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KOF Konjunkturforschungsstelle

KOF Investment Survey Meta information

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Editor	KOF Konjunkturforschungsstelle der ETH Zürich KOF Centre de recherches conjoncturelles de l'EPF de Zurich
Director	Prof. Dr. Jan-Egbert Sturm
Business Tendency Surveys	Dr. Klaus Abberger, Pascal Seiler
Coordination	Sabrina Humbel
Layout	Vera Degonda, Nicole Koch
Address	LEE G 116, Leonhardstrasse 21, 8092 Zürich
Phone	+41 44 632 80 64
E-Mail, Website	kof@kof.ethz.ch, www.kof.ethz.ch

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History of the KOF Investment Survey

The KOF Investment Survey was established in autumn 2010. Previously, since the beginning of the 1990s, an annual investment survey had been conducted in two parts in cooperation with the Swiss Federal Statistical Office (FSO). In the first part, the KOF conducted a qualitative survey in the winter (end of October to the beginning of January) on investment plans for the following year in the context of its Business Tendency Surveys. In the second part, the FSO conducted a quantitative survey in March as part of its Value Added Survey on investment plans for the current year and realized investments for the two previous years. The target variable for investment in both parts was gross fixed capital formation.

In 2012, the KOF Investment Survey was supplemented by a survey in spring and has been conducted twice a year since then. Since the autumn of 2013, companies have broken down their gross investments into expenditures on equipment and construction. Since autumn 2014, companies have also been asked about their investments in research and development. Over time, additional questions have been added to the core questions on realized and planned investments, such as a question on the irreversibility of investments in equipment in spring 2015. Most recently, in 2023 and based on the Investment Survey of the European Investment Bank, questions were added to the spring survey on how companies perceive climate risks and how they influence their investment activity. Since autumn 2023, methodological adjustments have been made to calculating the investment growth rate, moving from an ad hoc procedure to identify and eliminate outliers in companies' quantitative responses to a data-driven procedure.

Concept of the KOF Investment Survey

Economic development is strongly influenced by business investment. For economic analyses and forecasts, it is therefore important to have reliable information on companies' investment plans as early as possible. For this purpose, the KOF Investment Survey is part of the KOF Business Tendency Surveys. In this sense, it is a survey that aims to provide a timely picture of the investment activity of Swiss companies.

The KOF Investment Survey is conducted in the autumn and spring of each year to provide an early assessment of investment tendencies. It includes questions on investment plans and objectives, factors influencing investments and objectives for direct investments abroad. Investments are collected for both the past and the future and converted into rates of change. This allows conclusions to be drawn on the realization of investment plans. The survey asks companies to break down their investment into expenditure on equipment, construction, and research and development. This allows a more detailed analysis of the investment cycle.

General information on the KOF Investment Survey

The investment survey is conducted twice a year – in spring and in autumn. The spring and autumn surveys use different questionnaires. Table 1 shows the list of variables currently included in the KOF Investment Survey. The complete questionnaires can be found on the <u>KOF website</u>.

Both questionnaires focus on quantitative questions about investment amounts at specific points in time, with a different time horizon depending on the survey version. In the spring survey of year t, companies are asked about their investments in year t - 2, year t - 1, and expected investments in year t. In the autumn survey of year t, companies are asked about their investments in year t - 1, and expected investments in year t. In the autumn survey of year t, companies are asked about their investments in year t - 1 and their expected investments in year t and year t + 1. Thus, for a firm participating in the survey every spring and autumn, the survey collects six investment figures for any given year t at different points in time (see Figure 1): For the first time the expected investments in the autumn survey of year t - 1 and for the last time the realized investments in the spring survey of year t + 2.



Data structure of the KOF Investment Survey

Figure 1: Reporting and data structure of the quantitative questions from the KOF Investment Survey. Dark shaded areas represent realized investments. Light shaded areas represent expected investments.

The investments collected are gross investments: Acquisitions minus disposals of fixed assets, recorded at their purchase price before depreciation. For all three time horizons, companies break down their investments into expenditure on equipment, construction, and research and development.

These quantitative questions are complemented by several qualitative questions, for example, on the type of investment (replacement, expansion of production capacity, rationalization, or environmental protection and trade regulations) or the factors influencing the investment (demand, financial resources, technical factors, or others). The response scheme for the questions on the type of investment and the factors influencing the investment is different. For the first question, companies are asked to select one or more applicable types, while the response scheme for the question on the factors influencing investment is of the traditional qualitative type ("very stimulating," "stimulating," "no influence," "limiting," "very limiting").

The questionnaires are available in four languages (German, French, Italian, and English), and respondents can choose to participate online or complete a paper questionnaire. Interviews with respondents indicate that the questionnaire can be completed in 10 to 15 minutes.

Participants in the survey are drawn from a representative sample of private companies regarding the number of employees in industry, construction, and services. By contrast, agriculture, mining, private households, and semi-public enterprises are not or only partially covered. The results are, therefore, not directly comparable with those of the national accounts. In order to take account of the constantly changing composition of the Swiss economy and to compensate for the withdrawal of participating companies, additional newly founded companies are integrated into the company panel in each spring wave.

About 6,000 companies are contacted for the KOF Investment Survey, with an average of about 2,500 responding. Of these, 13% are large companies (more than 250 employees), 40% are medium-sized companies (more than 50, but less than 250 employees), and 47% are small companies with less than 50 employees.

Response rates and non-response

During the last wave of the survey, in autumn 2023, the response rate was 44.1%. The average response rate over the last three years, i.e., from spring 2021 to autumn 2023, was 42.9%.

In order to reduce non-response, the KOF sends a reminder email to missing online participants during the official participation period. After the official participation deadline, KOF reminds missing participants with another reminder email and by telephone.

Survey mode and field period

Respondents can choose to participate online or to complete a paper questionnaire. Currently, 73% of all companies in the sample participate online, and 27% of all participants respond via paper questionnaire. For the spring survey, the field period starts at the end of February and ends at the end of March. For the autumn survey, the field period starts in October and ends in December.

Quantification of companies' responses

As the pool of respondents is not constant across the surveys, the absolute amounts invested are not published for the quantitative questions. Instead, two annual rates of change are calculated from the three totals per investment type. In the spring of year t, the percentage change in investments from year t - 2 to year t - 1, and the expected change in investments from year t - 1 to year t. In the autumn of year t, the expected percentage change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t and the expected change in investments from year t - 1 to year t = 1.

Survey questions with a categorical response scale are quantified using the balance method. This method calculates the net balance, which is defined as the percentage of (+) responses minus the percentage of (-) responses.

Identification and treatment of outliers in companies' quantitative responses

The annual rates of change in investment are based on companies' quantitative responses to their realized and planned investments. However, these rates are susceptible to extreme values, for example, when companies report their investments in thousands of Swiss francs in one period and millions of Swiss francs in the next. In addition, very high investment totals can distort the overall result because they are included in the weighting and aggregation procedure.

Since the survey in autumn 2023, a data-based procedure has been used to identify and treat outliers. This procedure consists of three steps and is applied separately to each survey at the level of 21 branch aggregates (see Figure 2).

In the first step, growth rates are treated by identifying and excluding rates outside the one-and-a-half interquartile range (box plot rule) as outliers. Instead of percentage growth rates, log ratios are used to approximately symmetrize the distributions of the rates.

In the second step, the investment totals are treated by winsorizing the amounts above the 95th percentile, i.e., by setting them to the upper limit of the 95th percentile. Negative amounts are also excluded.

Finally, in the third step, the growth rates are again treated slightly, as the winsorization of the investment totals in the previous step can unintentionally introduce extreme growth rates. In particular, growth rates above the 95th percentile are excluded.



Figure 2: 21 branch aggregates used to identify and treat outliers in companies' quantitative responses to their realized and expected investments. Two-digit numbers correspond to the industries at the NOGA two-digit level. Letters correspond to the industries at the NOGA one-digit level.

Description of the aggregation procedure

After checking the questionnaires for plausibility and treating outliers in companies' quantitative responses, the individual responses are weighted and aggregated to the result for the economy as a whole in two steps.

In the first step, the individual responses are aggregated at the NOGA two-digit level for three size classes (small, medium-sized, and large companies). The number of persons employed for the size classes is defined in full-time equivalents. At this lowest level of aggregation, the individual responses for the quantitative variables are weighted by their share of employee representation derived from official employment statistics. Individual responses for the qualitative variables are weighted by their share of employee are weighted by their share of employee representation as derived from the questionnaire.

The results for the three size classes are further aggregated to the two-digit NOGA level. Quantitative variables are summed and the previous year's investment at the company level is used to calculate the percentage change in investment. Qualitative variables are aggregated using the respective share of employees in the population.

The second level of aggregation consists of summarizing the results at NOGA two-digit level into higher aggregates, such as the result for the sector (industry, construction, services) or the whole economy. Quantitative variables are summed up at the appropriate level and the calculation of the percentage change in investment is based on the investment of the corresponding previous year at the level of the company. Qualitative variables are weighted by the respective share of employment in the population and the investment totals from the survey and aggregated to the corresponding level.

Publication

Detailed results of the surveys are prepared and analyzed in reports for the participating companies. In addition, the results are published twice a year in the KOF Bulletin.

Interested parties can obtain some of the aggregated <u>time series</u> from the KOF for a fee. Researchers can gain access to the anonymized microdata in the <u>KOF Micro Data Center</u> for research purposes.

Question	Description	Reference Period	Answer scheme	Survey wave	Available since
Investment activity	machinery and equipment	in year t-2	in Swiss francs	spring	spring 2014
		in year t-1	in Swiss francs	autumn, spring	autumn 2013
		in year t	in Swiss francs	autumn, spring	autumn 2013
		in year t+1	in Swiss francs	autumn	autumn 2013
	construction	in year t-2	in Swiss francs	spring	spring 2014
		in year t-1	in Swiss francs	autumn, spring	autumn 2013
		in year t	in Swiss francs	autumn, spring	autumn 2013
		in year t+1	in Swiss francs	autumn	autumn 2013
	research and development	in year t-2	in Swiss francs	spring	spring 2015
		in year t-1	in Swiss francs	autumn, spring	autumn 2014
		in year t	in Swiss francs	autumn, spring	autumn 2014
		in year t+1	in Swiss francs	autumn	autumn 2014
Investment tendency	machinery and equipment	in year t	increase, remain unchanged (or at zero), decrease	spring	spring 2015
		in year t+1	increase, remain unchanged (or at zero), decrease	autumn, spring	autumn 2010
	research and development	in year t	increase, remain unchanged (or at zero), decrease	spring	spring 2015
		in year t+1	increase, remain unchanged (or at zero), decrease	autumn, spring	autumn 2010
	construction	in year t	increase, remain unchanged (or at zero), decrease	spring	spring 2015
		in year t+1	increase, remain unchanged (or at zero), decrease	autumn, spring	autumn 2010
Certainty of realization	realization of investment plans	in year t	very certain, fairly certain, fairly uncertain, very uncertain	spring	spring 2015
		in year t+1	very certain, fairly certain, fairly uncertain, very uncertain	autumn	autumn 2010
Irreversibility	investment in machinery and equipment	-	yes and easy, yes but it takes time, yes but it is very difficult, no	spring	autumn 2014
Production capacity	expected change relative to year t	in year t+1	expand, leave unchanged, reduce	autumn	autumn 2010
Product programme	add new products to the product range	in year t+1	yes, no	autumn	autumn 2010
	retain the product range	in year t+1	yes, no	autumn	autumn 2010
	bring the products into line	in year t+1	yes, no	autumn	autumn 2010
Structure of	extension of the production	in year t	yes, no	autumn, spring	autumn 2010
Investment	capacity	in year t+1	yes, no	autumn, spring	autumn 2010
	environmental protection	in year t	yes, no	autumn, spring	autumn 2010
	and regulations by trade law	in year t+1	yes, no	autumn, spring	autumn 2010
	replacement	in year t	yes, no	autumn, spring	autumn 2010
		in year t+1	yes, no	autumn, spring	autumn 2010
	to streamline production	in year t	yes, no	autumn, spring	autumn 2010
		in year t+1	yes, no	autumn, spring	autumn 2010
	other objectives	in year t	yes, no	autumn, spring	autumn 2010
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		in year t+1	yes, no	autumn, spring	autumn 2010
Factors influencing the investment activity	demand	in year t	very stimulating, stimulating, no influence, limiting, very limiting	autumn	autumn 2010
		in year t+1	very stimulating, stimulating, no influence, limiting, very limiting	autumn	autumn 2010
	financial resources / expected profits	in year t	very stimulating, stimulating, no influence, limiting, very limiting	autumn	autumn 2010
		in year t+1	very stimulating, stimulating, no influence, limiting, very limiting	autumn	autumn 2010
	technical factors	in year t	very stimulating, stimulating, no influence, limiting, very limiting	autumn	autumn 2010
		in year t+1	very stimulating, stimulating, no influence, limiting, very limiting	autumn	autumn 2010
	other factors	in year t	very stimulating, stimulating, no influence, limiting, very limiting	autumn	autumn 2010
		in year t+1	very stimulating, stimulating, no influence, limiting, very limiting	autumn	autumn 2010
Non-domestic investment	distribution	in year t+1	yes, no	autumn	autumn 2010
	production	in year t+1	yes, no	autumn	autumn 2010
	research and development	in year t+1	yes, no	autumn	autumn 2010
Climate and weather events	investments (plans) to tackle climate change	in year t-1, until year t+3	yes and planned, yes but not planned, no but planned, no and not planned	spring	spring 2023
	climate targets	in year t	yes, no	spring	spring 2023
	physical risk	in year t	major impact, minor impact, no impact	spring	spring 2023
	transition risk	until year t+5	risk, no impact, opportunity	spring	spring 2023
	transition impact on market demand	until year t+5	positive, no impact, negative	spring	spring 2023
	transition impact on supply chain	until year t+5	positive, no impact, negative	spring	spring 2023
	transition impact on	until year t+5	positive, no impact, negative	spring	spring 2023

 Table 1: List of variables in the KOF Investment Survey. The table lists only those variables that are still available in the current (spring 2023 and autumn 2023) versions of the questionnaires.

KOF

ETH Zürich KOF Konjunkturforschungsstelle LEE G 116 Leonhardstrasse 21 8092 Zürich

Telefon +41 44 632 42 39 kof@kof.ethz.ch www.kof.ch

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