Rethinking Global Child Labor Measurement: Time-Use Diaries, Extended SNA Work, and the Hidden Work of Girls

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1 Rationale and Motivation

According to the ILO's most recent global estimates, approximately 150 million children are engaged in child labour worldwide, with boys representing the clear majority (ILO & UNICEF 2024). These headline figures, however, are based exclusively on SNA work. They therefore overlook the large volume of extended SNA work that children—especially girls—perform on a daily basis, including domestic chores and sibling or elder care.

A long line of research (Guarcello, Lyon & Rosati 2008; Edmonds & Pavcnik 2005; UNICEF 2016) has consistently shown that girls undertake substantial amounts of extended SNA work. Yet global child-labour statistics remain almost entirely silent about this dimension, in part due to data limitations and the scarcity of comparable data across countries (ICLS 2018; ILO & UNICEF 2025).

This omission raises a fundamental set of questions: What would global child-labour estimates look like if extended SNA work were included? Would boys still appear to be the main providers of child labour? What might the trends over time look like? This paper seeks to provide answers to these questions by using diary-based time-use surveys and, eventually, by outlining a roadmap for constructing alternative child-labour estimates that encompass all forms of children's productive activities.

Diary-based time-use data provide an ideal and comparable way to measure extended SNA work. This is because time-use activity schemes include a detailed breakdown of extended SNA tasks—reflecting the fact that capturing these activities was one of the original motivations for developing time-use surveys. Time diaries are also essential for accurately measuring SNA work. Previous

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research shows very large gaps between questionnaire-based estimates—such as the instruments the ILO routinely uses to measure child labour—and diary-based measures, with diaries recording roughly three times more SNA work than stylised recall questions (Lamote de Grignon Pérez et al. 2025, conditionally accepted, *Journal of Development Economics*). This implies that if global child-labour statistics were based on diaries rather than recall surveys, estimated child-labour prevalence would be substantially higher. Time-use data therefore enable more reliable measurement of both extended SNA work and children's work overall.

Beyond being an important measurement question in its own right, this paper also speaks directly to the broader agenda of this NBER conference. Understanding persistent gender gaps in labour-market participation remains a central challenge in economics. Most research focuses on adults, however, it is difficult to imagine that the productive activities undertaken during childhood have no bearing on later labour-market trajectories. By shifting analytical attention to children's work patterns, this paper highlights the early formation of gendered economic inequalities and complements the conference's focus on structural transformation and women's time use.

2 Empirical Strategy and Preliminary Results

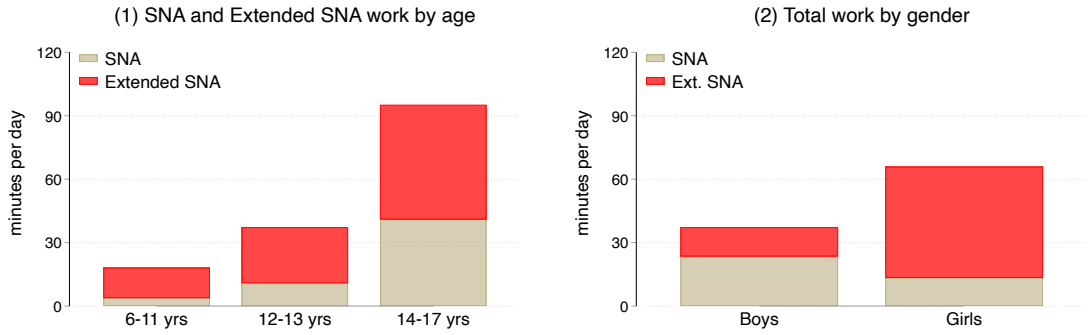
The analysis begins by examining the scale of extended SNA (ESNA) work and the displacement of activities: we quantify the amount of time children devote to ESNA tasks and assess which activities this work replaces—most importantly schooling, study time, rest, and leisure. We then analyse hazardousness through schooling interference. Because diaries record the exact timing of activities, they allow us to measure directly how much ESNA work takes place when children should be in school—work that qualifies as child labour under international statistical standards regardless of the task performed. This approach directly follows the principles set out by the International Conference of Labour Statisticians, which recognise schooling interference as a core criterion for identifying child labour (ICLS 2018). A further component of the analysis focuses on gender inequality. Because girls carry out the overwhelming majority of ESNA activities, incorporating ESNA fundamentally alters the gender profile of child labour.

Preliminary findings from the India 2019 Time-Use Survey reinforce patterns documented in earlier studies: girls perform most ESNA work and, once these unpaid domestic and care activities are included, they work substantially more total hours than boys—roughly 70–75 minutes per day, compared with about 40–45 minutes for boys. Crucially, a sizable share of this ESNA work takes place during school hours: visual inspection of the timing patterns suggests that approximately 30–40% of girls' ESNA episodes occur between 9:00 and 15:00. This indicates that a meaningful portion of girls' ESNA work is not only work—but child labour, according to international statistical standards.

Figure 1: The Scale and Timing of Extended SNA Work Among Children

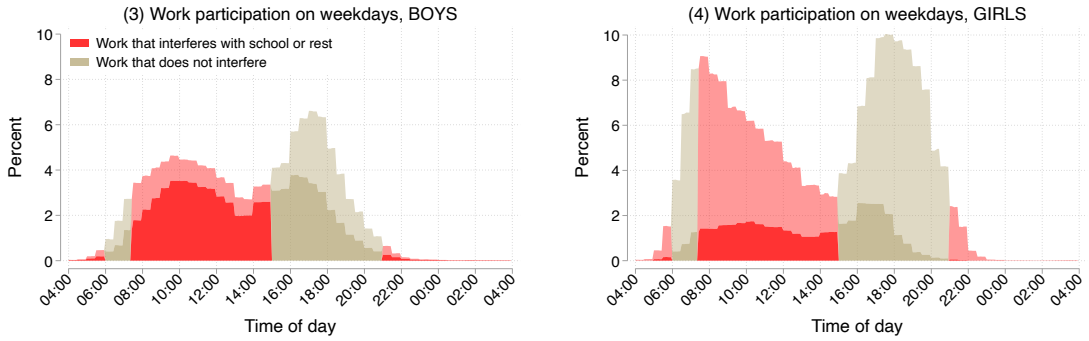
A. Average minutes per day in SNA and ESNA work, by age group

B. Average minutes per day in SNA and ESNA work, by gender



C. Distribution of work activities across the day: boys

D. Distribution of work activities across the day: girls



Notes: All panels use data from the 2019 Indian Time Use Survey for children aged 6–17. Panel (A) reports average minutes per day spent in SNA and extended SNA (ESNA) work across age groups. Panel (B) shows average daily minutes of SNA and ESNA work by gender. Panels (C) and (D) display the distribution of children's work activities across the day for boys and girls, respectively: the horizontal axis shows the time of day, and the vertical axis shows the percentage of children engaged in each activity at each moment. In these figures, light brown shading indicates ESNA work outside typical school hours, red shading indicates ESNA work recorded during school hours, darker tones represent SNA work, and lighter tones represent extended SNA work.

3 Data

India serves only as a starting point. By the time of the conference, we expect to include roughly ten countries such as Bangladesh, Mongolia, China, South Africa, Ghana, Kenya, Uganda, Tanzania, Egypt, and Argentina. Among these, India and China are especially important cases given their demographic weight in global child labour and the availability of multiple survey waves, which will allow us to explore changes over time. Although the focus of the paper is on low- and middle-income countries, we may also incorporate some high-income countries to compare the prevalence and gender patterns of extended SNA work in richer settings. While we do not expect substantial levels of SNA work there, we do anticipate finding meaningful—albeit smaller-scale—gender gaps

in extended SNA activities.

Members of the author team are responsible for maintaining and curating the Multinational Time Use Study (MTUS). Our plan is to incorporate as many of the countries used in this project as possible into the MTUS so that these harmonised datasets become publicly available to the wider research community. Jointly with the team behind the Child Penalty Atlas (led by Camille Landais, LSE), we are carrying out a major revamp of the MTUS to expand its geographical coverage and redesign key variables and activity classifications so that the MTUS better captures the realities of low- and middle-income countries.

4 Future Work

After demonstrating that extended SNA (ESNA) activities must be incorporated into any meaningful measurement or analysis of child labour, the next step is to explore how time-use diaries can be used to construct alternative child-labour estimates. In the NBER paper, we will present multi-country descriptive evidence based on diary data and develop proof-of-concept hybrid estimates for a subset of countries, illustrating how incorporating ESNA work would reshape standard child-labour statistics. These exercises aim to capture the full range of children's productive activities—both SNA and ESNA work—and to lay the groundwork for more comprehensive cross-national estimates in future work.

A key methodological challenge is that the ILO's child-labour definitions are based on work performed over a reference week, whereas time-use diaries observe only one (or at most two) diary days per child. While diaries allow very precise measurement of the volume and timing of work, they do not directly reveal how work is distributed across individual children throughout a full week. This complicates efforts to generate child-level classifications that are directly comparable to standard ILO estimates.

Going forward, we envision two complementary paths:

1. **Develop diary-appropriate indicators.** This includes measures such as average minutes worked per day, shares of children working at any point in the diary day, and measures of school-time interference—indicators that exploit the unique strengths of time-use data without forcing diaries into a weekly framework. These diary-specific metrics could complement existing global monitoring exercises by capturing patterns invisible in stylised questionnaires.

2. **Construct improved child-labour estimates by combining diary data with existing ILO survey data.** Rather than discarding ILO child-labour estimates, we aim to enrich and refine them. One strategy is to use diaries to obtain accurate measures of the total amount and timing of children's work, and then combine this with distributional information from household surveys (e.g., MICS, labour force modules) that underpin ILO estimates. This hybrid approach

would allow us to: correct questionnaire-based under-measurement of work hours, incorporate ESNA work into the overall tally, and produce simulated weekly child-labour classifications that approximate the logic of ILO standards while benefiting from the precision of diaries.

We outline these challenges and methodological strategies in the paper, though we do not expect to present fully developed alternative child-labour estimates at the NBER meeting. Our aim instead is to demonstrate the feasibility and value of these approaches and to present a clear roadmap for future work.

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