

Bankplassen

- en fagblogg av ansatte i Norges Bank



Attachment for blogpost “How important is the ECB for Norwegian monetary policy?” by Saskia ter Ellen

How to measure (ECB’s) monetary policy and communication surprises?

In the analysis, we only focus on financial variables. Financial variables respond instantly to (surprise changes in) monetary policy and are typically seen as a starting point of the transmission mechanism initiated by a monetary policy decision, and as indicators of the effect on economic variables. Because of the instant response, we can use observed financial variables on very high frequencies, both to be able to identify the surprise component of ECB’s monetary policy, as well as its direct impact on Norwegian variables. This technique is called HFI (high frequency identification) and was introduced by, among others, [Kuttner \(2001\)](#).

The idea is quite simple. Market interest rates reflect market participants’ expectations about the future actions of the central bank. At the time of a monetary policy announcement, the most important factor (arguably the only factor) determining market interest rates is the monetary policy announcement: is the central bank adjusting its key policy rate or not? Even when the central bank decides not to change its key policy rate, this can still come as a surprise when market participants expected the central bank to do so. Hence, when we look at the change of the market interest rate from right before the announcement until right after, we can measure the surprise of the announcement. We call this the ‘event window’.

What complicates matters a bit is that during that time, the central bank often also communicates about its future policy intentions. For example, the central bank might (unexpectedly) keep the key policy rate unchanged today, but may communicate that it expects to increase or decrease the key policy rate at the next meeting, if current economic conditions prevail. If one were to look at a market interest rate that covers several meetings, say a one-year swap rate, the surprise in this rate is a combination of a monetary policy surprise and a surprise in the central bank’s communication about the future.

In an [influential paper from 2005](#), Gürkaynak, Sack, and Swanson introduced a neat way of dealing with that. They apply a well-known method in statistics, principal component analysis (PCA), to surprise changes in several interest rate instruments, each of them covering a different maturity.

Because during the event windows there are only two main sources of movements in the interest rates, a monetary policy announcement and communication about the future, two common components can explain almost all the variation in all those interest rate instruments during the event windows. With a smart rotation of the factors, we end up having one factor (the so-called 'target factor') that represents a monetary policy surprise, and one factor (the so-called 'path factor') that represents a communication surprise.