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Still waiting for the (data) revolution. Examining supply-demand mismatches in the production of SDG4 metrics

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ABSTRACT

In the context of the 2030 Agenda for Sustainable Development, high hopes were placed in the production of global metrics. Such expectations rest upon two main assumptions: first, that global data demands will lead to an increase in domestic data supply; and second, that global and domestic data needs are closely aligned. Having passed the halfway point of the SDGs, this paper critically examines each of these assumptions in relation to recent developments in the education field. In so doing, it highlights the need for greater reflection on the opportunity costs associated with the production of globally comparable data, and for an empirically-informed analysis of the necessary resources and conditions for strengthening education information systems and domestic statistical capacity.

1. Introduction

In the run-up to the adoption of the UN's 2030 Agenda for Sustainable Development, high hopes were placed on the potential of data to instigate a virtuous circle of improvement by informing the action of a variety of stakeholders and signatories committed to the realization of the 17 Sustainable Development Goals (SDGs). As early as 2014, the UN Secretary-General called for a "data revolution", prior to appointing an Independent Expert Advisory Group on the Data Revolution for Sustainable Development. The group produced a widely-circulated report, *A World that Counts*, which noted that "Data are the lifeblood of decision-making and the raw material for accountability" (Data Revolution Group, 2014, p. 2). The report heralded the measurement efforts as the lynchpin of the 2030 Agenda, arguing that data improvement was imperative if the new goals were to be realized.

In coherence with such reasoning, considerable effort was put into the development of the Global Indicator Framework, understood as the cornerstone of the follow-up strategy. The centrality given to measurement efforts is today amply recognized as one of the most visible and ground-breaking innovations brought about by the 2030 Agenda. While the use of quantitative targets is not new, the specificity and novelty of the SDGs lie in the fact that, for the first time, these were not identified as part of an ex-post operationalization effort, but explicitly conceived as the core of the new agenda (Fukuda-Parr, McNeill, 2019).

The high expectations placed in the production of global metrics rest upon two main assumptions: first, that global data demands will lead to an increase in domestic data supply; and second, that global and domestic data needs are closely aligned. Such assumptions do certainly appear to drive efforts to track SDG4 targets according to the metrics established by the Global Indicator Framework and the education-specific Thematic Indicator Framework. Hence, it is expected that SDG4 reporting requirements will provide countries with the necessary impetus to bolster their statistical capacity, and will compel international organizations (IOs) to support them in such efforts, so that SDG4 data coverage will improve over time. It is also assumed that, by collecting the data necessary to report on SDG4, countries will be better equipped to advance their own agendas – with SDG4 metrics being relevant, actionable, and applicable to local education planning efforts.

While these assumptions have gone largely unexamined, the experience accumulated by countries and IOs in their efforts to report on SDG4 offers now the opportunity to interrogate such ideas. Having passed the halfway point of the SDGs, this paper critically examines each of these assumptions in relation to recent developments. In so doing, it highlights the need for a more nuanced debate on the challenges and opportunity costs posed by global quantification exercises. Ongoing discussions on the possibility of rethinking monitoring priorities might benefit from an empirically-informed reflection on the complex intersection between global data demands and domestic data needs – an approach that, in turn, requires greater attention to the context and conditions in which education data is produced, and to the properties

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specific to different indicators and sources.

2. Filling the gaps: Slow and unequal improvements in data coverage

A first assumption shared across the various efforts to monitor the SDGs is that, while countries might initially struggle to provide data and report on all SDG indicators, the data requirements associated with the Global Indicator Framework will incentivize countries, donors and other development partners to enhance their statistical systems – so that data gaps will progressively be filled. In line with this assumption, the UN Statistical Commission established different initiatives oriented precisely at supporting the coordination and funding efforts necessary for strengthening global and national statistical capacity. Examples of these initiatives include the *High-level Group for Partnership, Coordination and Capacity-Building for Statistics for the 2030 Agenda for Sustainable Development* and the *UN World Data Forum* (United Nations Statistics, 2021).

Almost a decade after the adoption of the 2030 Agenda, however, there are good reasons to cast doubt on such an assumption. The SDG data demands have not always triggered an immediate response on the supply side – that is, among countries and development partners responsible for supporting domestic efforts at data collection and reporting. Progress is thus more limited and slower than expected across all SDG areas, and in education in particular. In a recent assessment of SDG data availability, Goessmann et al. (2023) identified considerable variation across SDG sectors. In the case of education, only 38.3% of data series have data for at least 2 years since 2015. SDG4 thus features at the bottom of the chart, ranking as the 6th area with the lowest levels of data availability. Similarly, the *Sustainable Development Report 2021* identified SDG4 as one of the goals for which country coverage and timeliness remain more problematic (Sachs et al., 2021).

In line with such estimates, the UNESCO Institute for Statistics (UIS) noted in a 2019 report that data availability remained a major constraint, with fewer than half of the countries providing data on core indicators such as learning outcomes and primary and secondary education (UIS, 2019). The UIS Data Digest published in 2020 remarked that the coverage rate averaged 54% for SDG4 global indicators and 53% for thematic indicators. The report also highlighted that, for 7 out of 43 SDG4 indicators, there was no data available, a pattern revealing enduring data gaps (UIS, 2020). More worrisomely, progress in terms of data coverage appears to be slow: by 2022, the coverage rate for global indicators still only averaged 57% for global indicators, and 56% for thematic indicators (UIS, 2022).

While initial low levels of data availability need to be understood in relation to the considerable expansion of education-related indicators in the context of the UN's 2030 Agenda, the limited progress made since the adoption of the SDGs suggests that global data demands do not automatically increase domestic data supply. In response to such shortcomings, different education IOs and development agents have launched initiatives oriented at remedying data gaps in education, often focusing on the establishment, consolidation, and improvement of Education Management Information Systems (EMIS). Such initiatives rely on a combination of policy advice, technical assistance and funding, with examples including UNESCO, UNICEF and the World Bank's recent work on EMIS (UIS, 2020; UNICEF, 2020; World Bank, 2020) or the work on data systems and data advanced through KIX (a joint venture between the Global Partnership for Education and the International Development Research Centre) (GPE, 2019). There is a concerted effort to improve countries' capacity for education data collection and use – a push that cannot be dissociated from the pressures and data demands brought forward by SDG4. Yet it is also becoming increasingly clear that any enhancement in statistical capacity will not happen overnight. Even if a number of countries and development partners have embarked on initiatives to improve data coverage levels, such efforts will take a while to bear fruit. This realization coincides with the growing awareness of the complex challenges faced by statistical capacity-development initiatives. As advanced by recent works on the political economy of statistical capacity, the enhancement of national statistical systems in the Global South is inseparable from the strengthening of state capacity, and will require sustained funding and technical assistance as well as improved donor coordination (Taylor, 2016; Lokshin, 2022; Kim, 2022).

In addition, evidence suggests that statistical capacity might not be the only obstacle preventing or slowing down improvements in SDG reporting levels. As noted by Kitmueller et al., 2021, low levels of reporting are not necessarily or exclusively the product of statistical capacity limitations, but they are also indicative of limited political interest. Indeed, a recent study by the World Bank examining different components of countries' statistical capacity has found that the indicator relative to SDG reporting has the lowest correlation with countries' overall score in terms of statistical performance. In other words, even those countries scoring relatively well in relation to data infrastructure or other dimensions of statistical capacity might exhibit low levels of SDG reporting (Dang et al., 2021). Such developments suggest that reporting pressures brought forward by the SDGs do not operate as a sufficiently powerful incentive for countries to produce the necessary data to populate SDG indicators. Reasons behind such limited interest and uptake might be explained by the problematic alignment between global and domestic data needs – a question addressed in the following section.

3. Data to serve whose agenda? Ambiguities on the ultimate uses of global education datasets

A second (and less explicit) assumption behind the expectations placed on SDG indicators is the notion that global data needs are closely aligned with,or at least functional to, domestic data needs. Put differently, it is assumed that SDG indicators and global datasets in general are not only useful to track global progress, orient aid commitments, and create structures for transnational accountability mechanisms – but that they are also of direct interest and utility to national decision-makers and other domestic stakeholders. Hence, countries' efforts to populate SDG indicators are expected to simultaneously serve domestic data demands. To be sure, and as discussed below, the notion that SDG data demands and domestic data needs are naturally aligned is increasingly disputed (MacFeely, 2020; Avendano et al., 2021). The potential divergence between global and national data needs was captured early on in a report prepared by the Partnership in Statistics for Development in the 21st Century (PARIS21), established by the UN, the European Commission, the OECD, the IMF, and the World Bank. The report noted critically that "A concerted effort from the international community over the next 15 years will be needed to ensure that SDG monitoring does not impose inordinate costs on developing countries or divert resources from achieving national statistical development strategies" (PARIS21, 2015, p. 20).

However, the assumption that SDG4 data is relevant and actionable at the country level has de facto shaped global efforts at statistical capacity-building. Hence, ongoing initiatives continue to depart from the idea that generating data to monitor SDGs will also support domestic policy- and decision-making. Accordingly, international plans to enhance national statistical systems continue to put a premium on the production of SDG indicators, and potential trade-offs are rarely examined in depth (cf. HLG-PCCEB, 2017).

The field of education is no exception to such trends. The alignment between global and domestic data needs is often implicitly assumed and has not been the object of systematic examination. Yet, in relation to certain areas, it is becoming increasingly clear that not all global indicators are necessarily policy-relevant at the domestic level, and that the data sources and formats more amenable to comparative and global reporting purposes are not necessarily those more appropriate to operate as policy-informing tools at the domestic level. Such tensions have recently been captured by Rossiter (2020), who observed that "support to statistical capacity has been driven by global needs and has

overlooked country demand […] A focus on monitoring global goals has detracted from the local demand for data and subnational analysis needed to actually achieve the goals" (p. 5). The author reflected on the fact that global initiatives oriented at improving statistical capacity-building in education tend to be supply-driven in nature, thus compromising the usability and relevance of data.

Debates around the production of globally comparable learning data are a case in point of such tensions. The negotiation of the reporting protocol for learning indicators has been shaped by a recurring tension between in-built comparability and country ownership as two basic principles expected to orient the production of SDG4 data (Fontdevila, 2021). Since the adoption of SDG4 it has become apparent that the data sources more susceptible to be used for SDG reporting purposes are not necessarily those more likely to support and inform education planning efforts. Thus, national learning assessments or citizen-led assessments might hold great potential to inform or spur domestic policy action, but, in raw form, do not necessarily lend themselves to comparative and SDG4 reporting purposes. Conversely, cross-national learning assessments are better-suited for global monitoring purposes (in that they are easier to harmonize), but unlikely to have the granularity or frequency necessary for policy formulation and education planning efforts – let alone for accountability purposes (Lockheed, 2016). In fact, there is growing awareness that the comparability imperative associated with global reporting might end up emptying learning assessments from their policy-planning potential – by incentivizing countries and donors to privilege a specific subset of assessments administered externally and unlikely to realize the full potential of the learning metrics. In light of such risks, the UIS has gone to great lengths to maximize data-source flexibility and ensure that the SDG4 monitoring needs do not distort country efforts to strengthen systems of learning measurement (UIS, 2022). However, striking such a balance has been far from a straightforward process – technical and political challenges have been manifold and persistent (Fontdevila, 2023).

Such tensions echo an emerging line of reflection within development circles. Different researchers and practitioners have recently drawn attention to the fact that most global datasets are frequently of little use to local decision-makers, as they lack the granularity and precision necessary to orient domestic policy-making, resource allocation or service delivery. Jerven (2017), for instance, has written on the trade-offs between precision and relevance, and on the need to pay greater attention to the alignment between SDG indicator framework and country needs. In a paper addressing the economic and opportunity costs of the measurement agenda associated with the SDGs, he concluded:

> *Governments need disaggregated, high-frequency data linked to subnational units of administrative accountability. In contrast, the SDGs emphasize global goals, standards, and comparability […] the danger is that donor preferences for global comparable data come at the expense of the reliable and high-frequency data needed at the local level. (*Jerven, 2017*, p. 14)*.

Along the same lines, MacFeely and Barnat (2017) have argued that the expansive nature of the SDG monitoring framework could end up diverting statistical resources from the production of nationally relevant indicators. The authors call for the need to design statistical capacity-building programs that do not trump national and regional priorities. Custer and Sethi's (2017) remarks on the disconnect between the supply and demand for development, and the risk that SDGs end up producing "data graveyards", point to similar problems. More recently, DeRock and Mügge (2023) have coined the notion of *statistical trilemma* to refer to the trade-offs faced by international statistics – specifically, the difficulties in satisfying harmonization, prescriptiveness, and suitability. The authors conclude that local relevance can only be guaranteed if concessions are made either in terms of prescriptiveness or harmonization. Overall, there is growing awareness of the opportunity costs of the measurement needs associated with global goals and international comparability.

4. Concluding remarks

Global quantification efforts have tended to be the object of polarized views: on the one end, development and practitioner circles are generally optimistic about the transformative potential of data; at the other , academic circles have often been suspicious of such exercises, bringing to the fore the risks inherent to global metrics. Uneven success in producing SDG4 indicators suggests that the debates resulting from these conflicting views might benefit from greater attention on the impact of global goals and reporting procedures over national statistical systems.

Hence, the development field has placed high expectations upon the potential of the so-called data revolution. Yet, in the context of the SDGs, efforts to measure progress have revealed important challenges and fault lines relative to the difficulties faced by domestic data suppliers to meet global demands, and to the limited relevance of global datasets for domestic needs. The mismatches between global data demands and domestic needs, however, should not lead us to conclude that global quantification efforts are pointless or inherently problematic. Rather, they are indicative of the need for an empirically-informed analysis of the necessary resources and conditions for strengthening education information systems and domestic statistical capacity. They also point towards the need for greater reflection on the opportunity costs associated with the production of globally comparable data, and the potential trade-offs between comparability, actionability and relevance. Such debates cannot remain at a theoretical level but need to grapple with the political, economic and social context in which data is produced, taking into account the resource constraints faced by many statistical systems and national administrations, particularly in low- and middle-income countries. Likewise, statistical capacity cannot be addressed in isolation, but it can only be improved if administrative and state capacity are strengthened.

Within academic settings, global quantification efforts have spurred considerable debate and have often been met with skepticism – and SDG4 is no exception to this. There is no shortage of warnings and critical assessments of the perils of quantification and datafication. Oftentimes, such criticisms focus on validity issues – particularly, on the impossibility of accurately capturing a given phenomenon through quantitative indicators, and on the reductionist effect of translating complex concepts into stylized representations. Other sources of concern include the risk of encouraging strategic behaviors and unproductive blame games, as well as distorting educational priorities by disproportionately centering attention on those educational dimensions more amenable to quantification. These lines of criticism tend to depart from the assumption that education data is gaining prominence in the governance of education systems across the globe, and that the growing availability of (comparable) education data is inadvertently redefining the rules of the game. However, and despite concerns about the risks of such trends, the reality in most countries is that education data remains in short supply, hindering basic education planning and resource allocation efforts. Yet there is limited understanding of the structural forces and contextual factors preventing countries from developing robust information systems – and of the development and policy strategies more likely to effectively address existing data limitations. Gaining insight into such questions remains a key endeavor for comparative and international education research.

Overall, such developments suggest that further research is needed to advance our understanding of how and to what extent the data demands associated with the Education 2030 Agenda might affect domestic data-collection efforts, and under which circumstances they can enhance (rather than strain or overburden) statistical capacity at the national level. The impact of SDGs' reporting requirements on national statistical systems has been the object of limited interrogation – yet greater

reflection on the complex intersection between global data demand and domestic data needs is required if SDG4 is to be realized.

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