

Seventh IMF Statistical Forum

Measuring the Informal Economy

SESSION III: NEW TECHNIQUES, NEW TECHNOLOGIES, AND NEW POTENTIAL DATA SOURCES

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Chair: Mr. Jihad Azour (Middle East and Central Asia Department, IMF)

Presenters: Mr. Frederico Lima (African Department, IMF)
Mr. Erick Rangel-Gonzalez (Central Bank of Mexico)
Mr. Ricardo Valencia Ramírez (National Administrative Department of Statistics, Colombia)
Ms. Nan Liu (National Bureau of Statistics, China)

SUMMARY OF PRESENTATIONS

1. Estimating Economic Activity in Zimbabwe Using Big Data (Gene Leon and Federico Lima)

The informal sector in Zimbabwe is one of the largest in the world, as a share of total economic activity (Medina and Schneider, 2018). Over the past decades, the production of accurate statistics of economic activity has been hampered by a large informal agricultural sector, as well as by several policy disruptions, including the hyperinflation episode in the late 2000s, low capacity and recent monetary disruptions. This presentation combines traditional and nontraditional data sources, including nightlight intensity, greenhouse gas emissions and spatial weather patterns, to estimate the level and growth of economic activity in Zimbabwe since 1992. We find that nontraditional data provide an alternative measure that is highly correlated with total activity, and that can be used to derive a “residual-based” measure of informal activity.

2. Measuring Informality in Mexican States Using Satellite Nightlights (Irving Llamosas-Rosas and Erick Rangel-Gonzalez)

The authors use satellite nightlights to measure economic activity in México and discrepancies between estimated and official GDP in order to identify the non-registered (informal) economy. Their work is related to Ghosh, et al. (2009) in that it uses measures of nightlights in Mexico to estimate informal economic activity, but with significant differences: (i) use of an updated version of nighttime light data based on satellite, which offers a higher resolution; (ii) use of the State of Nuevo Leon (that has the lowest levels of informality in the country) as a benchmark economy besides the US economy; (iii) incorporate into the analysis the contribution of different

sectors to the state's GDP, since different economic activity have different nightlight elasticities (i.e. agricultural activities, services, and manufacturing). The authors' estimates indicate that the size of the non-registered economy in Mexico is about 25.25 percent of the GDP when using US economy as a reference, and 29.03 percent when using the state of Nuevo Leon as a benchmark economy.

3. *Informality in Data: A Case Study in the Use of Multidimensional Measure to Capture the Formalization Process* (Juan Oviedo Arango and Ricardo Valencia Ramírez)

The authors present the conceptual approaches to informality, from non-statical to statical perspectives, and explain that informality may be measured through the labor market (labor supply) or through the firms or companies (labor demand). For firms, Colombia recently launched a micro business survey. Based on the survey and other data, an index of *business formality* has been constructed by Colombia's National Administrative Department of Statistics (DANE). To study the formalization process (or how to go from informal to fully formal business), a sequential analysis with four dimensions is used: (i) the firm's entrance (business registration requirements); (ii) transactions to acquire inputs (capital, land, and labor); (iii) rules on production of goods and services; and (iv) the tax dimension (declaration and payment of taxes by the firm). These dimensions reflect the transit that a firm makes since entering the market to become completely formal. However, it is possible to interpret each dimension individually, to identify the main source of informality in firms. The multidimensional index of business formality is used in combination with the economic census to study informality in Colombia.

4. *China's Experiences in Estimating the Informal Economy* (Nan Liu)

According to the *System of National Accounts, 2008 (SNA 2008)*, the informal economy covers both legal and illegal activities. From the perspective of actual statistical significance, the accounting scope of China's informal economy refers to the economic activities of units or individuals that are not registered in government regulatory authorities. This presentation, based on this accounting scope, discusses the statistical data and accounting condition of China's informal economy. On the basis of the economic census and the Internet economic statistics system (IESS), a considerable part of China's informal economy can be observed, and the volume and growth rate of this activity can be grasped. However, it is difficult to observe emerging transactions completed through social media, and with the development of digital economy, this part of activity may grow year by year, which will challenge China's accounting for the informal economy.

SUMMARY OF COMMENTS, QUESTIONS, AND ANSWERS

Questions focus on (i) whether experimental statistics using new technologies, such as nightlight satellite images and official statistics, should be presented separately or combined, for example, through grossing-up official data with the new experimental statistics; (ii) the use of night lights as an indicator for productive activity in spite of several drawbacks, such as the use of urban

lights for non-productive purposes, informal activities done in daylight, production activities done in areas of no electricity, and the different impact of electricity in the primary, secondary, and tertiary sectors; (iii) the attempts to estimate the internet-based shadow economy in China; (iv) whether official GDP data in Zimbabwe were of more or less quality compared to the estimates using nightlight satellite images; (v) the robustness of the data used in Mexico, in particular, the use of the state of Nuevo Leon as benchmark; and (vi) the combination of business census data with a micro business survey in Colombia.

On the issue of using experimental statistics separately or to gross-up official data, the speakers were in favor of the latter. In spite of drawbacks, strong correlation between nightlight satellite images and GDP has been demonstrated through several studies. China's attempts to estimate the informal digital economy were commended, although the speaker noted that finding methods to avoid double-counting is a work-in-progress. On the quality of Zimbabwe's official statistics and the use of alternative methods, such as nightlight satellite images, the speaker notes that official data have challenges in capturing certain activities and that the results of bigger GDP using alternative methods came at no surprise to the authorities and Fund staff. On the robustness of the data and benchmarking used in Mexico, it was clarified that the state of Nuevo Leon was used as a reference economy because it is the state with lowest level of informality in Mexico and with more economic similarities than the US. Finally, the business census data with the micro business survey in Colombia are being combined through iterations (production model approach) of the areas involved in the data compilation process.