989 EXPENDITURES

	Total Expenditures (in billions)	% of Total
Categories and Major Programs		
I. Current Population Survey		
Social Security	233.6	50%
Medicare/Medicaid	131.1	28%
Other	105.6	22%
Subtotal	472.7	100%
II. Allocated		
Transportation	23.6	27%
Agriculture	19.9	22%
Education	16.2	19%
Veterans	11.4	13%
Other	15.3	18%
Subtotal	86.4	100%
III. Not Allocated but Should Be		
Military Retirement	30.0	36%
Civil Service Retirement	29.2	36%
Other	23.0	28%
Subtotal	82.2	100%
IV. Unclear		
Interest on the Public Debt	240.9	91%
RTC/FDIC	11.6	4%
Other	12.4	5%
Subtotal	264.9	100%
V. Pure Public Good		
Defense, Military	295.6	65%
Other	161.1	35%
Subtotal	456.7	100%
TOTAL, ALL FEDERAL PROGRAMS	1,362.9	

Commission. If these expenditures are to be allocated, I would think allocation should be made by the household distribution of financial assets. This approach yields the following distribution by income quintile:[5]

Quintile	1	2	3	4	5
Benefit share	0	.04	.10	.19	.67

Hence, the distribution of expenditures using this method results in a very pro-rich result. Although other analysts—e.g. Musgrave et al., Gillespie, and Reynolds-Smolensky—all allocate interest payments on the national debt to households as interest is received in the population, I feel some unease with this approach since

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over a longer accounting period an exchange and not a one way transfer of wealth has occurred. On the other hand, this allocation is reasonable when employing a one-year accounting period, the period used in this paper to allocate other federal expenditures.

The technique for distributing the benefits of pure public goods such as national defense is known in theory, e.g. use the marginal rate of substitution between the public good and composite consumption. However, as Aaron and McGuire point out, insufficient information about tastes allow each analyst to arbitrarily allocate the benefits of public goods. The Aaron-McGuire approach is to first assume that the public goods are optimally provided according to the Samuelson conditions (a reality check every member of the Congressional and Executive branch engages in daily, no doubt), and second, to choose utility functions for the population and allocate public good benefits using these arbitrary utility functions.

What others have done in the past is to suggest defense should be distributed by income, by wealth, or on a per-capita basis. The first, which is not too dissimilar to the Aaron-McGuire approach, relies on the reasonable proposition that public goods in general and defense in particular, are normal goods, implying that richer people would be willing to pay more for them than poorer people. Consequently, benefits from defense would be neither pro-rich nor pro-poor but be proportional to household income—paralleling the top line in Table 2.

The second approach argues that the value of national defense is to prevent the wealth of citizens from being confiscated or destroyed by a foreign military power. Consequently, the benefit from defense would be proportional to the distribution of wealth by income class. Given the skewness of the wealth distribution, I would expect this approach to yield a strong pro-rich pattern, similar to the allocation suggested for category 4 expenditures presented above. Ruggles used a related approach—allocation by interest income—as one way of distributing public goods.

The third and most pro-poor method is to allocate by population. (Note that this approach would *not* allocate twenty percent of the benefits to each quintile, since household size varies directly with quintile.) The distribution by quintile would be:

Quintile	1	2	3	4	5
Benefit share	.146	.172	.199	.229	.254

Conclusion

Benefit incidence analysis is both a hazardous and an underdeveloped field of research. In this paper I present some estimates of the distribution of federal expenditures by income classification. Although there is no shortage of problems in this analysis, let me offer another not raised above, *viz.* consumption externalities. Programs exist not solely due to the material benefits they provide to the recipients, but because of a willingness to provide such benefits by the non-recipients. This could explain why in-kind programs exist when, as most sophomore students in price theory could prove, they are economically inefficient. I close by saying that this externality, which explains the existence of many programs and is therefore one of the most important benefits, is at the same time the most difficult to quantify and allocate.

ENDNOTES

**The results presented here build upon work done while on leave at the Office of Management and Budget. I have benefitted greatly from information provided me by Bill Curtis, Richard Bavier, and a large number of budget analysts at the Office of Management and Budget and at other agencies. All errors remain my responsibility. The views and opinions presented here are my own and do not represent the positions of the OMB or any person associated with it or any other agency.

[1]Notable contributions have been made in this literature by Gillespie, Musgrave et al., Reynolds and Smolensky, Marilyn Moon, and Patricia Ruggles.

[2]Both Reynolds and Smolensky (1977) and Patricia Ruggles (1981) rely on data no more recent than the 1970 census.

[3]While I am drawn, for normative reasons, to use the term "progressive" to convey expenditures that are a larger proportion of lower than higher incomes, Musgrave et al. use the term "regressive" to describe

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that case (since that ratio of benefits to income falls as income rises.) Consequently, I have chosen to follow Reynolds and Smolensky's lead and use the term pro-poor as contrasted to pro-rich.

[4]This definition was not my choice and prevents me from aggregating these with the CPS programs.

[5]This distribution is based upon the data presented in Radner (1989) using 1984 data from the SIPP project.

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