Speech

Monetary policy trade-offs in a small open economy – the case of Norway

Introduction[1]

Good afternoon. Let me start by thanking the Peterson Institute for the invitation and for giving me the opportunity to address this distinguished audience. It's a pleasure to be here.

[Chart: The tightening was synchronised across countries]

The tightening of monetary policy by central banks over the past few years has been unprecedented in several respects. By some measures, this has been the most globally synchronised of all tightening episodes in the past half century. [2]

In Norway, as in many other countries, global supply chain disruptions contributed to a rise in prices for a broad range of goods during the pandemic. When pandemic restrictions were lifted, economic activity quickly rebounded. The high level of household saving gave an additional impetus to demand. When Russia invaded Ukraine in February 2022, energy and commodity prices soared. Since Norway is a major exporter of oil and gas, those price increases constituted a positive terms-of-trade shock, and they generated large inflows into the Norwegian government's sovereign wealth fund, the Government Pension Fund Global. But at the same time, the increases in energy prices contributed to pushing up domestic business costs and spilled over into consumer prices.

[Chart: Policy rate at 4.5% to end of year, according to forecast]

Norges Bank started a gradual normalisation of interest rates in September 2021, and our key policy rate now stands at 4.5 percent. The policy rate forecast in our latest Monetary Policy Report in September implies that the policy rate will remain at 4.5 percent to the end of this year, before being gradually reduced from first quarter 2025.

The trade-offs we face as policymakers when setting interest rates depend not only on the shocks that occur, but also on the relative strength of the different transmission channels of monetary policy. The transmission channels can vary both across countries and over time depending on, among other things, institutional features of labor and housing markets as well as the balance sheets of households.[3]

My remarks today will focus on one particular aspect of the monetary policy transmission mechanism in Norway, namely the strong direct effect of monetary policy on household spending operating through net interest expenses.[4] As I will return to, the strong cash-flow channel combined with an unexpectedly large currency depreciation has created some particular trade-offs for monetary policy over the past few years.

A strong cash-flow channel

[Chart: Large differences in pass-through of monetary policy to disposable income]

The cash-flow channel is likely to be stronger when households are more indebted and when interest rates on outstanding debt are tightly linked to short-term rates. Along both of these dimensions, there is a lot of variation across countries.[5]

Norway has over many years benefitted from revenues from our petroleum sector. With more than 1.7 trillion dollars invested abroad through its sovereign wealth fund, the Norwegian government is a large net lender. But Norwegian *households* are among the most indebted in the world, with an average debt-to-income ratio of close to 250 percent. Since the interest rate on 95 percent of home loans moves in tandem with short-term money market rates, there is a fast and strong pass-through of policy rate hikes to household disposable income.[6]

In the US, where fixed-rate mortgages account for more than 90 percent of home loans, most of them with an initial 30-year fixation period, and the average household is less indebted than in Norway, the pass-through of higher policy rates to borrowing costs can be expected to be much smaller in the short run. In fact, while the policy rate has increased by more in the US than in Norway during the current tightening cycle, interest payments as a fraction of income has increased by much more in Norway.

[Chart: More indebted households respond more strongly to interest rate changes]

To gain more insight into the cash-flow channel, we have recently assembled a new and unique dataset that combines rich information on household balance sheets and income from tax returns with directly measured consumption expenditures from individual electronic transactions for all residents of Norway. Using this dataset, my colleagues have estimated how much the responsiveness of consumption to interest rates varies with household indebtedness.[7] In the chart you can see the change in consumption following a one percentage point unexpected increase in the policy rate and how that varies with a household's gross debt-to-income ratio. As we can see, the consumption response to a policy tightening increases with indebtedness.[8] These effects set in a couple of months after the interest rate hike and increase over the course of the first year. If we compare a household with a debt-to-income ratio of three to a household with no debt, the indebted household will cut spending by around 1.5 percentage points more after one year.[9]

[Chart: Households around the world have become more indebted]

We can use these results to understand how the monetary policy transmission mechanism has changed over time. Households' debt-to-income ratios have increased markedly in many countries over the past quarter century.[10] In Norway, household debt increased from around 120 percent of disposable income in 1995 to almost 250 percent in 2021. A back-of-the-envelope calculation based on our microdata estimates suggests that, due to this increased indebtedness alone, aggregate consumption will fall by around 50 basis points more in reaction to a one percentage point contractionary monetary policy shock now than in the 1990s.[11] That amounts to as much as a two-thirds increase in the interest rate effect on household spending.[12]

Trade-offs in monetary policy

Now let me explain how a strong cash-flow channel can give rise to a particular monetary policy trade-off in a small open economy that is hit by a cost-push shock or an exchange rate shock that increases inflation. According to the textbook theory, the central bank should respond to either shock by increasing the interest rate to bring inflation gradually back to target. A higher interest rate dampens aggregate demand directly, but also contributes to appreciating the currency. If the aggregate demand channel is strong compared with the exchange rate channel, for instance

because cash-flow effects on consumption are important, a larger reduction in output – and a larger increase in unemployment – are needed to achieve a given disinflation. That is because more of the disinflation will come through lower output and employment and less through lower imported inflation. Hence, when the aggregate demand channel is strong, the so-called sacrifice ratio of stabilising inflation is high – lowering inflation sufficiently comes at the cost of a larger increase in unemployment.[13] In small, open economies where the effects of monetary policy on aggregate demand are weaker, the central bank gets more help from the exchange rate in bringing inflation down, and inflation can be stabilised at lower employment costs.

A weaker krone exchange rate

[Chart: The Norwegian krone has depreciated]

Against this backdrop, let me share some perspectives on the krone exchange rate. Over the past three years, the Norwegian krone has depreciated by 10 percent against an import-weighted basket of currencies. Against the dollar, the value of the krone is 23 percent lower than it was three years ago.[14]

The newspaper The Economist has referred to the weakening of the krone since the pandemic as “a mystery”.[15] While it is challenging to explain all movements in exchange rates, we believe we do know something about the factors that have affected the value of the krone over time.

First, over the longer term, real, structural factors matter. For example, research suggests that the build-up of the Norwegian petroleum sector drove a stronger real exchange rate from the beginning of the 1970s up until the beginning of the 2000s, and that the subsequent decline in the importance of the petroleum sector has pulled in the direction of a gradual exchange rate depreciation.[16]

Second, in recent years the pandemic, war and high inflation have led to heightened geopolitical and economic uncertainty, and market volatility has increased. This may have led to a flight by investors away from less liquid and more volatile currencies. Rebalancing of Norwegian asset managers’ hedging positions in response to declines in international asset prices may also have contributed to the weakening of the krone.[17]

[Chart: Trading partners’ policy rates increased faster in 2022 and 2023]

Third, exchange rates react to monetary policy decisions. We have seen over time that a tightening of monetary policy that is unexpected by the market normally leads to an immediate krone appreciation.[18] And what central banks in other countries do is also important. Through the spring of 2023, the interest rate differential against Norway's main trading partners fell, and more than the market had expected. The differential gradually turned negative. The decline in the interest rate differential coincided with the krone depreciation.

[Chart: Inflation has fallen more slowly in Norway]

The depreciation of our currency in the last few years has slowed the disinflation process. While CPI inflation rose less in Norway than among our main trading partners throughout 2022, inflation has since fallen at a slower pace in Norway. A weaker currency directly pushes up imported inflation.[19] It also raises inflation for domestically produced goods and services through the effect of the exchange rate on the prices of imported intermediate inputs and on wage growth. In Norway we have a system of coordinated wage determination in which the profitability of the manufacturing sector, which has a high export share, has a strong bearing on wage settlements in the rest of the economy. We believe that this system of wage determination in general contributes to counteracting wage-price spirals. However, a weaker krone exchange rate normally results in higher export sector profitability. This could lead to higher wage growth, which in turn may result in higher inflation.

Conclusion

Let me conclude. The cash-flow channel from interest rates to households' disposable incomes is strong in Norway relative to many other countries. Combined with the depreciation of the krone exchange rate, this has created some particular trade-offs for monetary policy in Norway over the past few years. These trade-offs have had a bearing on interest rate setting and the speed at which we aim to bring inflation back to target.

[Chart: Inflation will slow and unemployment edge up]

At the time of our latest monetary policy meeting, our assessment was that the policy rate needed to be kept at today's level for a period ahead. At the same time, we are approaching the time to lower the interest rate. With the September policy rate

path, inflation is projected to move down further and approach 2 percent towards the end of 2027. Unemployment will likely edge up, to about the level prevailing before the pandemic.

Looking further ahead, the job of ensuring price stability may become more demanding. The consequences of climate change are becoming increasingly visible, and a global transition to a low-carbon economy is imperative. Geopolitical tensions and the desire to safeguard national supply lines are affecting trade and cross-border cooperation. At the same time, technological innovations and artificial intelligence may lead to upheavals in the labour market.

These developments will pose a challenge to all aspects of economic policy, including monetary policy. Large changes in relative prices may be necessary. With a flexible inflation targeting regime, we can look through temporary changes in inflation. Still, the most important contribution monetary policy can make to support necessary structural change and high employment is to ensure low and stable inflation.

Thank you.

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Footnotes

[1] These remarks are based on Governor Ida Wolden Bache’s remarks at the Jackson Hole Economic Policy Symposium 2023 and on Norges Bank’s *Monetary Policy Report* 3/2024.

[2] Forbes, Ha and Kose (2024).

[3] IMF (2024).

[4] Flodén et al. (2021) and International Monetary Fund (2024) use similar definitions of the cash-flow channel.

[5] Debt net of deposits more accurately captures how much a given change in policy rates affect disposable income, at least when both lending rates and deposit rates closely follow short-term rates. Chart 3 shows gross debt due to a lack of extensive cross-country data on deposits.

[6] This does not take into account cross-country variation in the tax system and the particular structure of adjustable-rate and fixed-rate mortgage contracts, both of which can affect pass-through. First, long-term mortgages (e.g. 30 years) are more common than shorter-term (e.g. 2-5 years) in some countries than in others. Second, in some countries, households are allowed to deduct mortgage interest payments from taxable income. How much this deduction amounts to varies substantially across countries (Cerutti, Dagher and Dell'Ariccia, 2017). A high tax deduction reduces pass-through of the policy rate to disposable income. Third, under the terms of annuity loans – such as the ones common in Norway – principal payments are automatically reduced in the short run when the lending rate increases. This might also lower the pass-through to consumption.

[7] See Ahn, Galaasen and Mæhlum (2024). Confidence intervals as well as estimates for other horizons are included in the paper. Cloyne, Ferreira and Surico (2020) and Flodén et al. (2020) also estimate how the effect of monetary policy varies along this dimension.

[8] Ahn, Galaasen and Mæhlum (2024) also provide estimates of the consumption response along the dimension of (debt-deposits)/income.

[9] The estimated marginal propensity to consume out of interest expenses is around 30 percent, which is within the range of MPC estimates out of other types of income shocks.

[10] In the dataset of advanced and emerging economies shown in Chart 5, the median country – when ordering countries by the percentage increase in household debt-to-income over the period – doubled its household sector debt-to-disposable-income ratio between 1995 and 2021.

[11] This number is derived from the equation (% change in consumption due to cash-flow effect) = MPC x (change in lending rate) x (debt/income)/(consumption/income). We assume an MPC of 30% out of interest payments (Ahn, Galaasen and Mæhlum, 2024), close to full pass-through of policy rates to lending rates, an average consumption/income ratio of 0.7 and an *increase* in debt/income of 120 percentage points. This assumes that other parts of the transmission mechanism, as well as the MPC, stay the same.

[12] Estimates based on Norwegian data from the mid-1990s until the early 2020s or late 2010s indicate that the consumption response to a one percentage point monetary policy shock peaks at around one percent after 1-2 years (see Norges Bank's *Monetary Policy Report* 2/2022, p. 40, and 4/2023, p. 52). Assuming that the increase in debt-to-income has increased this response by 0.5 percentage points over the same sample period, the total response of consumption would have been around 0.75 percent in 1995.

[13] See Romer (1993) and Ball (1994).

[14] The numbers refer to the krone depreciation between September 2021 and September 2024 for the krone against the I-44 index and against the US dollar.

[15] "Norway's weak currency presents a mystery." *The Economist,* 14 September, 2024.

[16] Bjørnland et al. (2024).

[17] Alstadheim et al. (2021) find that rebalancing of hedging positions contributed to the sudden, large weakening of the krone in March 2020. Research on the later time period is work-in-progress.

[18] See the evidence cited in Bache, Ida Wolden (2023).

[19] The estimated pass-through of exchange rate shocks to inflation is slightly higher in Norway than for an average of other advanced economies. See "A weaker krone exchange rate pushes up inflation – but by how much?" in Norges Bank's *Monetary Policy Report* 3/24 and Carriere-Swallow et al. (2023).

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