



Accounting for Care: A Research and Survey Design Agenda

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...the efforts of the statisticians and researchers who work on producing the national accounts are not directed principally towards measuring the economy, but to observing and measuring better and better that part of the economy which they have agreed to make the object of their attention.

María Angeles Durán-Heras (2012:59)

Like Mother Nature, families make important contributions to economic output. The parallels between accounting for unpriced environmental services and household production are widely recognized. Many economists and national income accountants are now devoting considerable effort to measurement and valuation of family care. Both intra-family transfers and government transfers are also receiving increased attention. Yet efforts to systematically value non-market services remain intermittent and are seldom combined with efforts to measure intra-family transfers.

Resistance to accounting for transfers both of time and other resources within the family cannot be attributed simply to practical difficulties. Several national accounting categories currently include imputations based on tenuous assumptions and limited data. A more important factor is skepticism regarding substitutability between the family and the market. This skepticism is reflected in a tendency to consider non-market work, like leisure, a dimension of subjective well-being or happiness, rather than income or consumption (a tendency reflected in the very program for this conference). Transfers of other resources to family members also tend to be

described solely as gifts that yield utility to the giver, ignoring their additional consequences for the recipients.

Current debates over official definitions of income and consumption partly reflect theoretical differences between classical political economy, with its emphasis on the level and distribution of economic output, neoclassical economic theory, with its emphasis on individual utility or well-being, and the capabilities approach, with its emphasis on the intrinsic value of health, education, and other indicators of well-being. Standard national income accounts do not invoke neoclassical concepts such as utility or consumers' surplus in the measurement of market output. Yet they typically exclude both non-market work and non-market transfers on the grounds that these represent elements of personal well-being, rather than material output.

The tensions between classical and neoclassical perspectives are clearly reflected in the intellectual evolution of debates over accounting for care. The first section of this paper situates measurement and valuation of non-market transfers of time and money in the larger framework of efforts to move beyond conventional measures of Gross Domestic product, explaining their distinct, though complementary contributions. The second section briefly summarizes the history of efforts to measure and assign a monetary value to non-market work, while the third outlines a parallel history of efforts to examine intra-family income flows. The fourth section explains why levels and trends in non-market work and transfers bear on a number of important public policy issues. The final section specifies what such expanded definitions of income and consumption would look like and describes the most significant empirical obstacles to their implementation.

A Typology of Alternatives to Conventional Gross Domestic Product

As criticisms of conventional national accounting methods have multiplied, alternative perspectives have come to compete with one another for attention. Yet in many respects these

perspectives are complementary, because they each focus on a distinctive category of inputs and a distinctive measure of output. The traditional definition of Gross Domestic Product as the value of goods and services produced in a country echoes the emphasis of classical political economy on a measure of output defined in terms of a monetary numeraire. This definition has typically been limited to the value of goods and services exchanged through the market, with some exceptions such as imputations for the value of subsistence production of goods and the value of owner-occupied housing. Efforts to create satellite accounts adding imputations of the value of non-market work represent an extension of this approach, typically based on estimates of the cost of replacement through the market. Likewise, many efforts to value environmental assets and services apply a market-based approach (See Column 1 of Figure 1).

This approach is not inconsistent with efforts to examine the contribution of these three different categories of “inputs” to subjective well-being, utility, or happiness (See Column 2), or to examine their contribution to human capabilities with intrinsic value, related for instance to health and education. Rather, it can be construed as a way of broadening the concept of economic output, or total product, in ways that could complement other goals such as measurement of the relationship between different components of output and happiness or capabilities. Improved measurement of the level, and by implication, the rate of growth of total output is desirable even if total output is not our only measure of economic success.

This paper focuses on one piece of the larger picture presented in Figure 1, the contribution of non-market work and intra-family transfers (as indicated in Cell C). It makes a case for expanding definitions of output not only by imputing a value to non-market work, but by categorizing intra-family transfers, some of which represent informal reciprocity, and some of which represent gifts that enable others to engage in investment and consumption activities. This

process of imputation clearly has implications for happiness and capabilities, as well as output, but these are not considered here.

The imputation of market value to non-market transactions implies at least some substitutability between intra-family transfers and market exchanges. This substitutability is demonstrably limited, but nonetheless quite extensive. Indeed, much recent growth in both market output and public expenditures reflects shifts from unmeasured to measured flows of goods and services. Reluctance to explore the quantitative dimensions of these shifts distorts our understanding of economic growth, government spending, and inequality in living standards. It leads to inefficient public policies and discourages economists from greater efforts to improve measurement of non-market transfers of both time and money.

Precisely because substitutability between market and non-market transactions is limited, a full accounting for care also requires attention to its effects on subjective measures of well-being such as happiness and more objective measures such as the development of human capabilities. The purpose here is not to expand the definition of output so that it can displace attention to other dimensions of success, but to improve the measurement of both inputs and outputs that are relevant to all these economic outcomes.

Measurement and Valuation of Non-Market Work

Long-standing debates over the measurement and valuation of non-market work have surged, receded, and surged again in patterns shaped by feminist concerns, economic theory, international policy, and sociological curiosity. A wave of feminist activism in nineteenth-century Great Britain and the U.S. protested that failure to recognize the economic value of women's family work contributed to devaluation and disempowerment (Folbre, 2009). The problem was almost immediately acknowledged by members of the professional establishment,

including the Scottish economist William Smart and the Norwegian statistical office (Folbre, 1991; Aslaksen and Koren, 2014). Such acknowledgements were largely discounted on the grounds that non-market work was not fully comparable with market work and more difficult to measure.

Yet interest in the issue could not be extinguished, and continued to pop up in scientific discourse. The earliest estimates of the value of household production published in the U.S. applied a cursory formula: take the number of married women without paid occupations and ask what they would be paid if employed as domestic servants or farm workers. A study sponsored by the National Bureau of Economic Research in 1921 estimated that the value of housewives' services had declined from 31% of market national income in 1909 to 25% in 1918 (King et al., 1921). The same formula was applied in several subsequent discussions.

The eminent Simon Kuznets notes, in passing, that housewives' services in the U.S. could be valued at somewhat more than one quarter of national income in 1929 (Kuznets, 1941, volume 2, p. 431).¹ Colin Clark, another notable figure in the history of national income accounts, estimated their contribution at 27% of the Gross National Product of the United Kingdom in 1956 (Clark, 1958, 1965). Norway and Sweden offered official estimates of the value of household production in the late nineteenth and early twentieth century, but, in the 1930s, moved toward conformity with the practices of other statistical offices, which excluded it (Aslaksen and Koren, 2014).

In the U.S., women's entrance into the economics profession contributed to more sustained attention to family work (Folbre, 1998). Books by economists Hazel Kyrk (1929) and Margaret Reid (1934) summarized the results of early time use surveys and inaugurated the new field of family and household economics. Reid is best known today for her clear articulation of

the “third party criterion” used to define work as activities that another person could, in principle, be paid to perform. This definition is reflected in standard coding protocols for time use surveys today.

This early emphasis on home economics in the U.S. was pursued by Kathryn Walker, who published many early studies of time use in the household (See, for instance, Walker, 1969). However, it received little attention from the mainstream of the economics profession in the U.S. until 1972, when an essay by William Nordhaus and James Tobin provocatively titled “Is Growth Obsolete?” linked the omission of non-market work to omissions of other non-market processes such as environmental degradation and natural resource depletion. Henceforth, family and environment would often be linked. But Nordhaus and Tobin framed their argument in terms of a divergence between measures of output and measures of welfare, using more explicitly neoclassical reasoning than their predecessors. Their alternative “Measure of Economic Welfare” or MEW, aimed to provide a more accurate assessment of welfare, as distinct from income or consumption.

From this point onward, two distinct approaches to valuation became apparent. Neoclassical theorists placed more emphasis on subjective well-being even as national income accounting began to revise and extend measures of income and consumption. Oli Hawrylyshyn noted the tension between opportunity cost approaches to valuation (based on assumptions of utility maximization) and replacement cost approaches as early as 1976. The opportunity cost reflects the individual preferences revealed by utility-maximizing decisions; the replacement cost approach applies market prices to inputs into non-market work (primarily labor time).²

Particularly important contributions to the national income accounting approach were made by Oli Hawrylyshyn (1976), John Kendrick (1979), Robert Eisner (1989), and Luisella

Goldschmidt-Clermont and Elisabetta Pagnossin-Aligasakis (1999). The neoclassical approach, however, received a tremendous boost from the “new home economics,” especially Gary Becker’s influential *Treatise on the Family* (1993). Within this framework, both household production and leisure yield utility to family members, who reveal their preferences through the allocation of time and money in the household. This emphasis on utility departs from national accounting procedures that rely on market prices, ignoring both consumers’ and producers’ “willingness to pay.”

Research initiated outside the economic discipline also influenced the discourse. The deployment of representative time-diary surveys made it possible to directly examine amounts of time devoted to non-market work, which proved both surprisingly high and surprisingly resistant to decline over time. The Multinational Comparative Time-Budget Research Project, undertaken under the direction of Alexander Szalai with support from European sponsors, represented an important example of this approach (Szalai, 1972). The quantified results of these surveys countered initial claims that non-market work could not be measured and spurred the development of a new field of research on time use.

At the same time, a burgeoning international feminist movement threw its weight behind concerns that women’s unpaid work was an important source of gender inequality. The Third U.N. World Conference on Women in Nairobi in 1985 passed a resolution publicizing the issue (Luxton, 1997). New Zealand activist and policy-maker Marilyn Waring made common cause with environmentalists and helped mobilize public support for implementation of time use surveys with her widely-read book, *If Women Counted* (Waring 1988; Bjornhold and McKay, 2014).

The Canadian case offers a particularly telling example of political pressure meeting official resistance. In 1974, the National Council of Women unsuccessfully requested more

attention to unpaid work (Hawrylyshyn, 1976: 128). In 1991, however, a Canadian homemaker garnered national publicity when she refused to fill out the official Census form because it did not recognize her efforts as work. The subsequent controversy led the Canadian government to veto the recommendations of an official agency, Statistics Canada, and to insist on new efforts to measure non-market work (Luxton and Vosko, 1998).³ In 1995 the Fourth U.S. World Conference on Women in Beijing (with encouragement from its Canadian participants) extended and strengthened its recommendations for measurement of unpaid work.

These recommendations, bolstered by the efforts of women's groups in many countries, contributed to a proliferation of diary-based time-use surveys. While no explicitly comprehensive list is available, a concatenation of lists provided by the U.N. Statistics Division and the Centre for Time Use Research at Oxford University documents slow growth from 1930 to 1989, doubling in the 1990s to 36 and more than doubling in the first decade of the twentieth century to 87 (See Figure 2). Between 2010 and 2013, 25 surveys were administered. Linear extrapolation of this number suggests that about 63 will be administered in the current decade, below that of the 2000-2009 period, but still far higher than the 1990s.

Important collections of data include the Harmonized European Time Use Survey (HETUS), the Multinational Time Use Studies (MTUS) archive at Oxford University, and the American Heritage Time Use Surveys including pioneering research by John Robinson, and the official American Time Use Survey (ATUS), collected on an annual basis since 2003. This growth has paralleled efforts to measure trends in non-market assets and ecosystem services, such as the United Nations' System of Economic-Environmental Accounting (SEEA) and the World Bank's Wealth Accounting and Valuation of Ecosystem Services (WAVES).⁴

With improved data on non-market work have come improved efforts at valuation, often through the development of “satellite accounts” that can revolve around the conventional estimates. Notable efforts include Duncan Ironmonger’s estimates of Gross Household Output in Australia (1989), estimates of expanded GDP in the U.S. by Landefeld et al. (2000, 2009) and Bridgman et al. (2012) and, for OECD countries, Giannelli et al. (2010) and Miranda (2011). While important methodological problems remain, estimates such as these represent important steps toward improved valuation of non-market work.

This forward motion signals growing interest within the national income accounting community, a view clearly expressed by the internationally influential *Report by the Commission on Economic Performance and Social Progress Revisited* (Stiglitz et al., 2009). Yet the pace of change remains slow. Satellite accounts are easily disregarded, because they do not challenge or alter conventional measures of Gross Domestic Product or its growth over time. Ironically, the growing interest in moving away from GDP toward more direct measures of happiness and/or human capabilities has also diverted attention from the task of improving measures of output. Further, an important dimension of the non-market economy, transfers of resources other than time to dependent family members, is seldom if ever included in satellite accounts.

The Measurement and Valuation of Intra-Family Transfers

Failure to systematically measure transfers of resources to family members over the life cycle is symptomatic of reluctance to view the family as an important site of production and distribution. Like time devoted to the care of family members, money devoted to the care of dependents has economic consequences. In countries at every level of development a significant share of public spending provides substitutes for goods as well as services once provided in

families. Indeed, a large sociological literature examines trends in what is explicitly termed “defamilialization” (Esping-Anderson, 2009).

Non-market work performed within the household does not merely provide satisfaction or utility for those who perform it. It also generates goods and services that are consumed by other household members. Duncan Ironmonger and Evelyn Sonius argue that the “third party” criterion developed by Margaret Reid—specifying as “work” any activity that could in principle be performed for pay—should be replaced by third party “benefit” criterion—any activity that benefits someone other than the individual engaging in it (Ironmonger and Sonius, 1989:25). Whether or not this is the best definition, it provides a sharp contrast with a neoclassical utility maximization approach, emphasizing the positive spillovers of activities motivated by concern for others.

While non-market work is often described as “unpaid” this term is hardly accurate: married homemakers generally enjoy a share of their husband’s market income in return for their work. Care for children or elderly family members typically has elements of direct or indirect reciprocity and mutual aid. Parents in general and single mothers in particular often receive at least some public support. One does not have to receive “wages for housework” to be recognized as a partner—albeit a somewhat disadvantaged partner—in a cooperative enterprise.

The oft-neglected intellectual history of economics reveals many serious efforts to bring intra-family income flows into the realm of accounting. Nineteenth-century feminists in the U.S. called attention to gender inequality resulting from married women’s limited rights over the products of their labor. Elizabeth Cady Stanton and Susan B. Anthony, among others, supported legal reforms that would, in formal recognition of domestic partnership, give married women a legal claim to one-half their husband’s earnings. Such reforms were never accomplished, despite

important gains in women's ability to independently control their own earnings and their own property.

In the late nineteenth century, efforts to determine the level of wages necessary to support a family inspired research on working class family budgets (Johnson et al. 2001). Often couched in the language of family need, these budget studies did not address the question of distribution of income or consumption within the family. However, they did offer estimates of increases in expenditures associated with an additional household member, and generated equivalence scales to enable comparisons of living standards among households of varying composition.

The economist Irving Fisher argued as early as 1906 that the costs of producing human capital in the family should be taken into account. Louis Dublin and Alfred Lotka took that argument literally in *The Money Value of a Man*, which estimated parental expenditures on children (1930). However, they explicitly omitted consideration of the value of parental time. A similar approach was later taken by John Kendrick, who estimated accumulated rearing costs of children and “depreciation of the tangible human capital stock” or aging but ignored the value of time (Kendrick, 1976:7). Building on Kendrick's work, however, Robert Eisner called for measurement of both the value of time devoted to non-market work and intra-family transfers in revisions to the System of National Accounts (Eisner, 1984, 1989).

James Morgan, a pioneer of early empirical research on these topics, estimated that the value of income transfers alone within families in the U.S. in 1975 was equivalent to about one-third the size of GDP, and several times larger than Social Security transfers (1978). Robert Lampman and Timothy Smeeding (1983) examined trends in inter-household transfers (gifts, alimony, child support and others) in the U.S, finding that these declined as government

spending increased between 1929 and 1979. These studies illustrate an accounting methodology that uses survey data to focus on distributional outcomes outside the market.

This approach was overshadowed, in many respects, by renewed emphasis on explaining family behavior in terms of utility maximization. Neoclassical theorists such as Gary Becker (1993) took a very different approach to human capital, defining it largely in terms of investments in education, and estimating its value based on its future rate of return, rather than its cost of production (For a longer discussion, see Folbre, 2009). Moreover, Becker's reliance on a joint utility function implied little concern for issues of distribution within the family.

However, a number of sociologists and demographers, and at least a few economists, insisted that intra-family transfers were not simply a function of collective altruism. Jack Caldwell called attention to shifts in the size and direction of intergenerational income flows in the course of economic development (Caldwell, 1982). Martin Kohli (1999) shows that intergenerational transfers of both time and money remain significant in Germany, modified but not crowded out by public programs.

Intra-family flows also have implications for gender inequality. For instance, increases in the percentage of families maintained by women alone in the U.S. have been accompanied by a decline in the financial as well as temporal support that fathers provide their biological children (Folbre, 1994, 2008). A large body of empirical research shows that income that women bring into the family is spent differently than that brought by men, and more likely to be spent on children. Modern feminist research on the "care penalty" emphasizes that social norms assigning women greater responsibility for care than men reduce women's bargaining power, lower their earnings, and increase their vulnerability to poverty (Folbre, 2012). Yet most official estimates of the cost of children ignore its distribution between mothers, fathers, and tax-paying adults,

including only cash expenditures within the family. For many years, the U.S. Department of Agriculture has regularly published estimates of spending on children that omit any consideration of the value of parental time (Folbre, 2008).

Like income transfers within the family, income transfers from government are typically excluded from GDP, because they do not represent payment for services rendered. Yet transfers conditional on fulfillment of family responsibility, such as care of young children or elderly family members, are a de facto form of payment for obligations fulfilled, if not services rendered. Family allowances and tax subsidies for families with children are motivated by a variety of public concerns, but desire to assist those raising the next generation of workers and citizens is surely among them. But this motivation, while socially acknowledged, is economically ignored. Payments for care services provided through the market enter Gross Domestic Product; government transfers to families do not.⁵ From a neoclassical perspective, the difference in motives—specifically, parents’ willingness to provide services “for free”—matters more than the similarity of outcomes.

Similar conceptual tensions are apparent in other forms of care. When adult children devote time or money to the care of aging parents, their contributions are considered a gift. But when they are hired by the state to provide such care and paid an hourly wage to do so (as in the Medicaid-financed home-and-community-based care systems now common in the U.S., as well as Europe), they are considered payment for services rendered. Home-based care of family members or friends suffering illness or disability suffers from the same conceptual double-standard. In developing countries, the burden of caring for individuals suffering infection from HIV takes place largely outside the money economy (Rogero-Garcia, 2012). Ironically, studies that assign a replacement cost value to the time family members devote to care typically ignore

their cash expenditures for the purchase of similar services (See, for instance Arno et al, 1999; Feinberg et al., 2011; Mmopelwa et al., 2012).

Until recently, public finance devoted little attention to the effect of spending on groups based on gender and age, rather than income. Today, research on this topic is proliferating. Both government spending and taxes often affect men and women differently, a theme explored in relatively new “gender budgeting” literature. Evidence suggests that budget cuts tend to affect women and children more directly than men, in part because they tend to decrease public support for family care (Klatzer and Schlager, 2014). In the United Kingdom, the Women’s Budget Group has offered a detailed critique of austerity policies from this perspective.⁶

An early systematic effort to examine the distribution of public spending by age group, in so-called generational accounting models, focused only on transfers, ignoring the distribution of benefits from government services such as education and health (Auerbach et al., 1991; Ruffing et al., 2014). However, it is now widely recognized that government spending on goods and services, as well as transfers, has implications for the standard of living of groups based on age. The contrast between spending on education and spending on health care for the elderly offers a good example. International comparisons of disposable income offer a misleading picture when they ignore differences in public spending on education and health that obviously affect living standards (Garfinkel et al, 2006).

The National Transfer Accounts (NTA) project developed by Ronald Lee (2011) and others offers estimates of age-based transfers for a number of countries, taking public spending on health and education into account. Further, the NTA makes every effort to measure private transfers, in order to examine the substitutability of public and private transfers. While currently based on cross-sectional estimates of private and public expenditures, this project promises

further attention to the valuation of non-market work.⁷ In other words, it recognizes the importance of combining measures of non-market transfers with estimates of the value of non-market work.

The Policy Implications of Expanding Definitions of Income and Consumption

Current definitions of output, income and consumption based on market exchanges alone paint a misleading picture. Many productive activities and expenditures that affect family living standards are ignored because they do not take the form of market exchange, creating the impression that the growth of market output reflects the growth of total output. Recent comments by International Monetary Fund director Christine Lagarde offer a telling example. She recently publicized estimates of GDP foregone by many developing countries as a result of restrictions on women's employment.⁸ These estimates did not include any effort to value the reduction in non-market work that typically result from increased employment. One can agree wholeheartedly with Lagarde's critique of policies that limit women's choices but disagree with the implication that women make no economic contributions outside the market. Indeed, her rhetorical emphasis on the economic "irrationality" of restrictions on women's employment deflects attention from the ways in which such restrictions help guarantee an inexpensive albeit exploitative supply of family care.

Again, the disjuncture between social values and economic practices is striking. Current national accounting systems, as well as conventional measures of personal income treat spending on children and other dependents as a form of discretionary consumption, exactly the same as spending on cats or dogs. Similarly, public spending on health, education, and pensions, characterized as an expression of social and moral commitments, is often treated as a drag on economic growth, best minimized in order to make more resources available for other forms of

investment. To the contrary, much of the growth in welfare state spending associated with capitalist development represents investments in human capital that have likely contributed to economic growth (Lindert, 2004; Garfinkel et al. 2010).

Further, many transfers aimed to provide a social safety net for children, the sick or disabled made it possible for individual families to spend less on dependents than they otherwise would have. Just as the rapid expansion of Gross Domestic Product in the latter half of the twentieth century partly reflected women's entrance into an economic domain in which their work was counted, the rapid growth of government transfers partly reflected the socialization of intra-family transfers (Folbre and Wolf, 2012). The same logic applies today: increases in life expectancy and longevity are clearly increasing the costs of supporting an increasingly large cohort of elderly. However, reductions in state support do not make these costs go away; they simply redistribute them to individuals and families, either directly or indirectly through increases in the cost of private insurance.

The conceptual bias against valuation of family contributions has colored discussions of many other important public policy issues. For instance, most discussions of growing inequality in the U.S. are framed in terms of market income. Empirical research strongly suggests that valuation of non-market work has an equalizing effect on extended income and consumption (Aslaksen and Koren, 1996, Frick et al., 2009, Frazis and Stewart, 2011, Folbre et al. 2014). But as women's participation in paid employment has increased in affluent countries, the relative size of this equalizing effect has diminished. Further, both urbanization and the rise of single-member households have probably reduced substitutability between home-produced and market-purchased goods. Those who live in urban areas can't grow their own food; those who must work full-time to support their children cannot stay home to care for those children themselves.

As a result, inequality in living standards may have increased even more than suggested by purely market standards.

Income thresholds defining eligibility for public assistance are typically based on household composition and market income, regardless of whether the household includes an adult who devotes himself or herself to non-market work in the home for forty hours a week or more. Yet households lacking such an adult typically incur greater expenses for care of children and sick or frail family members, as well as paying more for food away from home and transportation to paid employment. The equivalence scales embodied in the U.S. poverty thresholds are based on the estimated costs of purchased raw materials for meal preparation, ignoring the additional expenses incurred when adult household members have less time available for that preparation (Albelda, 2011). In developing countries where women spend a large portion of their time tending to family needs, investments in basic infrastructure such as electricity, gas, and plumbing could significantly improve their overall productivity. The payoff to public investments in such infrastructure is understated when the value of non-market work, including family care of young children, is not explicitly factored in (Agénor and Agénor, 2014).

In countries with high levels of female employment, a number of work/family policies such as paid family leaves and reduction of penalties for part-time work can help women and men alike balance competing demands. The advantages of such policies are typically couched in terms of social rather than economic policy, with brief mention of potential increases in female employment or higher fertility (OECD, 2011). Yet failure to implement institutional changes that make non-market and market work more compatible also lowers the efficiency of the economy as a whole, making it difficult for families to optimize their time allocation.

Accounting for both time and money devoted to family care also bears on many dimensions of economic justice. In the U.S., as elsewhere, gender differences in lifetime earnings are closely related to economic penalties associated with motherhood. These penalties vary significantly across countries, largely reflecting differences in public policy (Harkness and Waldfogel, 2003). The high incidence of non-marriage and divorce weakens mothers' claims on the earnings of a partner with higher market earnings. In many countries, increases in women's earnings relative to men have been countervailed by increases in the likelihood that they will receive little support from the father of their children (Folbre, 2006). In many countries such as the U.S. retirement security in old age is based primarily on individual earnings and marital status, putting single mothers and those divorced after less than ten years of marriage (who lose eligibility for marriage-based benefits) at serious risk of poverty in old age.

Though hardly measured or acknowledged, inequality between parents and non-parents is significantly affected by public policy. Parents invest considerable time and money into rearing a new generation that will be taxed to provide security and health care for the entire older generation of citizens, regardless of their family efforts. Findings from several countries show that childless older adults rely more heavily on public assistance in old age (Folbre and Wolf, 2012). This issue was explicitly raised by the German Constitutional Court in 2001, when it ruled that "individuals who raised large families were being essentially exploited by a welfare state that socialized the risks of old age through the pension system yet treated childrearing as a private cost" (Tooze, 2011: 81).

Issues of intergenerational inequality also come into play. Older cohorts have the political power to exploit younger cohorts in general, by taxing them heavily to redistribute income to the older generation or simply by incurring unsustainable levels of public debt. The looming threat

of negative environmental externalities further complicates the picture. Depletion of natural assets and disruption of ecological services threaten the wellbeing of future generations.

While past efforts at intergenerational accounting have not proved particularly convincing, they have certainly established their political relevance.

Expanded Measures of Income and Consumption

A first step toward the development of measures of output that take non-market work and income into account is a clear specification of the components of individual income and consumption on the microeconomic level. The following model follows the sequence of topics above by starting with individual time use.

A Schematic Microeconomic Model

Each individual i has total time T_i equal to the sum of four components:

Let T_i = individual time

M_i = hours of time devoted to market work

H_i = hours of time devoted to non-market work (including that within and outside the System of National Accounts production boundary)

S_i = hours of time devoted to sleep and other physically necessary activities

L_i = hours of leisure

$$1) T_i = M_i + H_i + S_i + L_i$$

Each individual has total income Y_i equal to some function of time devoted to market and non-market work, the wages and shadow wages of these activities, personal income from capital, net transfers from other family members, net transfers from government, and net transfers of unpriced environmental services

Let w_{mi} = market wage for individual i

w_{hi} = shadow wage estimate of value of non-market work, taking household capital into account

$w_{mi}M_i$ = personal market wage times hours of market work or earnings (including value of in-kind benefits such as health insurance)

K_i = personal income from capital

$w_{hi}H_i$ = value of goods and services produced for own consumption

F_i = net transfers from family members (both direct and in-kind)

G_i = net transfers from government (both direct and in-kind)

E_i = net transfers from unpriced environmental assets and services

2) $Y_i = y_i (w_{mi}, M_i, K_i, w_{hi}, H_i, F_i, G_i, E_i)$

For the purpose of simplicity, treat this as a simple additive function and assume a single time period:

3) $Y_i = w_{mi}M_i + K_i + w_{hi}H_i + F_i + G_i + E_i$

The first two terms on the right-hand side correspond to what is typically defined as market income. Individual consumption represents total extended income less investment, which may take the form of investments of market income (yielding a financial rate of return) an increase in the productivity of non-market work, or an increase in the size of transfers from families, government, or the environment.

Equation 3 makes it easy to demonstrate the policy implications of mismeasurement described above: over time, increases in market income ($w_{mi}M_i + K_i$) have been partially countervailed by declines in non-market income ($w_{hi}H_i$), and increases in G_i partially countervailed by declines in F_i . Furthermore, F_i (representing net transfers of both non-market work and non-market transfers) varies significantly between men and women, parents

and non-parents, young and old. The value of environmental services E_i may well decline with resource depletion and ecological disruption.

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This schematic model clearly requires further conceptual elaboration. Accurate measurement of the value of non-market work requires consideration of a household production function including attention to economies of scale in production and non-rivalries in consumption. Many of the transfers described above have public-good aspects that make it difficult to determine individual benefits. It is more difficult to assign a value to environmental assets and services than to the other terms, because they often have no market counterparts. Still, the details omitted on the measurement of the terms in equation 3) are far less momentous than conventional neglect of the last four terms on the right in assessment of individual income.

Going from a measure of individual extended income to a measure of extended output is not an easy task. One precedent is suggested by Duncan Ironmonger's early development of input-output tables for household production, which divide it into distinct goods and services, distinguishing between intermediate and final outputs (1989). One could also argue that the most important "outputs" of household production and intra-family transfers are human capabilities themselves, a subset of which can be labeled "human capital" because they yield a future rate of return. Whether this output can be separately valued or not, measurement of the value of inputs into it could prove useful—essentially bringing John Kendrick's earlier intuitions, described above, to fruition.

The empirical challenges, while significant, are perhaps less daunting than conceptual ones. The rapid proliferation of time-use surveys offers a hopeful perspective on expansion of data-collection efforts. Nonetheless, existing time-use surveys suffer from a number of serious

limitations. Most are collected on an intermittent basis. Few of them effectively capture supervisory care for children (Folbre and Yoon, 2007a). Many of them, including the American Time Use Survey, collect data on only one person per household, making it difficult to estimate total household production. Further, time-use surveys have been segregated from other household surveys, such as those collecting data on consumer expenditures or household wealth. As a result, efforts to combine analysis of time use and household expenditures have been quite limited (though precedents have been set by Ironmonger (1989), Gronau and Hamermesh (2006), and Addabbo and Caiumi (2003)).

Important sources of data on intra-family but inter-household expenditures in the U.S. include the Health and Retirement Survey and the Asset and Health Dynamics Study. At least thirteen countries are planning or currently conducting similar surveys designed to analyze the economic circumstances of the elderly.⁹ Disaggregated analysis of public spending by age group of beneficiaries has been provided for a number of countries through the National Transfer Accounts project (Lee and Mason, 2011). Other studies of financial transfers between generations have been published (Fritzell and Lennartsson, 2005).

An obvious problem is that administration of many separate surveys is both limiting and costly. Significant gains in survey efficiency could be achieved by designing a single instrument assessing time use, household assets, consumption expenditure, and take-up of government in-kind services. In the U.S., for instance, this would entail combining features of the American Time Use Survey (ATUS), the Consumption Expenditure Survey (CE), and the Survey of Income and Participation (SIPP). Respondent burden represents an obvious problem, but one that could be addressed by greater appreciation of the value of non-market work: respondents should be paid for the time required to provide indispensable economic information.

While a thorough consideration of the related challenges of environmental accounting is beyond the scope of this paper, it is worth noting important similarities in this literature. The U.N. Millennium Ecosystem Assessment breaks down ecosystem services into four categories: provisioning services (such as food, water, and fiber), regulatory services (such as flood mitigation and water purification), cultural services (recreational and aesthetic), and supporting services (all others, including social formation and nutrient cycling).¹⁰ This list bears some resemblance to Duncan Ironmonger's (1989) early list of services provided by the household economy. Not surprisingly, the conceptual problems that arise in efforts to assign a market value to ecological services and to family/household services are rather similar (See, for instance, Alexander et al., 1998; Luck et al., 2009). More interdisciplinary efforts to address these problems could prove useful.

However, it is also worth noting that the data available for measurement and valuation of non-market work and intra-family transfers are considerable, and that "lack of information" is not a credible excuse for reluctance to move forward on accounting for care. The value of goods produced for own consumption, a category currently included within the production boundary of the System of National Accounts, is not very accurately measured even in countries in which it likely represents a significant percentage of total output (OECD, 2002). The value of human breast milk, which surely deserves inclusion more than the milk of cows or goats, is largely ignored even though its quantity and value have been persuasively calculated for at least one country (Smith and Ingham, 2005).

Valuation of the services of owner-occupied housing, an important feature of both the System of National Accounts and the U.S. National Income and Product Accounts, is based on very approximate measures of the market value of the housing stock and its relationship to

imputed rent. Valuation of illegal activities such as prostitution and drug trafficking, pioneered by Italy in 1987, boosted its GDP enormously (Coyle, 2014:106). Yet Italian estimates, like those recently implemented by the United Kingdom, are based on heroic assumptions regarding the number of prostitutes and the number of clients served per week (Abramsky and Drew, 2014). Empirical accuracy seems a far less serious problem than conceptual resistance.

Beyond the Conceptual Divide

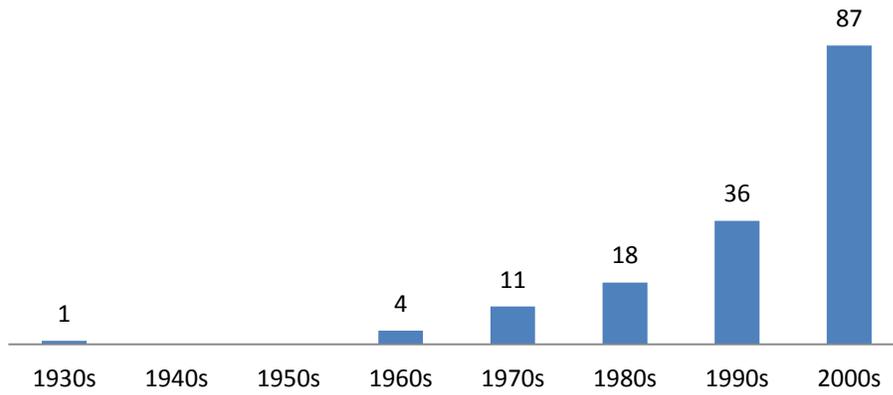
What distinguishes both non-market work and intra-family transfers from market exchange is not their location, but their motivation, weighted more heavily with social obligation and personal affection. This motivation shapes the quality, as well as the quantity of services provided, and infuses intra-family transfers with a very different meaning than income earned more impersonally from labor and capital. These important differences do not, however, completely vitiate substitutions across the conceptual boundary. At this point in history it seems almost self-evident that capitalist development proceeds as much by extending the boundary of the market as by increasing growth within that boundary. National income accounting can keep pace with it only by doing the same.

Figure 1. Classical, Neoclassical and Capability Approaches to Components and Outputs

Components or Inputs	Outputs or Outcomes		
	Classical: Value of Goods and Services Produced (1)	Neoclassical: Value of Utility or Happiness (2)	Capabilities Approach: Social Indicators of Intrinsic Value (3)
Market exchanges of labor and commodities	a. Current national accounts (with partial exceptions for imputations for subsistence production, owner-occupied housing, and finance) and “satellite” accounts	b. Subjective measures or “happiness accounts” of market income and market work	c. Measures of human capabilities such as health, education, and opportunities for self-realization.
Non-market work and intra-family transfers	d. Focus of this paper: Replacement cost estimates of both non-market work and intra-family income flows	e. Subjective measures or “happiness” accounts of non-market activities, including opportunity cost valuation relevant to revealed preferences	
Natural assets and ecological services	f. depreciation and replacement cost estimates	g. Contingent valuation or revealed preferences regarding environment	

Figure 2.

The Growth of Official National Time-Use Surveys,
1930-2009



Sources: U.N Statistical Office, <http://unstats.un.org/unsd/demographic/sconcerns/tuse/tu3.aspx>;
Oxford University Centre for Time Use Research, <http://www.timeuse.org/mtus/surveys>. Both
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Notes

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¹ In general, Kuznets argued against valuation of non-market work. It has been claimed that he later came to favor valuation, and parted ways with the U.S. Department of Commerce over the issue. See, for instance, the *Encyclopedia of Economics* at <http://www.econlib.org/library/Enc/bios/Kuznets.html>, accessed February 9, 2015. This claim is repeated in Patricia Cohen's *New York Times* article, "Putting a Price on Simon Kuznet's Nobel in Economics," at <http://www.nytimes.com/2015/02/25/business/putting-a-price-on-simon-kuznetss-nobel-in-economics.html> However, I have been unable to locate any primary source that substantiates this claim and therefore remain skeptical of it.

² This theoretical distinction is discussed in more detail in Abraham and Mackie, 1995.

³ But is the Luxton/Vosko account accurate? I'd like to hear Statistics Canada's side of the story.

⁴ For more on the U. N. program, see <http://unstats.un.org/unsd/envaccounting/seea.asp>; for more on the World Bank program, <https://www.wavespartnership.org/en>

⁵ I wonder about foster care. Is this considered a transfer payment or a government expenditure that contributes to total output?

⁶ See the Women's Budget Group website at <http://wbg.org.uk/>, accessed March 20, 2015.

⁷ See the National Transfer Accounts Manual published by the U.N., at http://www.un.org/en/development/desa/population/publications/development/NTA_Manual.shtml, accessed March 20, 2015.

⁸ Ian Talley, "Insidious Conspiracy Against Women Costs Economies Up to 30% of GDP, says IMF Chief," *Wall Street Journal*, February 23, 2015, available at <http://blogs.wsj.com/economics/2015/02/23/insidious-conspiracy-against-women-costs-economies-up-to-30-of-gdp-says-imf-chief/>, accessed March 21, 2015.

⁹ See the list of "sister studies" offered by the Health and Retirement Survey at <http://hrsonline.isr.umich.edu/index.php?p=sisters>, accessed March 23, 2015.

¹⁰ See U.N. Millennium Ecosystem Assessment at <http://millenniumassessment.org/>, accessed March 28, 2015.