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Time Use, Macroeconomic Models, and Macroeconomic Policy: Roundtable Discussion Summary and Additional Resources

INTRODUCTION

Data2X, with the support of the Bill & Melinda Gates Foundation (BMGF), brought together experts on time use (TU) data and experts on gender and macroeconomics to provide insights on the value of this data to inform economic policies that reduce gender inequalities and promote sustainable growth. The objective was to acknowledge but go beyond the use of TU data to characterize and measure the care economy and influence care policies. The roundtable, which took place on May 15, 2024, in Washington, DC, had a first hybrid (virtual and presential) 75-minute-long session and was followed by an in-person discussion over lunch with a smaller group of experts (see list of participants at the end of the note). In the hybrid session, Iris Buder (Idaho State University) and Odile Mackett (University of South Africa) presented research in progress using TU surveys for eight countries.

This note summarizes the main themes that were discussed and compiles information on initiatives and research in progress that participants mentioned during and after the session. In addition, the note mentions selected macro policy tools that use TU data to assess impacts on gender equality and the policy impact of TU data. It also attaches a list of additional references, including those shared by participants. The note starts with major themes that were raised in the discussion (it does not quote verbatim the comment but acknowledges the source); goes on to review relevant research that uses TU data, including macro policy tools, advances in methods, and research in progress; and ends with a listing of the policy impact of TU data.

This was the first of a series of three meetings on the topic that Data2X will organize in 2024-2025. We most welcome comments, additions and corrections, and ideas that could be included in the next meeting in the series, which seeks to inform policymakers.

THEMES FROM THE ROUNDTABLE DISCUSSION

On the use of TU data to inform macroeconomic policy:

- The first step is to capture attention and convince stakeholders about the critical importance of utilizing TU data to understand the macroeconomic impacts of women's unequal access to resources, education, health, and finance, as well as of domestic violence and women's unpaid workload. This involves articulating how this data shows intersections between non-market and market sectors, which affect the outcomes of various macroeconomic policies, such as fiscal, monetary, and financial policies. Both long-term model building, and short-term empirical research are needed to influence policy effectively. The broader audience beyond government officials, including private sector entities, should be engaged, as the latter plays a significant role in economic activities (Ratna Sahay).

- TU data is needed to address empirical questions on the impact of fiscal expenditure cuts on vital services in real per capita terms and as a share of GDP – and its effects on the redistribution of time between unpaid and paid work (Diane Elson).
- TU data should be linked to income/wealth survey data. It is good to hear of efforts to assess direct and indirect effects of [investments in care](#), including on labor productivity. There are dynamic multiplier effects of public investment on private spending and would be interested in discussing multiplier assumptions in modeling exercises (Ozelm Onaran).
- TU data offers key information to measure the costs of gender inequality with macro implications; it can show the suboptimal contribution of women in that women aren't able to participate more in the labor market and argues for labor market reforms seeking more gender-equitable labor markets (Indira Hirway).
- Detailed satellite accounts of household production in the extended System of National Accounts (SNA), calculated using TU data on unpaid activities producing goods for own final use, are relevant in macroeconomic analysis and policy, especially if these data are disaggregated at the main economic sector levels (Jacques Charmes).
- TU data is useful in developing a computable general equilibrium (CGE) model that can address some of the concerns raised at the meeting. This includes modeling care transfers between households and from government to households, e.g., public provision of childcare services to examine dynamic feedback effects. It also allows for the substitution of different care providers, e.g., market, government, and households and between household members. The documentation of the gender and care-extended social accounting matrix (SAM) developed for Colombia is available on Colombia's National Statistics Office (DANE) website (Martin Cicowiez).

What the IMF is doing:

- The IMF does not collect but does use sex-disaggregated data, including household survey and TU data, in modeling exercises to assess the impact of policies (such as educational, tax, parental leave, and childcare policies) on gender equality as well as on economic growth and stability; to refine policy recommendations; and to inform country-specific work (Lisa Kolovich).
- The IMF is developing new measures on macro-critical variables, including updated GDP that includes unpaid work. This is a work in progress—with guidance available in 2025 and country implementation the year after (Dragana Ostojic).
- Persistent advocacy is important: after three years of policy dialogue, finance ministers are now open to engaging on gender issues following the IMF's new gender strategy. Due to resource constraints, innovative approaches beyond traditional modeling are needed to maximize the impact of limited resources (Sahar Priano).
- The multinational TU survey in the IMF's database currently includes 30 countries, primarily advanced economies. The IMF's objective is to expand this survey to emerging economies to gather comprehensive data that can inform and improve policy decisions in these markets (Sahar Priano).

What the World Bank is doing:

- The World Bank has used TU data to assess the impact of female labor force participation on growth, as a tool for advocacy with finance ministers (Indonesia and Vietnam). TU data has been used in growth accounting decompositions, which includes formal labor force participation considering their unpaid work obligations. TU data can also be used to model the equity benefits of public investments (for instance in public infrastructure on women's water collection time), and in developing solutions as part of the set of options presented to finance ministers. TU data has informed the size and workings of the care economy and its links to female labor force participation, labor productivity, and growth (Matthew Wai-Poi).

On how TU data should be part of an expanded conceptualization of economic growth:

- We need to go beyond using GDP as the economic growth standard. A more comprehensive measure should incorporate climate and care policies that have gender (and time allocation) effects with huge macroeconomic impacts. The entry point may not be the economy, but we end up there. This is relevant to a 'beyond GDP agenda' that will be discussed at the forthcoming UN Summit of the Future (Papa Seck).
- SNA needs more serious reform than merely adding unpaid work using TU data. A more general accounting framework is needed that supplements GDP with human and ecological capabilities, that sees public spending as an investment in human capital, and unpaid care as an investment, not just a contributor to consumption (Nancy Folbre).
- TU data can provide granular information to reclassify activities as productive—for instance, time spent with young children is valuable in the long term, and thus productive (Ozlem Onaran).

On TU data needs:

- COVID has shifted TU significantly, but much TU data is pre-COVID, so policies are addressing yesterday's data, not today's. Newer, more efficient data collection tools are needed (Papa Seck).
- TU surveys at regular intervals are needed to assess trends and measure changes and impact (Iris Buder).
- We need better measures of supervisory (passive) care that is poorly captured now—UN Women is undertaking this work now (Papa Seck).
- We need data on the quality of time use, not just the number of minutes, alongside information on secondary/overlapping activities (Jerome de Henau).
- More robust measures of all types of time use are promising, but we also need to develop better ways of measuring the value of time, especially the unpaid work of women and children (Beth King).

On TU data challenges:

- TU survey methodologies are built on concepts of the family in Western countries; while different family forms and care arrangements and large family sizes in West African countries (i.e., Senegal) make it difficult to calculate things like unpaid work. Countries need significant methodological support to do the calculations (Latif Dramani).

- Data availability is limited, especially for cross-country comparisons. While some work is being done in this area, the extent of data depends on the specific requirements and existing resources. Building a comprehensive dataset is challenging due to these limitations (Papa Seck).
- Challenges are particularly acute when obtaining and analyzing data from various countries. There are availability (data usage rights) and quality issues. Country-specific analyses are deemed essential due to cultural and economic nuances, necessitating deep dives into subsets of TU data (Odile Mackett and Iris Buder).

On harmonizing TU data:

- The IMF needs more TU surveys and standardized data across countries. This data is crucial not just for modeling but also for individual projects at the country level (Glen Kwende).
- There is a trade-off between standardized data and data that is fit-for-purpose in individual countries, creating tension between the specificity of questions and the ability to make comparisons. Current data at the World Bank is available but patchy. Those working on it need to recognize its value to ensure more comprehensive and influential data collection (Matthew Wai-Poi).
- One option is a flexible approach to data harmonization, where certain standardized parts can be implemented across different country surveys while allowing specific sections to cater to unique contexts. This could encourage countries to be more open to sharing it with researchers (Glen Kwende).
- The need for flexibility and opportunism in utilizing available TU data is high, as well as the importance of harmonizing indicators rather than the surveys themselves (Papa Seck).

RELEVANT RESEARCH USING TU DATA

A sample of policy tools/models:

- Gender-aware macro models:
 - Theoretical and empirical models that include market and non-market sectors and their linkages have been developed by feminist economists since the nineties. They examine short- and long-run dynamics of the macroeconomy and gendered effects of policy options on women's employment and time spent in unpaid work, total working time, etc., to assess levels of time poverty and well-being. Gender-aware macro models based on different paradigms have emerged to examine how gender equality (or inequality) affects growth; others examine how growth-oriented macro policies affect gender inequality, including in labor markets.¹
- Macro-micro simulations:
 - Researchers based at the Levy Economics Institute have developed a measure of time and income (or consumption) poverty called LIMTIP (LIMTCP) and incorporated the measure in a macro-micro model that can be used for policy analysis, e.g., investment in physical

¹ See Berik, Rodgers and Seguino (2011), Seguino (2017), Dow (2020), Seguino (2021), Agenor and Agenor (2023), and Blecker and Braunstein (2022) for literature review.

infrastructures or expanding access to early childhood education (ECE).² They also examine the feasibility of redistribution of household responsibilities to alleviate time deficits and their effect on consumption poverty.³

- Researchers at the World Bank have incorporated social reproduction in the Fiscal Incidence Assessment (FIA) approach to capture intra-household resource allocations using information on exclusive or assignable expenditures. The approach estimates which household activities benefit the most (on net) from fiscal policies and which individual household members fill those roles. It shows the likely fiscal impact on gender inequalities using a broader set of economic activities and points of interaction with the fiscal system. Hence, individuals who perform unpaid work can either be made more productive by, or face burdens from, fiscal policy.⁴
- Jerome de Henau (2022) examines the fiscal implications of public investment in free universal high-quality early childhood education and care (ECEC) services in the UK using input-output methods.⁵ Specifically, it examines the extent to which it would pay for itself under different scenarios of pay increases. Labor demand and matching supply effects are also simulated using input-output methods, with sensitivity analysis involving different uptake rates of the program. Microsimulations are used to calculate increases in household income and tax liabilities and decreases in social security benefits spending.
- Input-output models, Social Accounting Matrices and CGE models:
 - Ozlem Onaran and Cem Oyvatt (2023) examine the impact of increased public spending in care economy, renewable energy, public transport, and other infrastructure on women's and men's employment and GDP in eight emerging economies using a vector autoregression (VAR) model for policy simulations.⁶ It makes use of multivariate time series data and builds on assumptions regarding the causal structure of the variables under investigation; these underlying assumptions are inferred from time use data.
 - Martin Cicowiez and Hans Lofgren (2023), and Martin Cicowiez, Hans Lofgren, Ana Tribin, and Tatiana Mojica (2023) developed care-embedded computable general equilibrium (GEM-Care) models for South Korea and Colombia, respectively.⁷ They are used to examine the policy options that can reduce women's unpaid care work so they can participate in the labor force, take on better paying jobs, and improve incomes of

2 Masterson, Thomas (2012). Simulations of full-time employment and household work in the Levy Institute Measure of Time and Income Poverty (LIMTIP) for Argentina, Chile, and Mexico.

Ilkcaracan, Ipek, Kijong Kim, Tom Masterson, Emel Memiş, and Ajit Zacharias (2021). The impact of investing in social care on employment generation, time-, income-poverty by gender: A macro-micro policy simulation for Turkey. *World Development*, 144: 105476

3 Zacharias, Ajit, Thomas Masterson, Fernando Rios-Avila, and Abena Oduro (2021). Scope and Effects of Reducing Time Deficits via Intrahousehold Redistribution of Household Production: Evidence from sub-Saharan Africa. *Levy Working Paper*.

4 Jellema, Jon et al. (2023). *Gender and Fiscal Policy: A Methodological Proposal and its Application to Jordan and Armenia*. World Bank Policy Research Working Paper.

5 De Henau, Jerome (2022). Simulating employment and fiscal effects of public investment in high-quality universal childcare in the UK. *International Journal of Child Care and Education Policy*, 16(1), 3.

6 Onaran, Özlem and Oyvatt, Cem (2023). The employment effects of public spending in infrastructure, the care economy and the green economy: the case of emerging economies. Project Report. International Trade Union Confederation (ITUC), Brussels, Belgium.

7 Cicowiez, Martin, and Lofgren, Hans (2023). Child and elderly care in South Korea: policy analysis with a gendered, care-focused computable general equilibrium model. *Philippine Review of Economics*. 60(1), 19-64.

Cicowiez, Martin, Hans Lofgren, Ana Tribin, and Tatiana Mojica (2023). Women's market work and childcare policies in Colombia: policy simulations using a computable general equilibrium model. *Philippine Review of Economics*, 60(1), 65-98.

households with care responsibilities. The GEM-Care model is based on a SAM database that uses TU data for specifying household female and male members' behaviors and includes different categories of households depending on their care responsibilities.

Advances in TU data methods:

- The International Labour Organization (ILO) has developed a [light time use module](#) (15 minutes long; CAPI design; 40 pre-coded activities) as an add on to labor force survey module series. The module considers the new ILO standards around informality and records simultaneous activities and recovery questions on child and adult care. It is being rolled out in number of countries within national labor force surveys (Samantha Watson).
- UN Women plans to compile a comprehensive report with harmonized indicators for all supported countries in the Women Count program, aiming for completion by October. The intention is to make microdata and indicators accessible for analysis, possibly through a dedicated website. The long-term goal involves building a platform where researchers can access and utilize the data freely (Papa Seck).
- The [Center for Time Use Research \(CTUR\)](#) has developed the extended light digital diary instrument (ELiDDI) tool to address measurement concerns associated with traditional recall-based time diary methods and a random time sampling (RTS) smartphone app.
- The World Bank is developing a self-administered smartphone-based pictorial time diary, known as the TimeTracker app, to address measurement concerns associated with traditional recall-based time diary method and improve data accuracy (Talip Kilic).
- The International Food Policy Research Institute is developing a survey instrument to measure individual time-use agency, which can be part of the household survey.⁸ It complements the [Women's Empowerment in Agriculture Index \(WEAI\)](#) and [project-level WEAI \(pro-WEAI\)](#), which include indicators related to an individual's total (paid and unpaid) workload.

Ongoing research:

- Structural Transformation and Economic Growth ([STEG](#)) is an academic program (Tufts University) that funds research on structural change out of agriculture at a more granular level, working with microdata for macro analysis, including individual and household choices of time allocation (using TU surveys) with implications for the allocation of the labor supply across sectors, the aggregate economy and structural change. STEG welcomes proposals for research under a small grants program (Doug Gollin).
- The Care Economy Africa Project (CEAP), funded by the William and Flora Hewlett Foundation, is developing a social accounting matrix (SAM) that incorporates paid and unpaid care sectors for Senegal and Kenya using the approach developed by Hans Lofgren and Martin Cicowiez. This research is breaking new ground for Africa countries (Latif Dramani).
- Ozlem Onaran (University of Greenwich) continues her engendering modeling work and is interested in using TU data to measure the effect of unpaid care work on labor productivity and compare this with the effects of paid care work.

⁸ Eisler, Sarah et al. (2021). Exploring gendered experiences of time-use agency in Benin, Malawi, and Nigeria as a new concept to measure women's empowerment, IFPRI Discussion Paper 02003.

POLICY IMPACT OF TU DATA

TU data has significantly influenced policy directly and indirectly. That is, TU data has both been used to shape concrete policies and programs and the 'policy horizon' or the beliefs and assumptions that people hold, which influence policymaking.⁹

- TU data has significantly raised policymakers' and public awareness of women's total economic contributions.
- Time use information has been used in:
 - monitoring progress in meeting gender equality and women's empowerment SDG goal #5, particularly Target 5.4, which explicitly calls for recognizing and valuing unpaid care and domestic work;
 - developing the ILO's "5R framework for decent care work" and UN Women's toolkit on unpaid and paid work;
 - the ILO's revision of the concept and definition of work to include various types of unpaid work (ICLS-19); and
 - the development of household production (extended SNA) satellite accounts.
- TU data provides crucial information and evidence in the development of:
 - the business case for investment in care, e.g., estimates of investment in care services and expected rates of return on investment;
 - various economic models that embed care or unpaid work used for policy analysis;
 - rethinking the meaning of productive activities, of investment vs. consumption, and accentuating the importance of human well-being externalities and social costs/benefits;
 - input-output tables and social accounting matrix databases that include paid and unpaid care sectors. TU data is crucial in the construction of well-being and human capabilities indicators that go beyond GDP per capita and educational level;
 - research on the impact of social, labor, anti-poverty, and fiscal policies as well as structural transformation, technological change and demographic change; and
 - research on the relationship between time constraints and unpaid work and distributional, welfare and labor market outcomes.
- TU information has helped strengthen the capacity of several advocacy groups such as care workers' organizations and alliances.

9 Buvinic, Mayra, and King, Elizabeth M. (2018). Invisible no more? A methodology and policy review of how time use surveys measure unpaid work. United Nations Foundation, Data2X.

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