University of Waterloo W. H. Cherry

MEASURING: ***Are we too obsessed with real GDP?***

EM1601: The Globe and Mail, May 6, 2016, page B2

Are we too obsessed with real GDP?

TODD HIRSCH

Economic Insight

Since the end of the global recession in 2010, one question has loomed over economic and central banking conferences: What happened to growth?

From emerging markets to the wealthy, industrialized countries, the pace of economic expansion has failed to impress.

It wasn't supposed to be this way. The BRICS had held out such bright hope as beacons of global growth, continuing to lift commodity prices and consumer markets for everything from Coca-Cola to new iPhones. But these hopes were always pinned to a flimsy premise. Now, at least two of the BRICS are in recession, and forecasts for the other three have consistently been scaled back.

Europe and North America are in better shape than they were in 2010. But surely with the amount of fiscal and monetary stimulus they've seen, one could reasonably expect more. Even the bold experiments with negative interst rates in Japan and Europe are failing to do much.

Here in Canada, the federal government has struck a task force of impressive economists to provide ideas for how Ottawa can pump up the country's growth rate. Meanwhile, the Bank of Canada Governor is suggesting slow economic growth may be the new normal. The gains from liberalized global trade that supercharged growth in the past have largely been exploited.

And even this week, equity markets swooned and oil prices dropped – all on fears that global GDP growth is disappointingly slow.

But an interesting question comes out of all this. Are we unduly obsessed with growth as measured by real GDP? It is, after all, a very imprecise tool to gauge progress. (Full disclosure: I lead an economic group at a finacial institution, and the first indicator we forecast each quarter? Growth in real GDP!)

The system of national accounts that measures the GDP was a product of the post-WWI world, when factory production and agricultural output were the primary economic drivers. How many new cars or tanks or bushels of wheat were produced is easy to count.

But in 2016, the service sector has taken a much larger role. How do you measure output when the banking, entertainment, communications and travel sectors are evolving so quickly? If more people are staying home to watch streaming video content rather than spending $40 at a theatre, it counts as a drop in the GDP. But we are not worse off.

Then there's the rise of the "sharing economy," which throws another wrench into how we measure economic activity. Car sharing, Airbnb, community vegetable gardens – increasingly, consumers are less interested in buying and owning things they use only occasionally. Why buy a drill that you'll use five times a year when you can borrow one at a tool library? Sharing a drill is bad for real GDP but, clearly, consumers are not worse off. In fact, they are better off.

Even worse, the GDP also counts bad things as positive. Natural disaster, such as tsunamis, earthquakes and ice storms, stimulate all sorts of spending in the form of rebuilding. This boosts real GDP, but clearly we'd be better off had the disaster not happened.

Why do we want economic growth at all? Broadly speaking, there are two reasons.

The first is that a growing economy usually creates new jobs. The second is that it creates revenue for pension funds and government coffers. And these two are intricately connected in a self-reinforcing feedback loop. The more jobs, the more revenue and income, which helps create new jobs, and so on.

But is an expansion of real GDP actually necessary to create new jobs and provide a growing standard of living? That's a more complicated question that requires a fundamental rethink of tradition economics.

Rather than chasing out tails with a endless obsession over real GDP, perhaps economists and policy wonks would be of greater service targeting those metrics that actually do promote job creation and prosperity. Education levels, preventative health care, environmental well-being, innovation and R&D – all of these help create new jobs, which in turn generate revenue for governments.

But they may or may not dirctly boost the size of the economy – at least not as measured by real GDP.

Todd Hirsch is the Calgary-based chief economist of ATB Financial, and author of The Boiling Frog Dilemma: Saving Canada from Economic Decline.

1 Identify the measurement issues raised by the article EM1601 reprinted above; distinguish statistical from *extra*-statistical issues.
- Statistical Highlight #38 (on pages HL38.5 to HL38.7) discusses four components (the measuring instrument or gauge, the operator, the measuring protocol, the element or unit measured) of measuring processes; identify these components in the context of the article EM1601.

2 In the fourth paragraph of the middle column of the article EM1601 reprinted above, Mr. Hirsch describes a drop in the GDP resulting from prople staying home to watch streaming vdieo content rather than going out and spending $40 at a theatre.
- List factors associated with *not* going out to a theatre, *other than* not spending the $40, that would make the GDP drop.
- List factors, if any, associated with staying home to watch streaming video content that would make the GDP *rise.*

What do you infer from your two lists about *this* illustration of people's altered behaviour making the GDP drop?
- Discuss briefly what you take from the final statement in the middle-column fourth paragraph: *But we are not worse off.*

3 In the fifth paragraph of the middle column of the article EM1601 reprinted above, Mr. Hirsch discusses the implications for the real GDP of the "sharing economy" in the situation of renting, rather than owning, a drill that will be used only occasionally: *Sharing a drill is bad for real GDP but, clearly, consumers are not worse off. In fact, they are better off.*
- List the way(s) in which consumers are better off in this situation.
- List the way(s), if any, in which consumers are *worse* off.

What do you infer from your two lists about the effect on the real GDP of *this* illustration of the "sharing economy"?
- Explain briefly whether similar considerations arise in the other three 'sharing' contexts mentioned in the article EM1601 – car sharing, Airbnb, community vegetable gardens.

(*continued overleaf*)

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MEASURING: ***How does McDonald's know it's sold 70 billion?***

EM9011: Toronto Star, January 22, 1990, page B3

How does McDonald's know it's sold 70 billion?

By Rode DeWolf
SPECIAL TO THE STAR

How do they know?

Just recently, Campbell Soup Co. had a big celebration in honour of the "20 billionth" can of tomato soup shipped off to market. Last year, Disney World in Florida honoured its "300 millionth visitor." And those McDonald's Golden Arches, which still adhere to the company's tradition of reporting on hamburger sales, now proclaim "over 70 billion served."

Are we expected to believe these companies can actually pinpoint the day, the hour, the very minute when numerical history is made?

The answer is no. It turns out that this is not a very exact science.

□ About the number of McDonald's hamburgers sold:

"It's an estimate," says Anne Tolle, spokeswoman for McDonald's. "We know the exact number sold at the 25 per cent of McDonald's that are owned and operated by the company, because we keep a running count by computer."

"For the number sold by the 75 per cent of our restaurants owned by franchisees, we conduct a telephone sampling of a percentage of them to get an idea of their sales volume."

□ About the 300th million visitor to Disney World:

"There is a certain ceremonial aspect to it," admits Disney World spokesman Dave Herbst. "After all there are three different gates here – at the Magic Kingdom, Epcot Center and Disney MGM studio – and there are many turnstiles at each gate. So we couldn't know exactly which visitor was the 300 millionth. But each turnstile contains a counter that keeps track of the people arriving, so we can estimate about when a record is about to occur. Then we pick a date to celebrate and pick a family coming through one of the gates to help us with the ceremony."

□ And finally, that 20 billionth can of soup:

"We never claimed we knew exactly which can was the 20 billionth," said Campbell spokesman David Hackney. "After all, tomato soup is now made at four different plants in the U.S. and at one time was made at six. There would be no way of knowing which can at which plant was number 20 billion. What we did know was that, given normal production rate at our plants, the 20 billionth can would be produced sometime in January ..... which just happens to be National Soup Month."

"So we planned a celebration in January. Instead of holding it at one of the plants – how could we possibly pick which one? – we chose to hold it in Minneapolis because it is among the top cities in the nation in tomato soup consumption per capita. Then we picked the date by determining when the various celebrities we invited to help us celebrate could make it."

"It could be that the 20 billionth can actually was produced the day before or a couple of days after. But we know it was around that time. We have production records going back to the founding of the company."

"We could never simply make up a number out of the air, you can be sure of that. One time when we wanted to say something light-hearted about the number of stars in our chicken and stars soup, our legal department made us actually open several cans and count them."

KNIGHT-RIDDER NEWSPAPERS

1 The three population attributes discussed in the article EM9011 are all a *size*; briefly describe the three (target) populations.
- Compare and contrast the attribute discussed in the article EM9011 above and the attributes investigated in Statistical Highlights #15, #35 and on page HL36.2 in Highlight #36?

2 Which of the three Answers given in the article EM9011 – 20 billion cans, 300 million visitors, 70 billion hamburgers – would you expect to have, as a fraction of its magnitude:
- the *smallest* overall error; ● the *largest* overall error? Justify your choices briefly.

3 In the left-hand column of the article EM9011, in its *sixth* paragraph, a McDonald's spokeswoman calls the 70 billion hamburgers sold an *estimate.* Compare and contrast this useage with our defintions of 'estimate' and 'estimator' on, for example, pages HL6.2 and HL6.3 in Statistical Highlight #6; explain briefly in your discussion how *sampling* is involved in obtaining the 70 billion Answer.
- In the same paragraph, the spokeswoman is quoted as saying: *We know the exact number (of hamburgers) sold at ..... because we keep a running count by computer.* Assess (in order of *de*creasing importance), to the extent possible from the limited information in the article EM9011, the limitations imposed on the 70 billion Answer by study error, non-response error, sample error and (attribute) measurement error.

4 In the *last* paragraph at the end of the right-hand column of the article EM9011, a process is described for estimating the (average) number of stars per can in Campbell's chicken and stars soup.
- What factor(s) affect the *precision* of the corresponding estimator of the population average;
  - What matter of statistical concern do you infer from the word 'several' in the last sentence of the article EM9011?
- What factor(s) affect the *accuracy* of this estimator?

Explain briefly the importance of each factor you mention.

The article EM9011 reprinted above in this Highlight #34 is also used in Figure 2.16 of the STAT 220 Course Materials.