Invited Lecture Series: 2/2023

RELEVANCE OF LARGE DATASETS IN POLICY MAKING

Anshuman Kamila, IES
Assistant Director, DBT Mission
Cabinet Secretariat
Government of India

21 July 2023

COUNCIL FOR SOCIAL DEVELOPMENT
(An Autonomous Research Institute supported by Indian Council of Social Science Research, Government of Telangana and Reserve Bank of India)
Southern Regional Centre
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Anshuman Kamila, IES

Anshuman is an officer of the 2020 batch of Indian Economic Service. After finishing his training in economics from St Stephen's College, Delhi School of Economics and Jawaharlal Nehru University, he served in the Reserve Bank of India as a Manager in the Department of Economic and Policy Research. Subsequently, he joined the Indian civil service and was awarded the President of India Gold Medal for being the best Officer Trainee at the 95th Foundation Course at Lal Bahadur Shastri National Academy of Administration, Mussoorie. An NTS scholar, a Dr Manmohan Singh Fellow at Delhi School of Economics and a Junior Research Fellow of UGC, Anshuman continues to take keen interest in academics, interface between academics & policy making and capacity building in the civil service. He is currently Assistant Director, DBT Mission, Cabinet Secretariat, Government of India.

RELEVANCE OF LARGE DATASETS IN POLICY MAKING

A very good afternoon to one and all present.

Prof Sujit Kumar Mishra, Regional Director, CSD Hyderabad;

Mr Nagaraj Meda, Chairman and Managing Director, Transgraph Consulting;

Dr Soumya Vinayan, Assistant Professor, CSD Hyderabad

and

my principal coordinator; my fellow travellers in the path of statistical exploration and inference making; ladies and gentlemen.

Before I begin sharing my thoughts and perception with you, let me disclaim that these are purely my own and do not necessarily reflect the views of the Government of India. Aside from fulfilling the official requirement for a civil servant speaking at a public forum, I think the disclaimer is important because as a young officer in the grand scheme of governance, it is likely that my views are not tempered by the wisdom of age or hindsight born of experience and more likely than not to reflect the brashness of youth or the impatience of the inquisitive. As one is aware, “With great power, comes great responsibility.”; the opportunity that Prof Mishra has presented me with today in inviting me to speak to this assembly of young scholars from pre-eminent institutions of India has made me all the more aware of the responsibility that I must possess when I wield the power to contribute to your thoughts. At the same time, I am also mindful that I am standing between you and more exciting events such as lunch – so, I will keep my remarks to the briefest possible.

I have been able to gather that over the course of the past 2 weeks, you have had the occasion to listen to stellar experts and noted academicians on various aspects of large data sets. What more can I possibly tell you, except to confess that at this point of time I know much less than you about handling large data sets! My tryst with large datasets occurred sometime in 2017 when I assisted my mother in exploring gender wage earnings gaps in the Indian labour market for one of her papers published in *The Indian Journal of Labour Economics* in 2018 – we found that wage earnings gaps in the Indian labour market existed not so much because of differences in 'merit' between male and female workers as much as because of unknown factors, with varying magnitudes of such differences across states / UTs. But I have not had a chance to delve deeper into such datasets, or explore the entire suite of the rich data sets in Indian context. Perhaps I will look forward to the next time Prof Mishra and his colleagues organise such a workshop and apply to be admitted to sit on the other side of the podium – of course, hoping that my bio data is appealing enough to the rigorous scrutiny of fine academicians! However, having been a devoted student of economics who considers that anything one opines must be robustly backed by data and someone who has lectured fellow civil servants on the importance and ways and means of evidence-based policy making at Lal Bahadur Shastri National Academy of Administration at Mussoorie, I would like to share my thoughts on how I think large data sets are relevant in policy making in India.

Let me begin by referring to an illustrious former Governor of the Reserve Bank of India who said in an interview after hanging the boots, "As a policy maker, you're desperate for more data to guide your policy making. You would love to have a ton of research telling you, 'this works, that doesn't, thus and such is how you should go.' But, in practice, you don't have it. So you're going 60 miles per hour with the rain pattering on your windshield, and the windshield is fogging

up. And you're on a highway, so you can't stop, because you could cause a pile-up, but you have no idea what's in front of you. That's sort of policy making." The long and short of it being that research based on large datasets is helpful in making policies that are more likely to be impactful and effective and the absence of such research makes policy making like sailing a ship under a star-less sky with a broken navigation! The history of Indian policy making juxtaposed with that of Indian statistical system offers rich examples of how good data-driven research leads to impactful policy making and salubrious socio-economic outcomes soon after. In the 42nd Round of NSSO survey 1986-87, we had 69.23% of females of all ages above 6 years never having been enrolled in a school. Infant mortality rates and maternal mortality ratio at the turn of the century were at unspeakable levels. A spark was lit due to judicial activism and there was groundswell of support for supply side interventions in the primary education sector; a committee of education ministers was set up to come up with what are the problem areas and what needs to be done; the Sarva Shiksha Abhiyan was launched to firmly establish the roots of Right to Education for children in India. Similarly, a parallel movement of sorts was initiated in the field of health facilities; multiple interdisciplinary committees were set up under the aegis of a core committee which developed a set of cogent policy priorities and action areas. The National Rural Health Mission took off. So, what happened when you had data-driven policy making based on slightly higher allocation of resources to areas of national socio-economic priority? The 71st round of NSSO for 2014-15 showed that boys or girls in the rural or urban areas had comparable school attendance rates; infant mortality rates and maternal mortality rates had improved significantly.

Apart from helping frame policies *de nuvo*, large data sets have also helped in building a cogent case for mid-course policy correction or urged a closer look at whether policy is *really* working and could we do better with simple tweaks in our approach. From October 2014, India has worked towards the goal of eliminating open defecation through the Swachh Bharat Mission. By December 2018, 27 states had been declared open defecation free (ODF). Although rural latrine ownership increased considerably over this period, certain studies based on a survey conducted by the Research Institute for Compassionate Economics (r.i.c.e.) that yielded a large dataset showed that approximately 40% to 50% of rural people in states such as Bihar, Madhya Pradesh (MP), Rajasthan, and Uttar Pradesh (UP) defecated in the open in late 2018 – in all fairness, it had declined from about 70%. These studies showed that even though policy implementation on the ground had raised the numbers of those who owned a latrine, the fraction of people who own a latrine, but who nevertheless defecate in the open, did not change between 2014 and 2018 in the four states; a lot of the compliance that was achieved was based on measures that did not enjoy official sanction in policy circles and pernicious impacts of such measures were asymmetric in their incidence. Thereby, the need to transform the social attitudes that have made open defecation so prevalent and challenging to address was highlighted, and I vividly recall a very senior civil servant driving the transformation at the national level drawing lessons from such studies.

Large datasets have also helped establish bankable figures regarding the magnitude of evolving socio-economic phenomena, thereby building a case for nuanced public policy intervention. India's presidency of the G 20 is the flavour of the day, and one is aware of the how digitisation has transformed myriad aspects of life in India – something that India is showcasing to the world as a global role model. The pace of digitisation has transformed societies and

ushered in a new economic revolution with significant implications for the future of work and employment in India and globally. The gig-platform economy is at the core of this unfolding paradigm shift, and digital platforms in particular provide promising income opportunities to workers with different skill sets and wider market access to businesses. Against this backdrop, NITI Aayog as the premier think tank of the Government of India had commissioned a report on 'India's Booming Gig and Platform Economy – Perspectives and Recommendations on the Future of Work'. Briefly, the report released about 2 months ago offers a scientific methodological approach to estimate the job creation potential of the gig-platform economy as well as provides wide-ranging perspectives and recommendations on the gig-platform economy in India. Quite logically, perspectives and recommendations stem from an intelligible assessment of the size of the gig-platform economy's labour force and its socio-economic characteristics such as educational qualifications, skill levels and social security net coverage of such workers. However, to quote the report, "Though the Indian statistical system is very robust in the case of the conventional economy, official data presently does not estimate gig and platform workers due to the amorphous nature of work in the sector." Therefore, to arrive at tractable estimates of the size of the gig-platform economy labour force, a team of expert labour market researchers used NSSO's Employment-Unemployment Survey as well as Periodic Labour Force Surveys to estimate numbers of "workers with gig worker-like characteristics" for recent years and to project estimates for the next decade. These estimates highlight that even though workers with gig worker-like characteristics form 2.6% of the non-agricultural workforce and 1.5% of the total livelihood in India now, they may well rise to about 6.7% of the non-agricultural workforce and 4.1 % of the total workforce by 2030, and though gig work, which is concentrated in middle level skills currently, is likely to diversify into both high skilled and low skilled types

of gig work in the future – both these findings having implications for policy making, for example regarding provisioning of social protection coverage for such workers. The later recommendations in the said report build on these estimates. Thus, if I may be allowed an opportunity to make a small suggestion to our young researchers here, instead of being content in trying to derive straightforward insights from the large datasets you have had the occasion to explore in your work or during your stint here, please think of out-of-the-box questions and approaches to finding answers to questions that lie beyond the visible horizon.

I should also highlight the role large datasets play in helping civil servants such as myself derive satisfaction about doing our jobs alright and telling us what has not panned out as planned. I remember that in the initial days of inception of our statistical systems and establishment, a lot of discussion revolved around whether sectoral statistics should be collected by the concerned Ministry/ Department or an independent body should be entrusted with the overall responsibility of collecting statistics. Years later, we have come to have the benefit of having well developed systems of both administrative data sources and survey/census based statistics, whereby we use the latter to validate the trends seen in the former. An illustration would be the Gram Swaraj Abhiyan, launched by Hon'ble Prime Minister to promote social harmony, spread awareness about pro-poor initiatives of government, reach out to poor households to enrol them as also to obtain their feedback on various welfare programmes. As a special endeavour during the Gram Swaraj Abhiyan, it was envisaged that saturation of eligible households/persons would be made in 21,058 identified villages under seven flagship pro-poor programmes, namely, Pradhan Mantri Ujjwala Yojana (for affordable cooking gas connections), Saubhagya (access to reliable electricity supply), Ujala scheme (for provision of

LED bulbs), Pradhan Mantri Jan Dhan Yojana (access to basic savings bank accounts), Pradhan Mantri Jeevan Jyoti Bima Yojana (access to affordable life insurance), Pradhan Mantri Suraksha Bima Yojana (access to affordable accident insurance) and Mission Indradhanush (access to full suite of immunisation). The 5th round of National Family Health Survey 2019-21 covering 6,36,699 households, 7,24,115 women, and 1,01,839 men attests to the success of the Gram Swaraj Abhiyan – as borne out in enhanced access to electricity, immunisation coverage, bank account and insurance coverage, etc. If I were to look around, I also recall reading an opinion piece authored by Prof Mishra and his colleagues on the improvement in health statistics in Telangana between the two NFHS rounds 4 and 5; it talked of how child sex ratio and maternal and neonatal mortality rates have improved over time and how state schemes have contributed to these salubrious developments. The article also noted with concern that the variation in these indicators across social categories and geographical locations of the state left room for nuanced and focused implementation of policies. Similarly, the latest update of the global Multidimensional Poverty Index (MPI) released last week by the United Nations Development Programme (UNDP) and the Oxford Poverty and Human Development Initiative (OPHI) at the University of Oxford states how about a total of 415 million people in India moved out of multidimensional poverty in India between 2005-06 and 2019-21, with deprivation in all indicators declining in India and "the poorest States and groups, including children and people in disadvantaged caste groups, having the fastest absolute progress." To borrow from Robert Frost, there are 'lovely, dark and deep' woods, but we civil servants have promises to keep and miles to go before we sleep. The glass is still half full as quality education, skilling for higher order employment, health beyond vaccination, IMR and MMR, diversified livelihoods, AI-priming of enterprises

and private investment in hitherto backward regions require exponential scaling up for an India for all, for universal human well-being.

To hark back to the concerns expressed so eloquently by a former central banker of India, policy making is without doubt an exercise characterised by many unknown knowns and unknown unknowns! While the unknown unknowns may well be grouped into white noise errors or 'acts of God', large data sets help shine light on multiple possible unknown knowns. Deputy Governor of Reserve Bank of India Dr Michael D Patra's recent speech is worth recalling here: "In this area of our work, we are forced more often than not to fly blind, yet always mindful of the fact that policy errors can be costly and welfare diminishing for our society. In this mountain of dark uncertainty, statistics provide a foothold by visualising causal relationships or the absence of them, simulating plausible scenarios, peering into the crystal ball at the future with forecasts, feeling the pulse of households and businesses and communicating our assessment to the rest of the world so as to build common expectations, all chiselled with precision and confidence." Even though he has referred to many high frequency statistics – a topic I plan to return to later – which inform the process of monetary policy making in India, I share his admiration of large datasets in making the work of policy making in general seem less of a tatonnement!

An old English saying goes, "One does not miss the water until the well runs dry!" I surmise it hints at an alternative approach to looking at the relevance of large data sets in policy making, by experiencing a scenario when a much-cherished large data set is unavailable for navigational purposes to policy makers. For years now, NSSO's Consumer Expenditure Survey (CES) helped provide credible evidence of the size and trend of consumer expenditure, thereby helping us derive the levels of poverty and state of inequality. The last CES data

available for public consumption dates back to 2011-12 and since the 2017-18 data was never firmly placed in the public forum, our ability to derive insights from it has been somewhat compromised. For example, a debate titled by some leading academicians as the 'Great Indian Poverty Debate 2.0' has been raging. What is the core of the debate? That since official data is absent (namely, the 2017-18 CES data), alternative estimates have had to be drawn up so as to make up for it. Now, mind you, there is no dearth of these alternative estimates: estimates abound, the estimation approaches are aplenty; but concomitantly, conclusions vary widely! (And may I hastily add wildly?) Leading Indian researchers at the IMF have used National Accounts Statistics to suggest that poverty has declined over a decade starting 2011-12; commentators at the World Bank in a working paper have used an alternative large data set from a non-government source to support the IMF researchers' findings; members at the Prime Minister's Economic Advisory Council, professors at Columbia University and some leading lights of the academic community who have lectured during this ongoing workshop have used Periodic Labour Force Survey data; and also some intrepid researchers have industriously accessed the 2017-18 CES data to provide estimates. Of course, each researcher has their own reasonable justification for deriving these estimates and a compelling need to derive them. But from a policy maker's vantage point, these studies have been questioned rather fundamentally – some assumptions have been controverted, comparability of estimates with trend data from the past has been doubted, representativeness and robustness of dataset used have not been universally accepted, there is lack of consensus regarding the figures derived using the same data for the same year and the trajectory of poverty level since 2011-12 is unclear. Some have stated that Indian poverty has turned into a great eternal mystery! As one can imagine, this severely limits a policy maker's ability to assess the path one has coursed through in the past and chart out a roadmap for

the future. What is it one has been doing right? What are the trends one must be wary of? What are the ingredients to making policy that effectively tackles income poverty? These are pressing questions, but in the absence of official data, I as a policymaker would seem to be adrift mid sea! I am reminded of a story by O Henry, titled *Pendulum*, that I read in school. Set in America, it talks about a married man lamenting his wife's absence for a day and the toll it takes on him and his life. "*She had become so thoroughly annealed into his life that she was like the air he breathed – necessary but scarcely noticed.*" I would not be too off the mark to opine that large data sets play a comparable role in a policy maker's professional life.

While I wax eloquent about large datasets that our statistical establishment produces, let me also take a moment to remember the legendary Professor Prashanta Chandra Mahalonobis whose birthday on June 29 is celebrated as Statistics Day in India. Professor Mahalanobis once said, "Statistics would be a key technology in planning the economic development of independent India because it represents the arithmetic of human welfare." Ever since independence, governments in India have placed primacy on poverty measurement and India has emerged as a pioneer in this field. Indeed, it has been a role model for several developing countries as regards building a representative and robust statistical establishment is concerned. In fact, such has been the reliance on and faith in large datasets that there has been a constant call for increasing the frequency and size of surveys that yield such datasets. As a newbie civil servant in my early days at the Ministry of Finance, I too have toiled like the proverbial squirrel trying to impress upon the statistical establishment to pay heed to such calls. Of course, these demands emerge from practically a consensus that robustness and representativeness of survey methodology is beyond any misgiving. However, in recent times, cautionary

notes have been aired about the data quality of such surveys, about the sampling frames being outdated and non-representative, about survey mechanisms being archaic and not adapted for capturing rapid changes. For instance, it has been suggested that NSS has a rural bias in terms of representation and over-estimation of the SC population and the working-age population and the refusal to respond rate is correlated with other confounding variables – all of this pointing in the direction of reduction in the statistical efficiency. Of course, these assertions have been challenged quite stridently, and the jury is still out. Much as I respect institutions and the Indian statistical establishment in particular, I must submit that being open-minded about improvement and innovation would do us all good. The key concern here is a trade-off – capturing important changes in a dynamic Indian economy requires changes to our data survey methodologies often enough but there is the associated risk of rendering large datasets intertemporally incomparable. Ergo, if I am allowed a second opportunity to make a small suggestion to our young scholars here, while you work with large datasets, please also be mindful of the concerns flagged by experts and see how serious these are to your data analysis, while also thinking of ways to tackling their effects – because your work will be of relevance to policy makers, and no one wants to be "definitely wrong" when one could be "approximately right"!

This brings me to a point that I had briefly touched upon earlier, that is the rise of non-government datasets and high-frequency datasets (some of it released by government entities) in policy corridors. In my reckoning, two factors have contributed to this – government large datasets are released somewhat infrequently and many of them are unable to capture recent and dynamic changes in a fast-evolving Indian economy. Further, the onset of the pandemic which imposed severe constraints on the conduct of surveys and collection of

data through conventional means precisely at a time when data-driven insights were of the essence opened the eyes of policymakers to exploring other ways of inferring information about the real economy. Accordingly, Google and Apple indices for mobility, data on e-toll count and collection, GST collection, power consumption to signify overall economic activity, tractor and fertiliser sales and procurement of foodgrains to capture agricultural activity, credit to industries and IPOs to detect the health of industrial sector, railway freight, port traffic and domestic air cargo traffic to represent services were some of the databases used by policymakers to avoid flying blind in tempestuous times. Given their abiding relevance in conveying the live health status of the economy at a frequency that is much higher than official statistical datasets can convey, discussions about them have become routine in policy analysis reports. However, for discovering long term trends and developments in the socio-economic profile of Indian economy and our people, large datasets continue to retain their relevance. If anything, high frequency datasets have supplemented – not supplanted, in utility or relevance – the large datasets of statistical establishments. So, should any of you have any apprehension about the criticality of the datasets you are working on, I must urge you to put them at rest. It is large datasets and works that ride on such datasets which caution policymakers not to miss the woods for the trees! In fact, in 2018, the 2nd Suresh Tendulkar Memorial Lecture organised by RBI was delivered by Prof Roberto Rigobon of MIT Sloan School of Management on the subject enticingly titled "Big Data and Measurement: From Inflation to Discrimination". Charting out the future course for statistical systems, he distinguished between two kinds of data – one, designed data, that comes from surveys and administrative records; two, organic data, that is generated by individuals without them noticing they are being surveyed, such as data in the GPS of your phone, your searches on the web or on OTT platforms, the friends in your network, the things you purchase. While designed data is

representative, it has small sample selection problems and is well understood and therefore it is clear how to curate it, its collection is costly and intrusive; on the other hand, organic data suffers from lack of representativeness in sample selection but is non-intrusive and the individual tends to be truthful in the data generation. Accordingly, the approach to future of statistics would be in adopting a hybrid approach – where we combine designed data with organic data, to offset the shortcomings of each and utilise the strengths of both. I spoke earlier of using census / survey data to validate / affirm the trends in administrative data sources; similarly, designed data (which is essentially what we have been referring to as large data sets) should be used to confirm or qualify the suggested trends visible in organic data.

I am confident that many of us would be aware that India has acquired the membership of the apex statistical body, the United Nations Statistical Commission. This body is responsible for evolving and standardising statistical approaches and reporting formats globally. Two questions which have been flagged by experts to be of relevance for discussions is redefining and adopting methods to measure the value addition of unpaid work of women and arriving at the quantum of digitalisation activities which have altered the basic structure of production, consumption and expenditure since the last time the System of National Accounts was finalised. I request all our young scholars here to reflect, while they work on their own research agenda, of ways and means of best answering these questions. What could be more satisfying a contribution and befitting a tribute to our statistical establishment than our thoughts about making our data sets richer and more informative!

Let me now rapidly draw the curtains on my elocution with one concluding thought. The rise of computing tools and statistical software that have tended to outdo one another has brought down the tedium involved in extracting large

datasets from their original format to a more tractable form. The rapid march of emergent technologies such as ChatGPT promises to relieve researchers – or, in fact, any undaunted explorer of such datasets – of the need to master skills needed earlier to prepare data in usable format. Thus, all of you will find trekking through the world of large datasets to be comparably a much comfortable exercise than it has hitherto been. This simply means that all of you will have more time, more leisure to delve deeper into these datasets, generate more nuanced research questions, notice so-far-unexplored trends and patterns and present them for the world to appreciate them. An extension of this is the need to juxtapose multiple large datasets one on the top of the other and derive insights that require simultaneous reference to richer configuration of data. A tool has been developed under the aegis of NITI Aayog, Government of India's premier think tank, to aid in such analyses. It goes by the name National Data Analytics Platform (NDAP), and has been developed with a view to facilitate cross-sectoral analysis by collating, standardizing, cataloguing and integrating data from various large datasets. At this point of time, it provides basic visualisation and facilities to merge multiple large datasets together, and a more advanced analytical layer is under development. I would urge you to see how best to use NDAP profitably in your work.

I would now like to close. I thank Prof Mishra and his equally spirited colleagues for having me over for this valedictory session. It has been a great honour to walk upon these sacred grounds of an eminent institution such as Council for Social Development and to have the opportunity to talk to some of the finest research scholars of our country. I wish all of you all the very best in your endeavours with large datasets, as you go about exploring them and sharing your thoughts about the trends and developments the data convey.

A veteran civil servant of our times once said that a policy maker's dharma is *applying thought*: and I will eagerly look forward to applying your thoughts in the course of my career.

Namaskar and Jai Hind!

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