

Measuring Venezuela's hyperinflation

Steve Hanke discusses how economists can make use of high-frequency exchange rate data to track rapid price movements in Venezuela

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In a lecture delivered at the Institute of Civil Engineers on May 3, 1883, Lord Kelvin had this to say about measurement: “I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of *science*, whatever the matter may be.”

As a member of the council of the Society of Economic Measurement, I agree with Lord Kelvin, but with some reservations. In some cases, evidence of the type we can “measure” is elusive. And, as any good detective knows, one would be ill-advised to rule out the “unmeasurable” *a priori*. Indeed, as Jerry Muller cautions in his recent book, [The tyranny of metrics](#), we would be ill-advised to obsess over measurement. He wisely concludes: “Measurement is not an alternative to judgement: measurement demands judgement: judgement about whether to measure, what to measure, how to evaluate the significance of what’s been measured, whether rewards and penalties will be attached to the results, and to whom to make the measurements available.”

Now, let’s turn our attention towards Venezuela’s current episode of hyperinflation. Hyperinflations are rather rare events.¹ There have only been 58 throughout history. Venezuela’s hyperinflation episode began on November 13, 2016, when the monthly inflation rate first exceeded 50% per month. As of February 13, 2018, the annual inflation rate is 6,230%, the highest in the world.

This rate is measured by The Johns Hopkins-Cato Institute Troubled Currencies Project (TCP), which I direct. We began to measure Venezuela's inflation in 2013, employing high-frequency data that allows for daily measurements of both monthly and annual inflation rates. We measure. We do not forecast.

How do we measure? The most important price in an economy is the exchange rate between the local currency – in this case, the bolivar – and the world's reserve currency, the US dollar. As long as there is an active black market (read: free market) for currency and the black market data is available, changes in the black market exchange rate can be reliably transformed into accurate measurements of countrywide inflation rates. The economic principle of purchasing power parity (PPP) allows for this transformation. And the application of PPP to measure elevated inflation rates is rather simple.

During periods of elevated inflation, PPP is the proper theory to use for measurement. Indeed, PPP holds during episodes of hyperinflation, and it holds very tightly.² So, with Nobel Prize-winner Tjalling Koopmans's admonishment to economists in mind, we are measuring, and we are measuring with the correct theory (see Koopmans's classic August 1947 article, "[Measurement without theory](#)").

The German experience

Evidence from Germany's 1920–23 hyperinflation episode – as reported by Jacob Frenkel in the July 1976 issue of the [Scandinavian Journal of Economics](#) – confirms the impressive performance of PPP during hyperinflations. Frenkel plotted the Deutschmark/US dollar exchange rate against both the German wholesale price index and the consumer price index (CPI). The correlations between Germany's exchange rate and the two price indexes were very close to unity throughout the period, with the correlations moving to unity as the inflation rate increased.

Beyond the theory of PPP, the intuition of why PPP represents the 'gold standard' for measuring inflation during hyperinflation episodes is clear. All high-value items are either priced in a stable foreign currency (the US dollar) or a local currency (the bolivar). The bolivar prices are determined by referring to the dollar prices of goods, and then converting them to local bolivar prices after checking with the spot black market exchange rate. Indeed, when the price level is increasing rapidly and erratically on a day-by-day, hour-by-hour or even minute-by-minute basis, exchange rate quotations are the only source of information on how fast inflation is actually proceeding. That is why PPP holds and why we can use high-frequency (daily) data to calculate Venezuela's inflation rate.

Are there other "official" measures of Venezuela's inflation rate? The Central Bank of Venezuela (BCV) last published its CPI in December 2015. However, the BCV supplied the International Monetary Fund with inflation measurements for December 2016. These were published in the IMF's [World Economic Outlook](#) reports of April and October 2017. In addition to the BCV's measurements, the opposition-controlled National Assembly began to construct its own CPI in December 2016. The National Assembly appears to follow the same methodology employed by the BCV – namely, the changes in prices for a basket of goods are collected and each good is assigned a weight, resulting in a CPI. The "official" measurements of Venezuela's inflation and those based on PPP are presented in the table below.

Given that the TCP's inflation measurements, which are based on PPP, are by definition the "true" measurements of Venezuela's inflation, two points bear mentioning. First, in 2015 and 2017, the "official" measurements are much lower than the PPP measurements. Consequently, in those years, the official measurements were in error by a large margin. In 2016, the errors contained in the official measurements were much smaller. That said, the BCV did supply the IMF with two different values for the same period (2016), one published in the April 2017 *World Economic Outlook* and the other in the October 2017 *World Economic Outlook*. We do not know the basis for the difference. The second point related to the "official" measurements is that, in addition to being in error, they are costly to produce and cannot be replicated. In short, they are a waste of time and money.

What about projections of Venezuela's inflation? It turns out that the IMF is the only major institution foolish enough to forecast – as opposed to measure – Venezuela's inflation (see the table above). The fact that the IMF would forecast inflation in the midst of hyperinflation is absurd. Indeed, no-one has ever been able to forecast inflation rates with any degree of accuracy during an episode of hyperinflation. If that wasn't bad enough, the IMF has not been actually measuring inflation in Venezuela during the hyperinflation episode. In fact, it has gone out of its way to include statements in each of its *World Economic Outlook* reports indicating that the IMF has had virtually no official contact with Venezuelan authorities for years, and that the last IMF Article IV consultation took place over 10 years ago, in 2004. Furthermore, the IMF has failed to present its methodology for forecasting. Replication of its forecasts is therefore not possible. All this suggests that the IMF is employing a 'finger-in-the-wind' method for its inflation forecasts in Venezuela. Unfortunately, none of this has stopped the financial press from repeatedly reporting the IMF's pie-in-the-sky projections.

I am reminded of Oskar Morgenstern's admonition about the accuracy of economic observations, which was delivered in 1949 at the International Statistical Institute in Bern, Switzerland, on his behalf by no less than Nobel Prize-winner Simon Kuznets: "Concluding, it is therefore necessary that new rigorous standards be developed governing the use of economic statistics. While their quality has to be improved constantly, economists ought to reject poor observations in a very definite manner. Wide publicity ought to be given to the quality of social and economic statistics in order to limit their use to those fields for which they are suitable."

Notes

1. Hanke, Steve and Nicholas Krus, 'World hyperinflation' in [Routledge handbook of major events in economic history](#), edited by Randall Parker and Robert Whaples (Oxford: Routledge, 2013), pages 367–377.

2. Hanke, Steve and Charles Bushnell, 'On measuring hyperinflation: Venezuela's episode' in [World economics](#), Vol 18, No 3, September 2017.