

Documentation note

A description of the regression analysis in the box “Key drivers of real wage growth” Monetary Policy Report 1/25

About the publication

Documentation Notes provide concise documentation of analyses or calculations featured in the Monetary Policy Report, speeches, and other publications where opportunities for further elaboration are constrained. An important goal of the Documentation Notes is to make the analyses more accessible to a broader audience, thereby contributing to verifiability and transparency. In some cases, related code and datasets will also be included.

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Description of the regression analysis in the box “Key drivers of real wage growth” (MPR 1/25)

This Documentation Note provides a detailed description of the regression analysis used in the box “Key drivers of real wage growth” in *Monetary Policy Report* 1/2025, pages 50–53.

The estimation of the pass-through from expected inflation to expected wage growth is based on responses from Norges Bank's Expectations Survey in the period between 2012 and 2025. The Survey is conducted quarterly, and the panel consists of experts (both the social partners and economists in the financial sector and academia), business leaders and households. The data used is cross-sectional, but we do not follow the responses of individual respondents over time. In the estimation, we use each respondent's answers to the following questions:

- “In your opinion, what will the general increase in prices for goods and services be twelve months ahead, as measured by the 12-month change in the consumer price index (CPI)?”
- “In your opinion, what will average annual wage growth be in the current year?”¹

As the question regarding CPI expectations pertains to the next 12 months, and the wage expectations question pertains to the current year, only responses from the first quarter are used in the estimation. The time frames for the questions on price and wage expectations will then overlap to a certain extent.

In the estimation, we assume that inflation expectations influence expected annual wage growth in the current year. We do not take into account that expectations of annual wage growth can also influence inflation expectations for the current year. This assumption is based on the fact that the effects from wage growth on inflation are normally “sticky” and therefore likely to be more important for inflation expectations in the longer term. However, we cannot rule out that the results may be influenced by some simultaneity. On the other hand, we observe that our estimates are in line with those of recent studies that use more sophisticated techniques (randomised experiments) to address this issue².

- The estimated pass-through from expected inflation to expected wage growth is estimated through the following regression, where $E(w)_i$ is expected wage growth for the current year, $E(\pi)_i$ is expected inflation over the next 12 months, and W_{t-1} is accrued annual wage growth from the previous year's national accounts:

$$E(w)_i = \beta_1 E(\pi)_i + \beta_2 W_{t-1} + \text{other control variables} + \varepsilon_t$$

¹ Business leaders are asked about their expectations for annual wage growth in their own company, and households are asked about their salary expectations for the next twelve-month period.

² Abberger, K., A.K. Funk, M. Lamla, S. Lein and S. Siegrist (2024) “[The Pass-Through of Inflation Expectations into Prices and Wages: Evidence from an RCT Survey](#)”. *CEPR Discussion Paper*, No. 19595, Buchheim, L., S. Link and S. Möhrle (2024) “[Inflation and Wage Expectations of Firms and Employees](#)”. *IZA Discussion Paper Series*, No. 17269, Savignac, F., E. Gautier, Y. Gorodnichenko, O. Coibion (2024) “[Firms' Inflation Expectations: New Evidence from France](#)”. *Journal of the European Economic Association*, 22 (s2), pp 2748–2781.

The following variables are included as control variables:

- Actual consumer price inflation in the previous quarter.
- Productivity growth. Annual Norwegian mainland GDP growth divided by the number of employed people in the previous year.
- Capacity utilisation. Norges Bank's estimated output gap, lagged by one quarter.
- Oil prices. Four-quarter change, lagged by one quarter.
- Exchange rate. Four-quarter change in I-44, lagged by one quarter.
- The wage share in Mainland Norway. Labour costs as a share of factor income, excluding housing services and the public sector, and adjusted for the self-employed.

To exclude outliers, all observations with a value above 100 and below -100 are removed first. Then, the samples are trimmed based on the standard deviation in each group. The dispersion in the different groups varies significantly, with a particularly low dispersion in the responses from the Experts. To avoid omitting too many of the responses from the Experts, all responses that are more than three standard deviations away from the mean are trimmed. For the other groups, all observations that are more than two standard deviations away from the mean are trimmed.

Trimming reduces the total number of observations somewhat. The differences are summarised below:

- Experts
 - Before trimming: 1 193
 - After trimming: 1 178
- Business leaders
 - Before trimming: 6 299
 - After trimming: 6 125
- Households
 - Before trimming: 10 988
 - After trimming: 10 348

We seek to identify the estimated pass-through from changes in inflation expectations to wage expectations for the different groups. In addition, we divide the experts into two groups: the social partners and economists. Table 1 summarises the estimated coefficients for each group.

Table 1:

	The social partners	Economists	Business leaders	Households
Inflation expectations 12 months ahead	0.21***	0.15***	0.21***	0.07***
Wage previous year	0.43***	0.65***	0.64***	0.61***
Actual inflation	0.05	0.06	-0.11***	-0.02
Productivity growth	0.01	0.12**	0.09**	0.05
Wage share	-0.05	-0.01	-0.26***	-0.21*
Capacity utilisation	0.27	-0.04	-0.28**	-0.38*
Change I-44	-0.01	-0.03***	-0.02***	-0.03**
Increase in oil prices	0.00	0.00	0.01***	0.01**
Constant	4.89	7.66	19.96***	16.64**
R ²	0.69	0.61	0.32	0.04
*, ** and *** denote statistical significance level of 10%, 5% and 1%, respectively				

The coefficients above summarise the average pass-through from inflation expectations to wage expectations. In the regression, it is assumed implicitly that the pass-through is linear and symmetrical. It is not obvious that this is the case. We have tested various specifications that can indicate whether the pass-through changes when inflation is high. This can, for example, be implemented through thresholds for actual inflation or thresholds for inflation expectations. The results from these simple exercises suggest that there is no clear asymmetry in the pass-through. However, the results should be interpreted with caution, as we do not have the possibility to follow individual respondents over time.