Intelligence MEMOS

From: Jeremy Kronick and Ramya Muthukumaran

To: Bank of Canada Governing Council

Date: September 18, 2017

Re: **LOOK MA, WE'VE BROUGHT BACK THE DIFFUSION INDEX**

One of the big puzzles for inflation-targeting central banks since the 2008 financial crisis has been missing inflation. Despite rock-bottom interest rates, unconventional monetary policy, and some healthy GDP rebounds, many countries have managed only tepid inflation. This includes Canada, which has averaged about 1.5 percent inflation since 2010. This situation presents a problem for the Bank of Canada, which has had to keep interest rates low, compounding financial stability concerns related to household-debt levels.

There are many theories as to why inflation has been systematically below target, but perhaps a simple explanation exists for Canada – until recently, GDP growth has been too concentrated. When economic growth is broader, the more likely it is to lead to inflation. If true, and if Canadian GDP has indeed been broader of late, the bank would be further justified in its most recent interest rate hikes. How can we check?

For a long time Statistics Canada produced a diffusion index using a methodology pioneered by Philip Cross (2004). Unfortunately, the agency stopped producing the index in 2012. We, however, revived it in a 2016 paper.

The index is fairly simple: expanding industries over a given period receive a score of 100, those falling receive a score of zero, and those with unchanged output receive a score of 50. An average is then calculated using the scores for each industry. An overall average of 50 indicates an equal number of expanding and contracting industries. A score above 50 indicates more expanding than contracting industries and a score below 50 the opposite. Using chain-weighted sectoral data by North American Industrial Classification System (NAICS) code, at the three digit level, leaves us with 101 industries, representative of the one-third goods, two-thirds services that make up our economy.

Figure 1: Diffusion Index – Cross (Baseline) Methodology

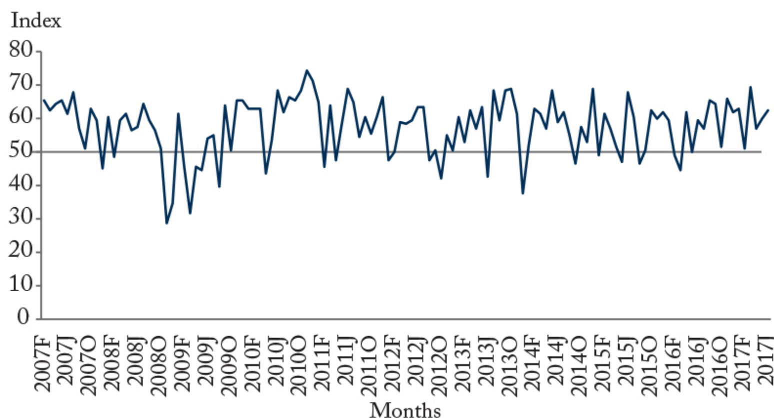
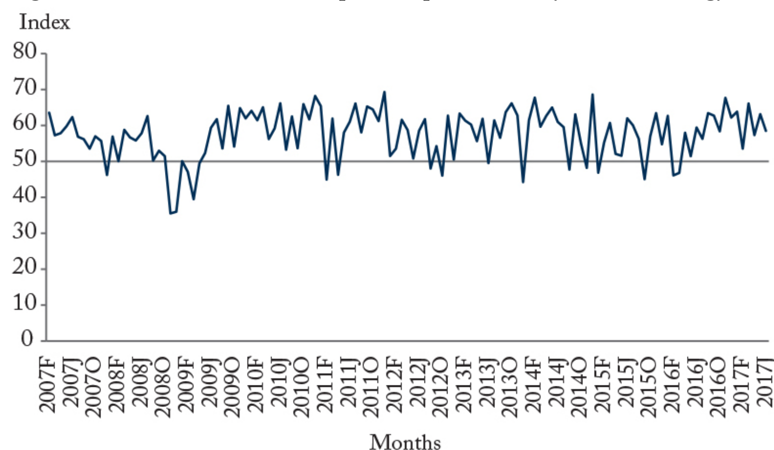


Figure 2: Diffusion Index – Principal Components Analysis Methodology



As you can see in Figure 1, this diffusion index has been above 50 for the last 15 months, longer than any period since the crisis. What this means is we are finally seeing consistent broad-based economic growth.

What about the link to inflation?

In that same 2016 paper, we produced what we believe is a more accurate diffusion index that better takes into consideration the depth, amplitude, and sectoral co-movement of GDP. This index uses principal components analysis, which allows us to better capture the underlying trends of the economy. We can use this measure to confirm the findings of the unweighted index. As Figure 2 shows, we again see that economic growth over the last 15 months has been broad-based. Interestingly, with this measure, there has been one other period post-crisis where there was breadth of a longer length: May 2009 to January 2011, and this timeframe was marked by some of the highest inflation we have seen post-crisis, accompanied by Bank of Canada rate hikes.

Overall, these novel diffusion indices suggest Canada is currently experiencing economic growth that is broader than at any time since the crisis. Research should further investigate in more detail the link between this breadth and more robust inflation. If the link is strong, this would further support the Bank of Canada's latest rate hikes.

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