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Application for the Robert Summers Fellowship on Economic Measurement
Conference on Research in Income and Wealth, NBER Summer Institute 2026

Measuring the Modern World

I am a post-doctoral research associate at the University of Cambridge and an affiliate of the Economic Statistics Centre of Excellence (ESCoE). My work is focused on developing new approaches to better capture the modern economy. My work includes measuring the value of free digital services, measuring intangible assets, and quality adjustment. I am also part of the Global INTAN-Invest project, a joint effort by the World Intellectual Property Organization (WIPO) and Luiss Business School, where I contribute to the project's effort to measure intangible investments for middle income countries.

My research agenda was shaped substantially by seven years compiling national accounts at the Philippine Statistics Authority, which gave me a practical understanding of how aggregate economic statistics are built up from the ground and where the assumptions are doing the most work. I led the overall revision of the Philippine National Health Accounts. I also led the development of satellite accounts measuring the contribution of the ocean to the economy (Bersales et al., 2019a) and measuring the sustainability of tourism (Bersales et al., 2019b). These exercises required constructing plausible estimates for activities that do not map cleanly onto existing frameworks, and they left me with a lasting interest in where official statistics fall short and what it would take to improve them.

While my work as a government statistician set the foundation for my research career, it was during my PhD and postdoc that gave it structure, rigor, and direction. My doctoral work focused on the digital economy, combining economic frameworks with non-traditional data sources.

Measuring the Modern World

Both my postdoc and PhD research address foundational questions about how we measure economic activity in an economy where a growing share of output is difficult to capture using conventional methods.

In my PhD work, I address the issue of measuring the value of free digital services. I developed a conceptual framework that identifies prices of paid digital services as a valid proxy for free digital services such as personal email, video calling, and social media. Consistent with how official statistics handle similar problems such as owner-occupied housing, the approach can be implemented within existing statistical frameworks. I show analytically that the shadow price decomposes into the value of user attention to advertisers and a household surplus, implying that free digital services are worth more than their production costs suggest. I apply this framework to two empirical papers. The first measures the value of free personal email, online news, and video calling in the UK (Poquiz, 2023a). I find these services account for around 2 percent of household consumption. The second measures the value of digital piracy (Poquiz, 2023b). Both are available as ESCoE Discussion Papers.

I also developed a methodology that allows for the measurement of depreciation of intangible assets using big data (Poquiz, 2025). Official statistics often rely on depreciation rates rooted in conventions established decades ago. I propose using Google Trends search volume as a proxy for an asset's ongoing relevance. As software or films become obsolete, fewer people search for them. I find that software depreciates more slowly than current statistical agency assumptions, with compounding implications for capital stock measurement. This paper is under R&R the Review of Income and Wealth.

As part of my postdoctoral work at the Bennett, I am developing a method for quality adjustment of service sector output using online consumer reviews. The logic is that, a hotel room sold at the same price in two successive years is not the same product if the quality of service has changed, and

standard price indices have no reliable way to detect this. I use a large corpus of UK accommodation and food services reviews and apply text analysis to construct a quality index that separates genuine price changes from quality improvements.

I have also contributed to this broader conversation through an invited chapter for an NBER volume on measurement challenges raised by artificial intelligence, co-authored with my postdoctoral supervisor. The chapter examines how AI complicates traditional approaches to measuring output, productivity, and capital formation, and considers what changes to national accounting frameworks might be needed.

Measuring Intangibles for the Middle-Income countries

I also contribute to the the Global INTAN-Invest Project, which constructs internationally comparable estimates of intangible capital investment across a diverse set of economies. I led the compilations of the intangible estimates for Philippines, which will be official part of the database this year. I have also conducted scoping studies for other middle income countries including China, and more recently for several African countries, assessing whether they have the statistical infrastructure needed to produce reliable intangible capital estimates.

Upcoming work on Measuring Data for the National Accounts

I am part of a team supported by ESCoE and the ONS to improve how data is measured as a capital asset under the forthcoming 2025 revision to the SNA. The project has two components. The first develops a framework for quality-adjusted deflators for data assets. A key contribution is bridging the information systems literature on data quality measurement, national accounts deflator methodology, and the economics of data as a productive asset. Existing recommendations from international statistical organisations rely on aggregate adjustment approaches that do not address how data quality itself manifests in productive value, and we aim to develop the first operational framework for this emerging measurement challenge. The second component develops empirical estimates of data depreciation rates.

References

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