Statistics Poland

Results on investments in Statistics Poland's BTS – regular survey vs. ad-hoc questions

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Agenda

1. Overview of the standard BTS

Brief outline of the survey's scope, target entities, thematic coverage, and key breakdowns

2. Survey Extensions and Selected Analytical Modules

Summary of key extensions, including rapid macroeconomic diagnostics (investments).

3. From BTS to Systematic Diagnostic System

Transition from a standard survey to a comprehensive tool for both real-time economic assessment and structural research on the Polish economy

Key information about the survey

Mandatory participation under the Programme of Official Statistical Surveys

Monthly questionnaires, average completion time: approx. **18 minutes**

Large sample – cross-sections (NACE rev.2, size classes, voivodeships)

Manufacturing (section C)	~ 3 500
Construction (section F)	~ 4 000
Retail trade (section G)	~ 7 800
Services (section H, I, J, K, L, M, N, R, S)	~ 4 300

Very high response rates (typically about 90%)

A total of over 6,000 time series (cross-sections)

Access – news releases, publications, Excel,
Knowledge Databases – available via API and downloadable Excel files

Questions on investments in regular survey

Set of questions: harmonised (manufacturing and services) & national (construction)

- asked bi-annually – in March and October
- In October 2021 – set of questions added in services
- One question on investment outlays also on monthly questionnaire for trade

- Filtering question on incurring investment expenses in the following years – *national*
- comparing investments between following years (increase, decrease, no change) – *harmonised*
- Investement goals – *harmonised*
- Financial sources of investments – *national*
- Main factors stimulating investments – *harmonised*

Questions on investments in regular survey

Filtering questions on incurring investment expenses in the following years

1. 2 years back
2. previous year
3. current year
4. next year

Variants of answers

1. yes
2. no

Investement goals

1. replacement of worn-out plant or equipment
2. extension of production capacity
3. investment designed to streamline production
4. other investment objectives (pollution control, safety, etc.)

Main factors stimulating investments

1. demand
2. financial conditions
3. technical factors
4. other factors

Financial sources of investments

1. own sources
2. bank credit
3. leasing
4. others

Comparing investments between following years

Categories:

1. overall investment
2. machinery and equipment
3. land, building and infrastructure
4. intangibles (R&D, software, data, intellectual property, vocational training, etc.)

Variants of answers

1. increase
2. remain unchanged
3. decrease

Questions on investments in regular survey – filtering questions

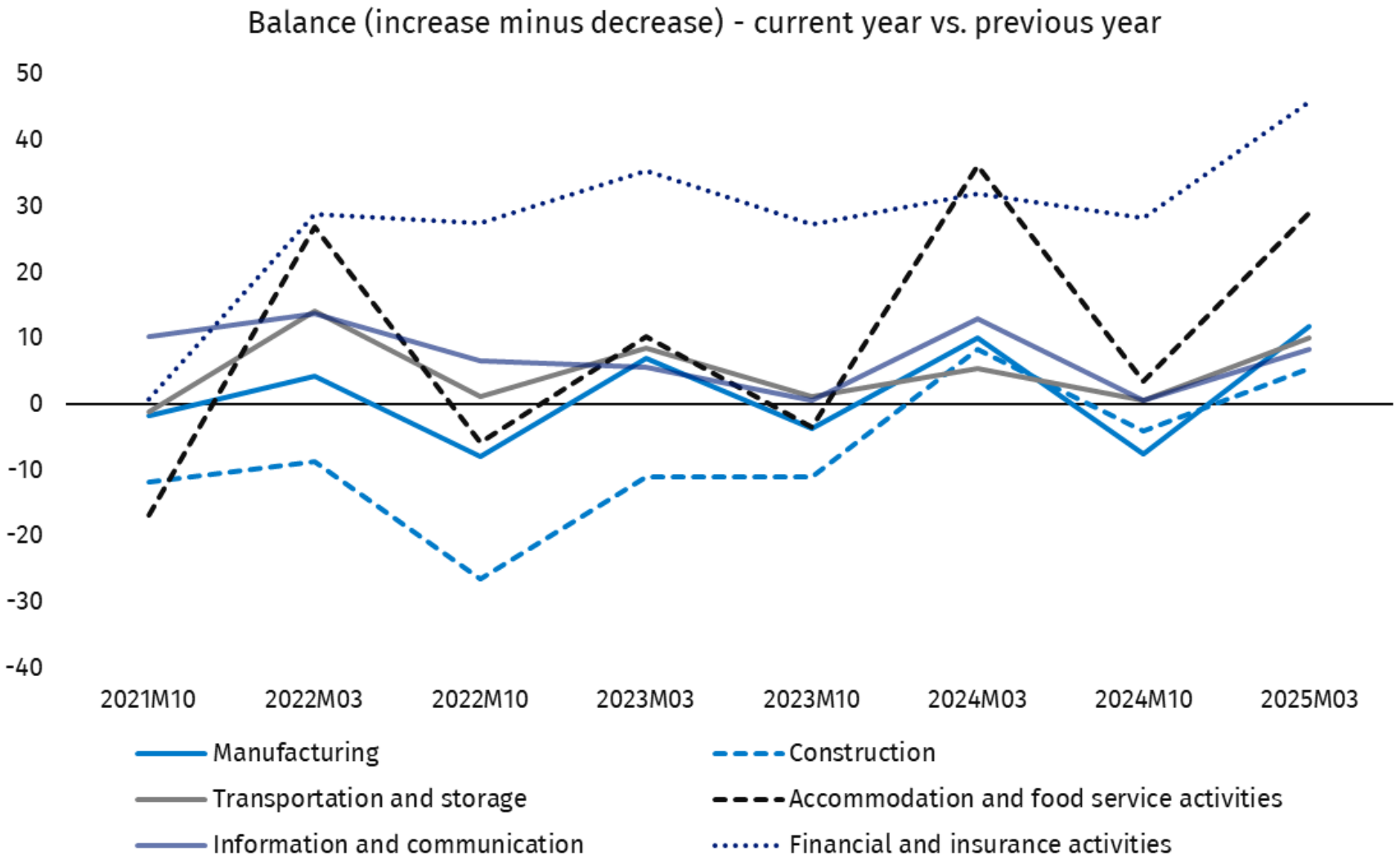
Investments this year - YES

	2022M03	2022M10	2023M03	2023M10	2024M03	2024M10	2025M03
Manufacturing	47.3	55.2	48.7	54.2	49.8	55.0	⇧ 51.5
Construction	32.0	35.7	29.2	36.5	34.8	40.9	⇧ 35.8
Transportation and storage	57.8	61.7	57.3	57.6	49.5	52.6	⇩ 47.2
Accommodation and food service activities	35.2	41.2	36.7	39.3	35.7	43.7	⇧ 42.7
Information and communication	62.0	62.5	54.0	59.8	54.9	55.2	⇩ 49.7
Financial and insurance activities	61.0	63.1	71.4	70.6	71.7	69.9	⇧ 78.5

Inwestments next year - YES

	2022M03	2022M10	2023M03	2023M10	2024M03	2024M10	2025M03
Manufacturing	38.6	41.4	40.2	44.3	42.8	47.6	⇧ 44.9
Construction	28.7	26.0	26.2	29.8	30.7	32.9	⇧ 31.4
Transportation and storage	51.8	52.7	51.0	52.4	46.3	47.4	⇩ 46.3
Accommodation and food service activities	31.8	30.8	33.1	32.7	24.9	56.3	⇨ 29.3
Information and communication	57.6	58.3	53.8	57.7	51.9	44.8	⇩ 47.5
Financial and insurance activities	57.6	60.1	67.2	69.3	69.0	30.1	⇧ 73.7

Questions on investments in regular survey



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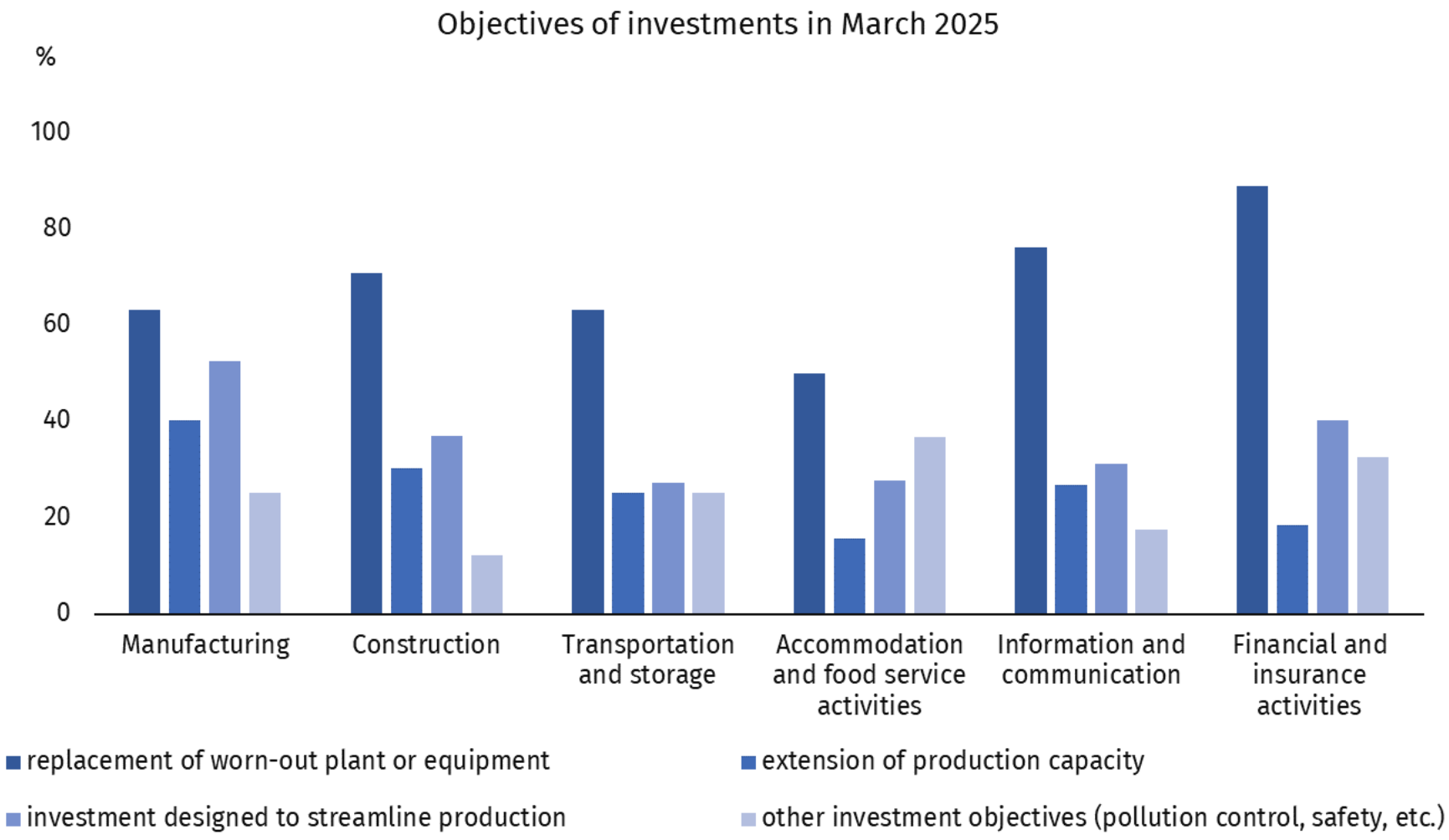

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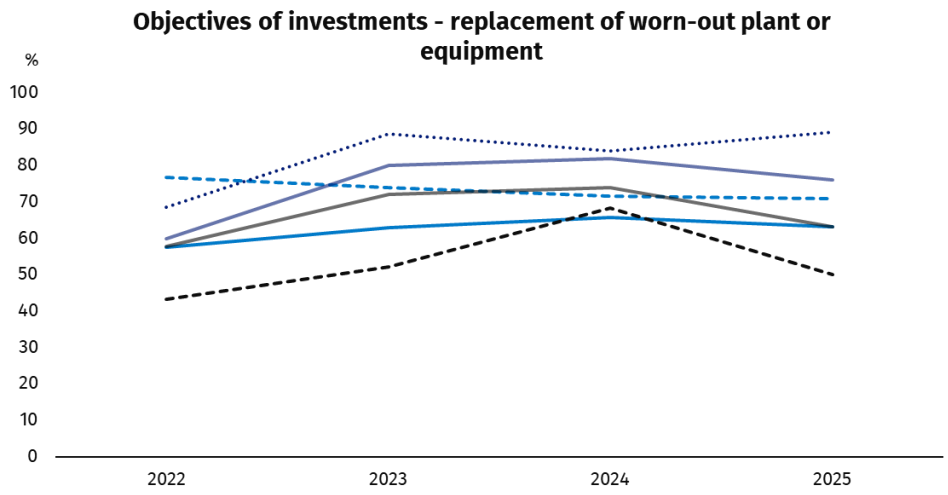

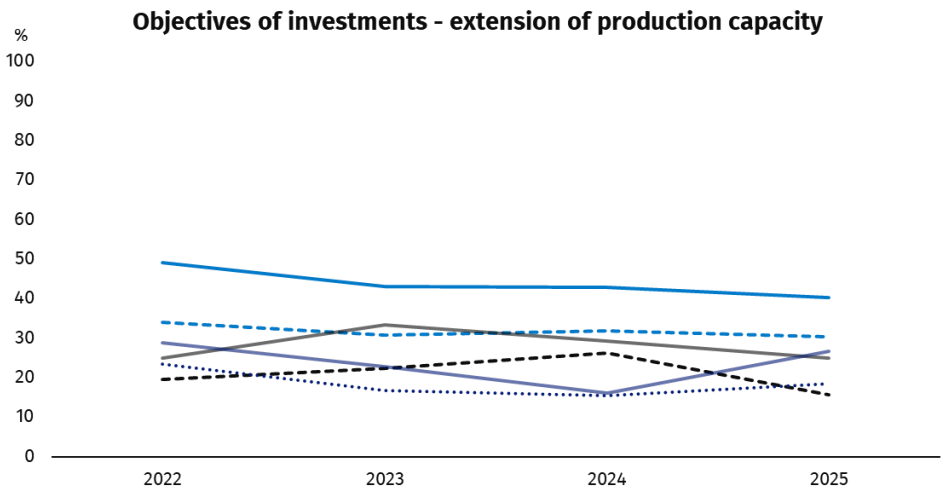

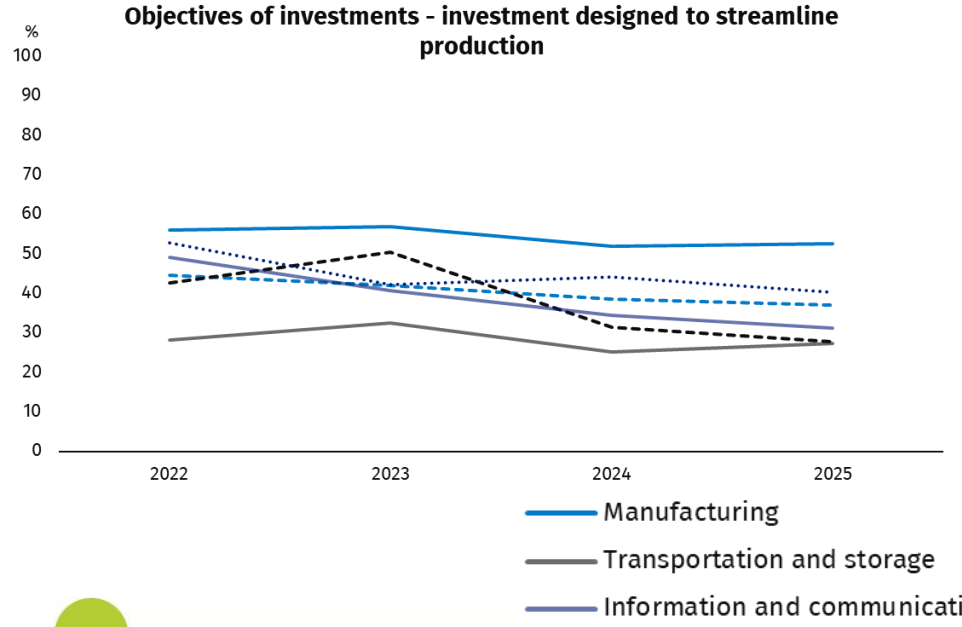

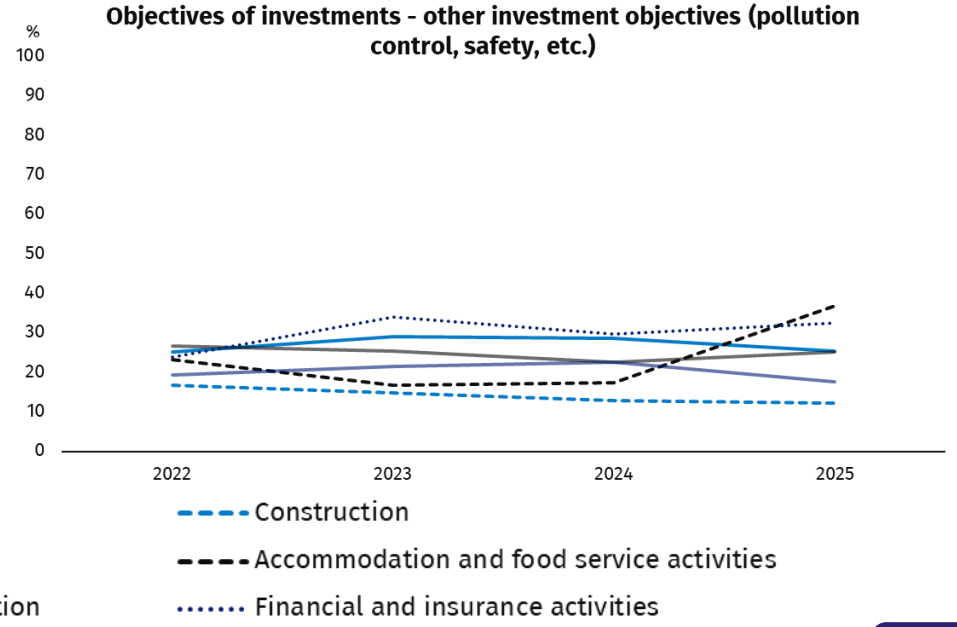

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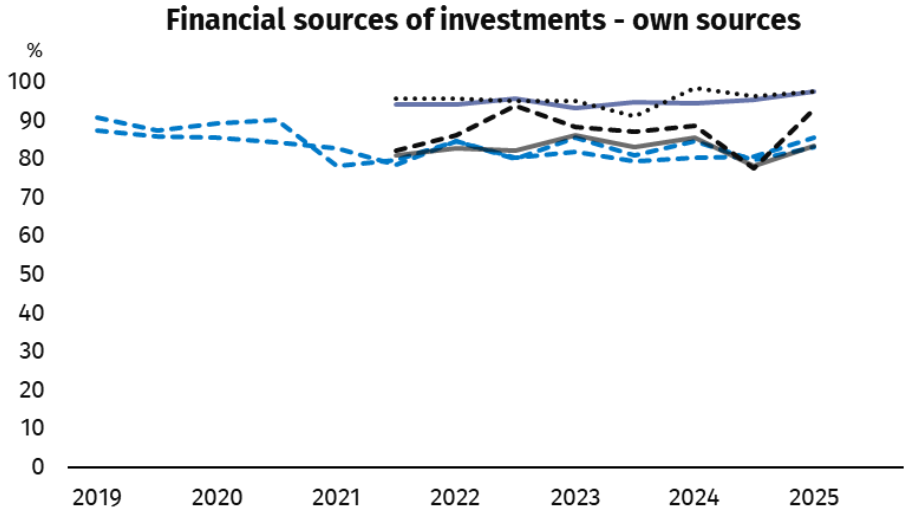

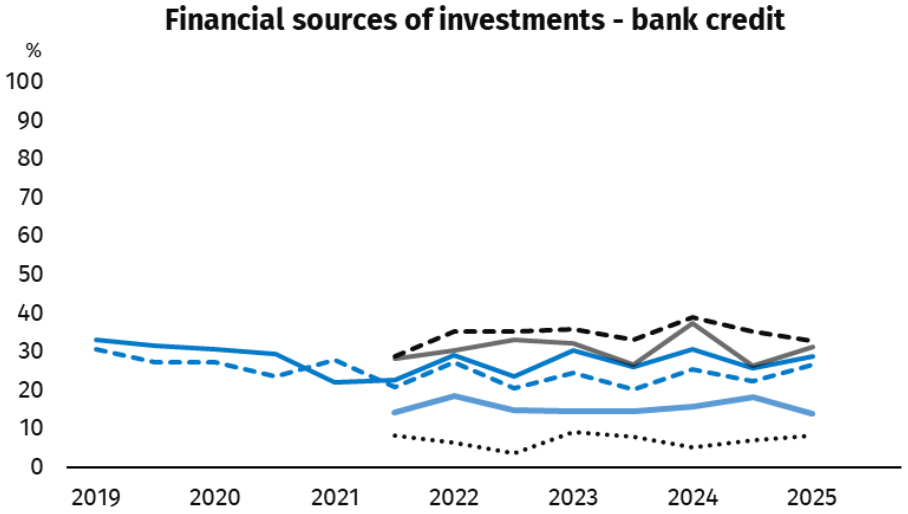

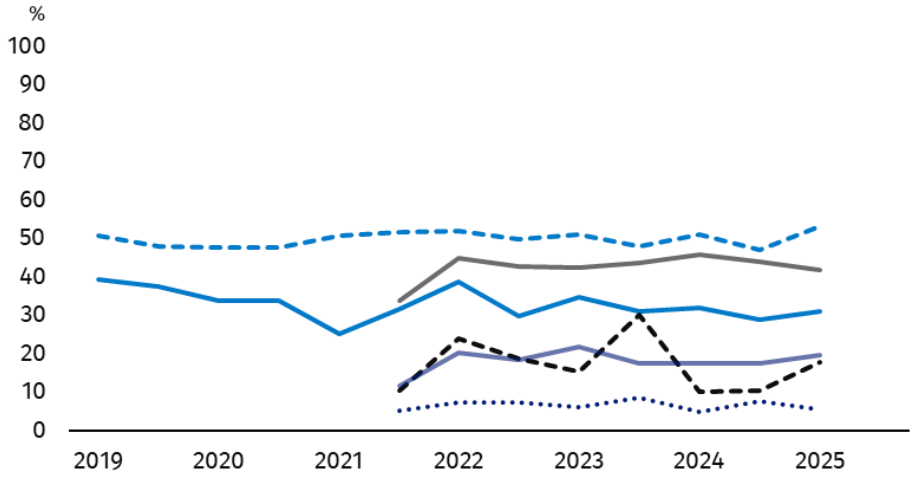

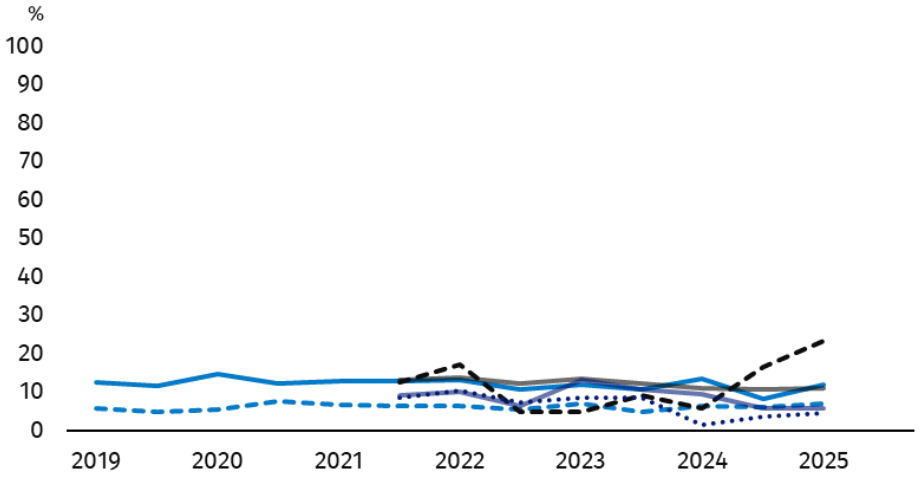

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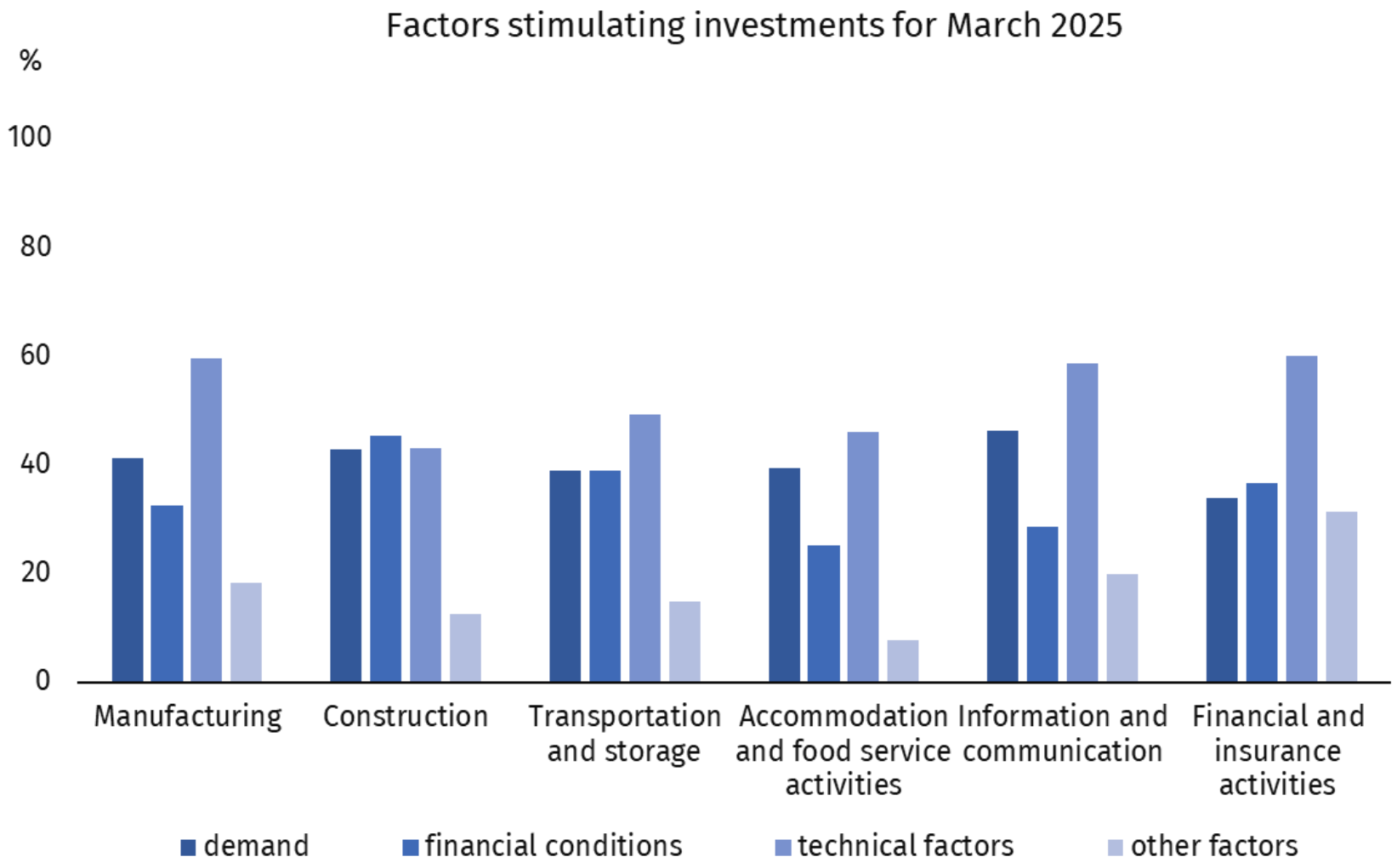

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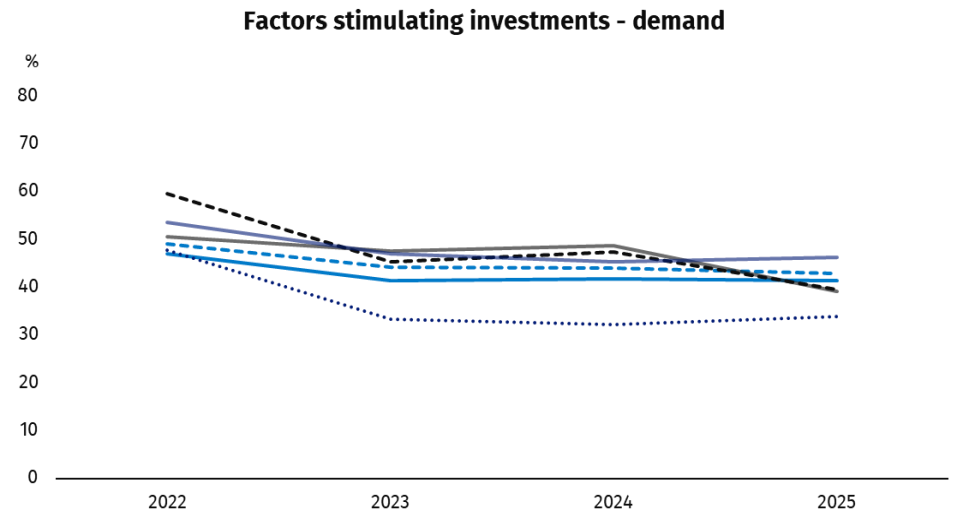

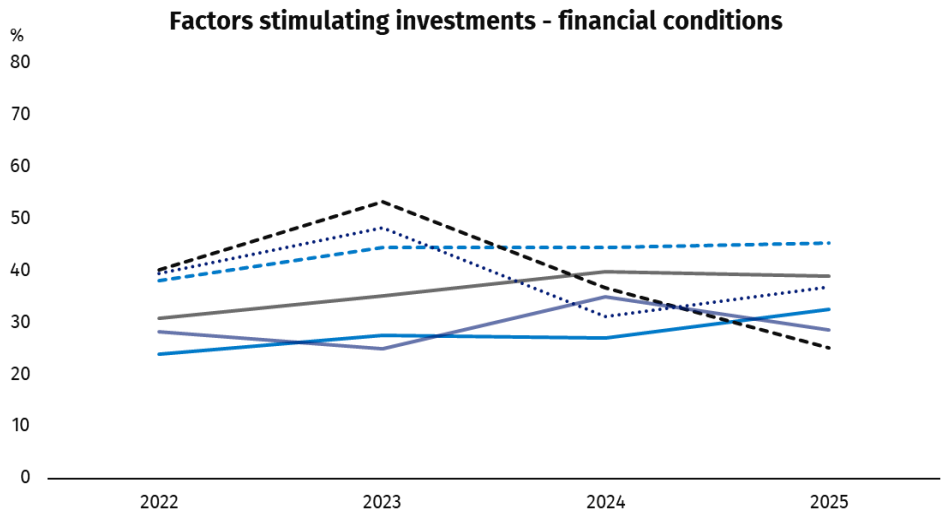

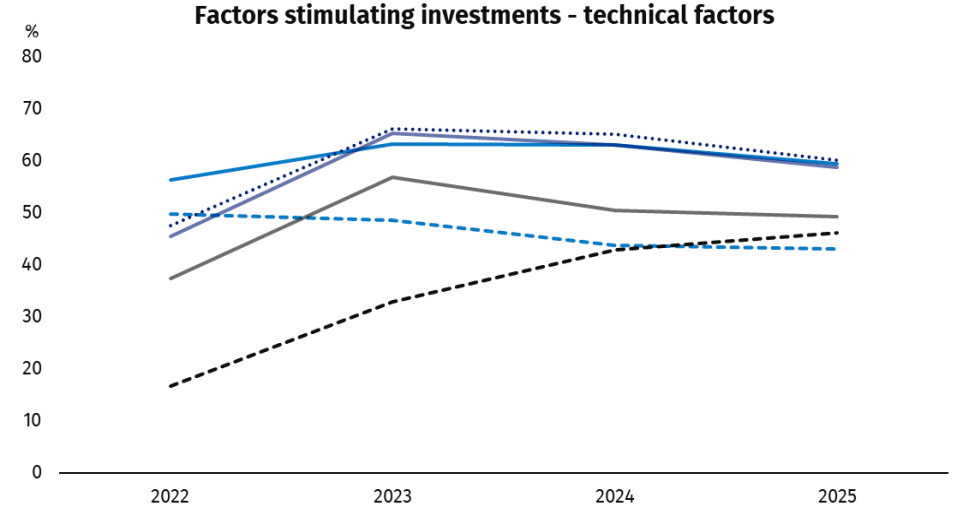

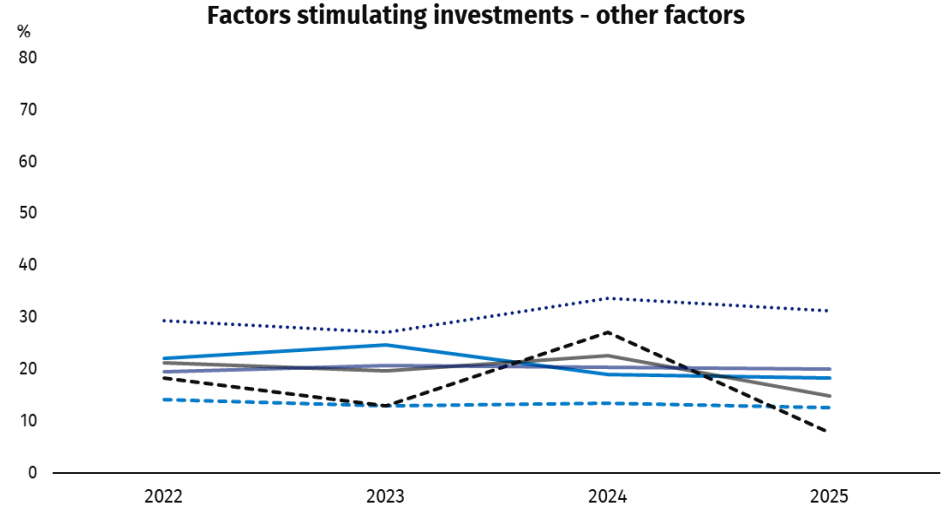

Manufacturing
Transportation and storage
Information and communication
Construction
Accommodation and food service activities
Financial and insurance activities

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BTS extensions

- Subjective and objective extensions in relation to the EU framework
- Voivodship level
- Additional survey among exporters (manufacturing, factors limiting activity in services)
- Impact of COVID-19 pandemic
- Impact of war in Ukraine
- A system for diagnosis of structural macroeconomic challenges at the microeconomic level - Quick Structural Assessment (Mic-Mac)
- Business Cycle Clock
- Relations between business cycles of the world's major economies and the EU
- Output gap estimates based on company-level data

Extension: Quick Structural Assessment (Mic-Mac)

- Rapid and “near real-time” diagnosis of key macroeconomic challenges at the microeconomic level
- Analysis of major macroeconomic processes over a “medium-term” horizon (several years)
- A clear set of enterprise-level questions with conclusions applicable also at the macro level
- Questions appropriate for both growth and decline scenarios
- Exploration of rarely addressed behavioral aspects of entrepreneurs' decisions and the cause-and-effect mechanisms involved, which are uncommon in „regular”statistical research

Extension: Quick Structural Assessment (Mic-Mac)

Following the analysis of several variants, the following structure of questions was adopted for the supplementary module:

1. Size of the phenomenon/directions of change
2. Key transmission mechanisms
3. In-depth diagnostic questions aimed at uncovering the underlying mechanisms and rationale behind decisions

Scope of analysis:

1. Price developments
2. Investments
3. Labour market

Frequency of research:

– quarterly

Quick Structural Assessment (Mic-Mac) – investments

- Questions asked sistematically since 2023, four times a year – in February, May, August and November
- In all surveys (manufacturing, construction, trade, services)

- Level of investments
- Investment directions
- Factors limiting investments
- Willingness to invest

Quick Structural Assessment (Mic-Mac) – investments

Level of investments

1. significant decrease
2. insignificant decrease
3. maintenance of level of investments
4. insignificant increase
5. significant increase

Investment directions

1. organisational/business processes
2. staff training
3. copyrights, related proprietary rights, licenses, concessions (incl. software)
4. computer and telecommunications equipment
5. R&D (research and experimental development)
6. machinery, technical equipment and tools
7. land, buildings and structures
8. means of transport
9. no investment plans

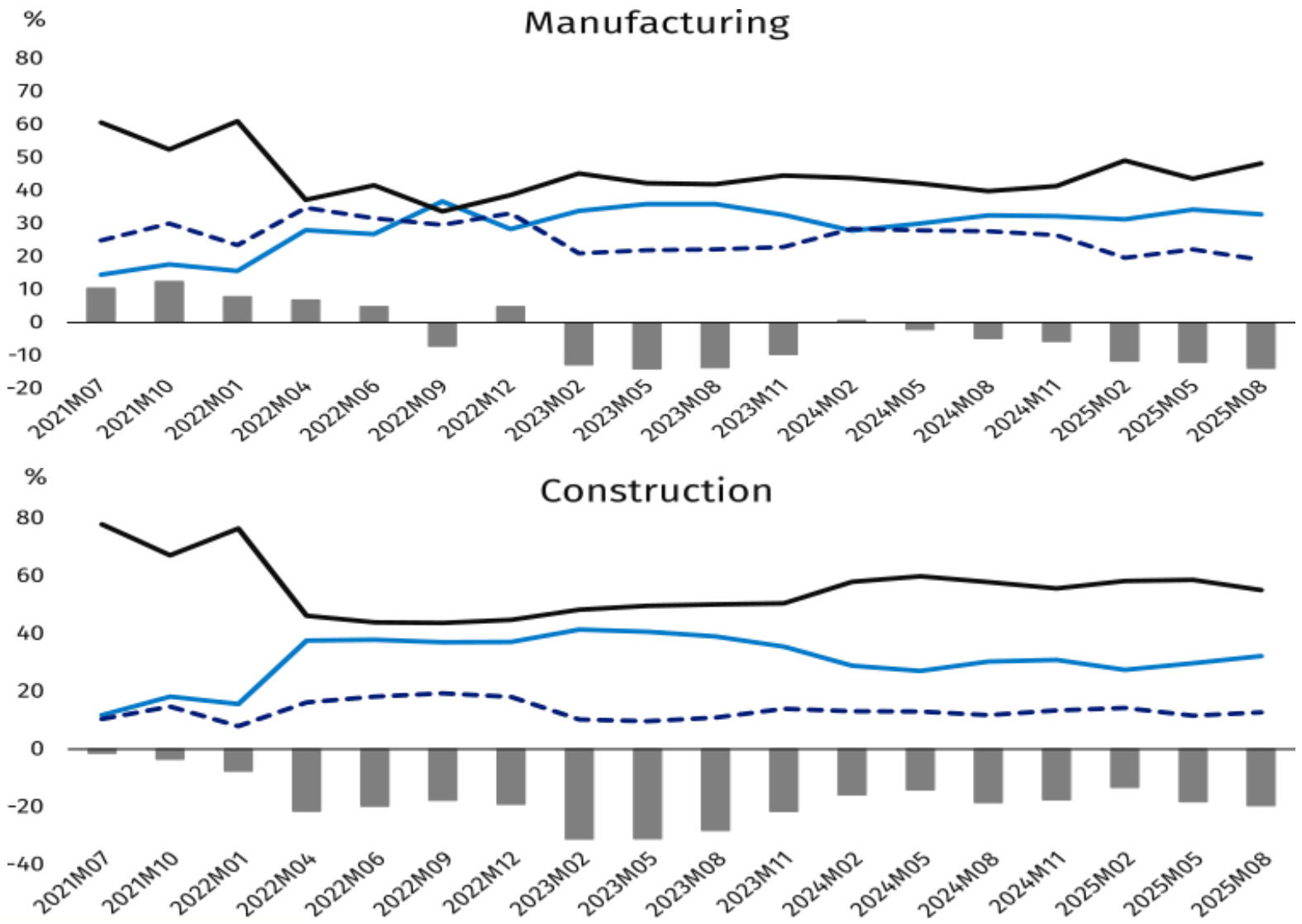
Factors limiting investments

1. high costs of investments
2. difficulties in obtaining external sources of financing
3. lengthy procedures for obtaining permission to invest
4. problems with employing personnel
5. broken supply chains
6. high inflation
7. unclear and unstable legal regulations
8. uncertain macroeconomic situation
9. insufficient demand on products/services offered by the company
10. none

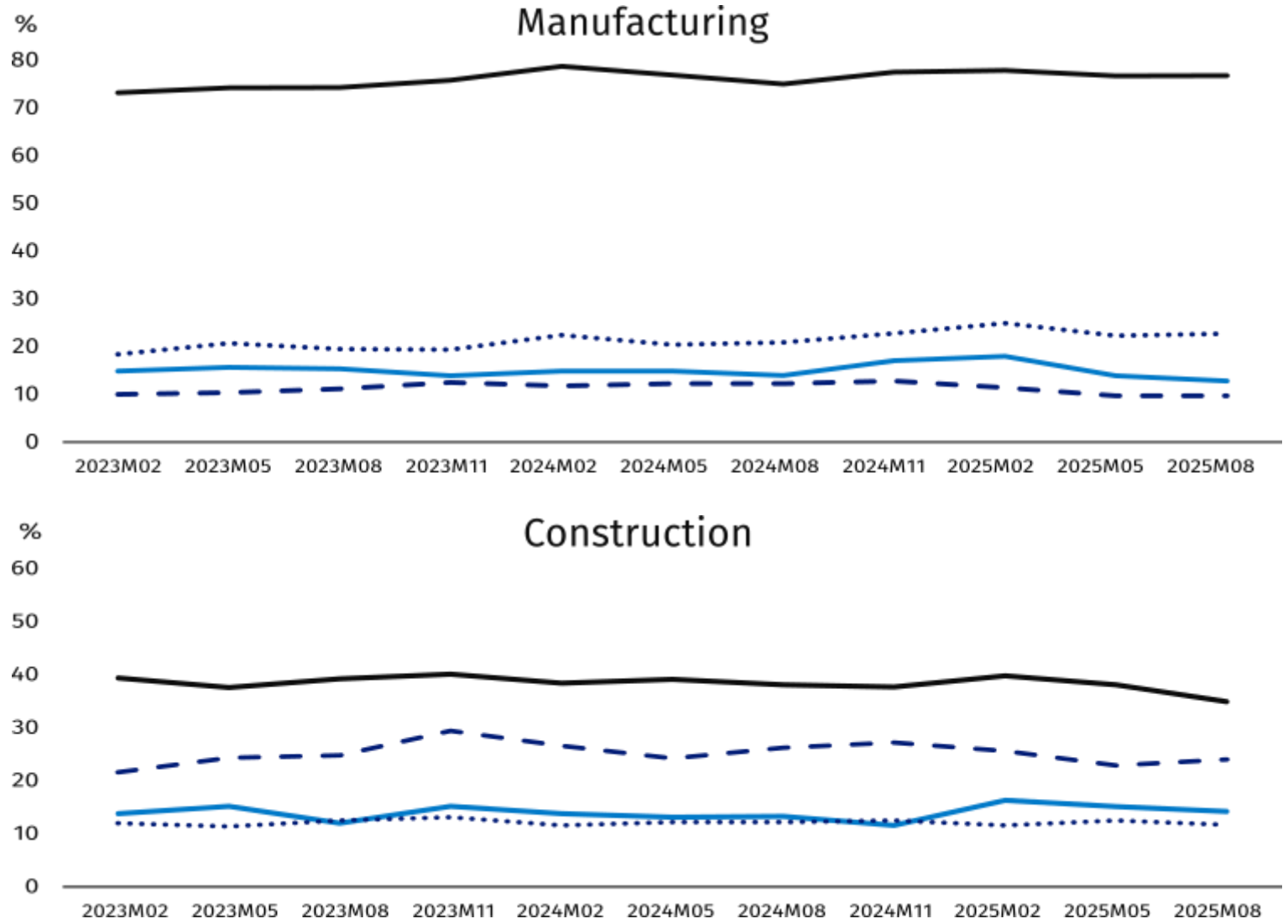
Current changes in the situation of company as well as market environment affecting the **willingness to invest**

1. positively
2. neutrally
3. negatively

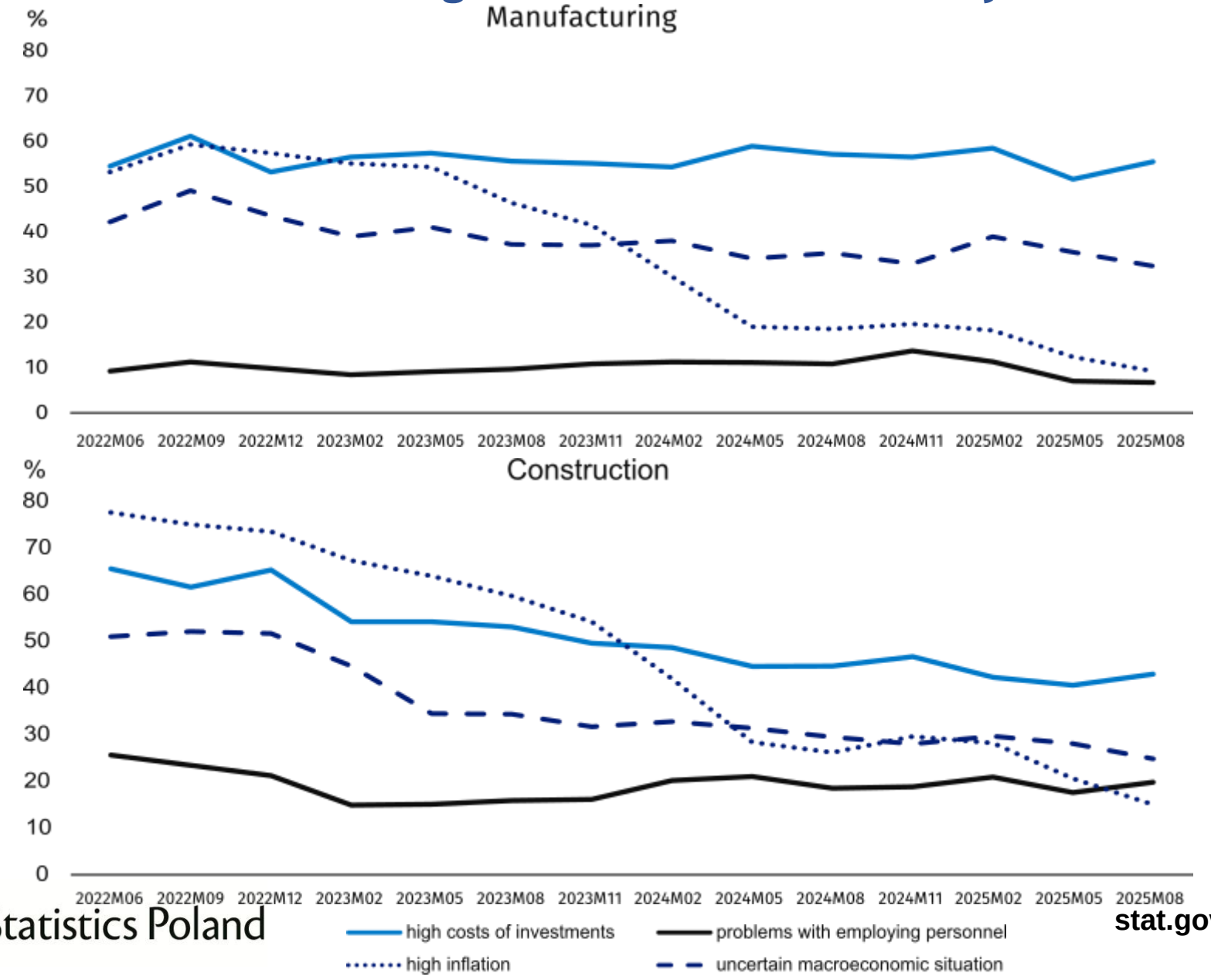
Quick Structural Assessment (Mic-Mac) – investments – level of investments in the current year



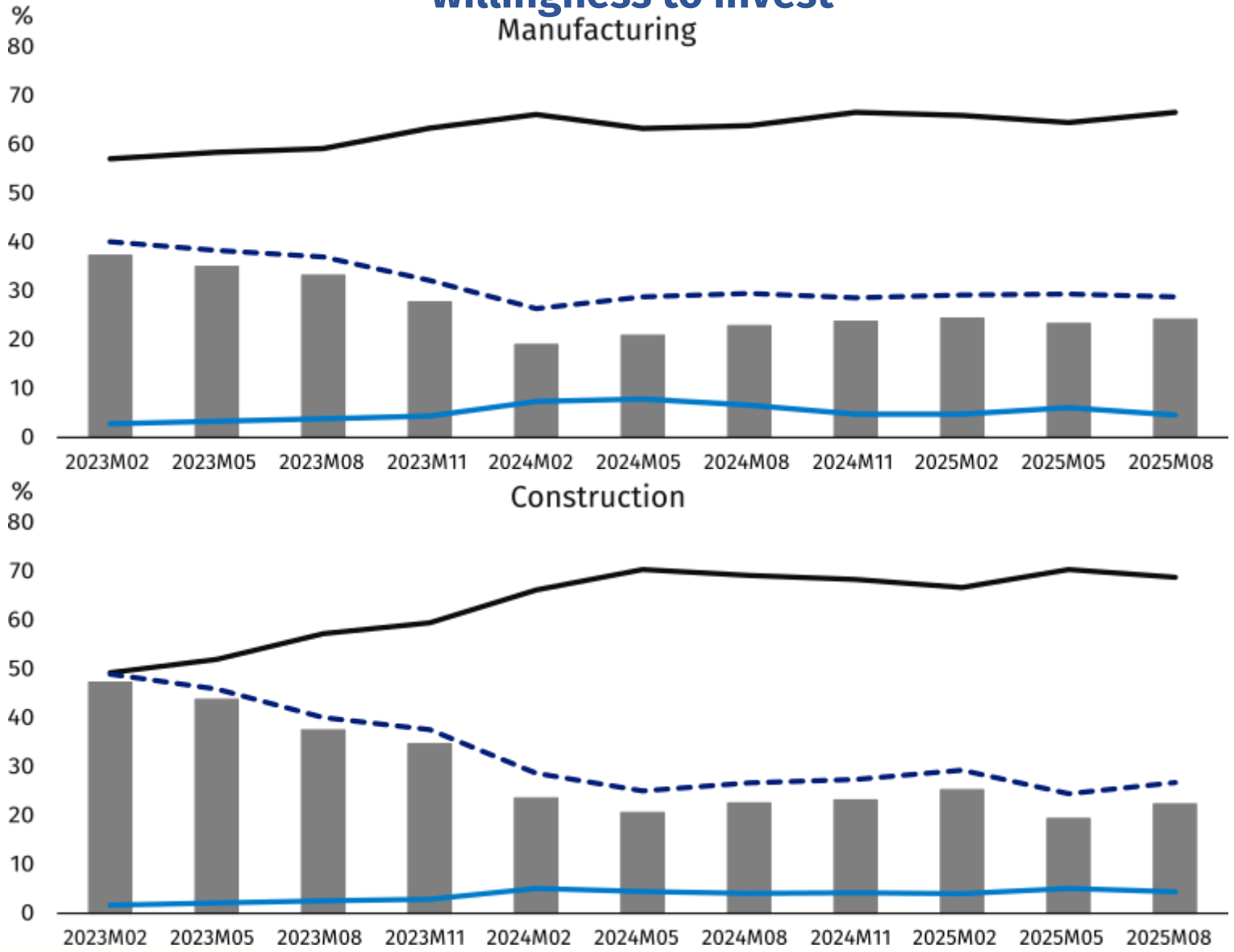
Quick Structural Assessment (Mic-Mac) – investments – main investment directions



Quick Structural Assessment (Mic-Mac) – investments – factors limiting investments in the current year



Quick Structural Assessment (Mic-Mac) – investments – willingness to invest



Questions on investments in BTS

Publishing the results on investments

The previous slides present only a fragment of data on investments in BTS.

Data in this regard are presented in numerous cross-sections:

1. In manufacturing – at the level of size classes, NACE Rev.2 sections/divisions and MIGs
2. In construction – at the level of size classes

They can be found in Excel databases on Statistics Poland's official webpage

Statistics Poland / Topics / Business tendency / Business tendency / Business tendency (2000–2025) - August 2025

as well as Knowledge Databases > link also on EC's (DG ECFIN) official webpage

Highlights

Extensive survey – comprehensive dataset

- Broad coverage of enterprise activity: addressing nearly all key aspects of business operations
- Multiple dimensions and breakdowns: including time, geography, and other relevant groupings
- Over 6,000 monthly data series: ensuring detailed and systematic monitoring

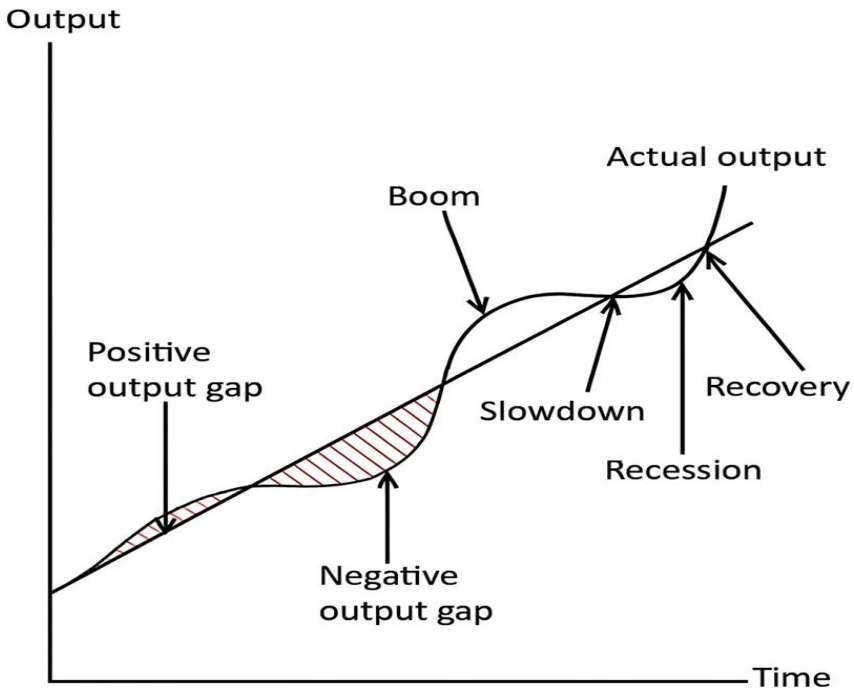
Flexible and rapid response to research challenges and emerging needs

- Immediate reaction to shock events affecting the economy
- Ongoing methodological innovation to enhance the diagnosis of economic processes
- Capacity to generate tailored cross-sections and indicators for specific analytical requirements
- Approaches combining extensive and intensive development, including the application of advanced econometric methods

What is the Output Gap?

- **Output Gap:** difference between actual and potential output
- **Key indicator for**:
  - Economic conditions assessment
  - Inflationary pressures (Phillips curve)
  - Monetary and fiscal policy decisions
- **Challenge:** Potential output is unobservable and difficult to measure, existing estimation methods are not satisfactory in terms of both **results** and **analytical potential**

Firm-level production function approach can open new prospects for both (and productivity analysis)



What is the firm-level TFP?

- **Definition:** measures how efficiently firms transform inputs (capital and labor) into output – **key challange od EU MS economies (Draghi Report)**
- **Role:** the primary indicator of efficiency and technological performance in the production process
- **Estimation:** Since TFP is not directly observable, it is derived as the *Solow residual* from the firm-level production function
- **Heterogeneity:** Firm-level analysis has become increasingly important, as aggregate measures often mask substantial heterogeneity across enterprises
- **Policy relevance:**
  - Identifies **barriers to productivity growth** at the firm, sectoral, or regional level
  - Supports the design of **targeted industrial, innovation, and regional policies**
  - Informs strategies to **enhance competitiveness, innovation diffusion, and resource allocation efficiency**

Microdata-based Output Gap Calculation

Step 1: Estimate Firm-level production function

$$Y_{it} = TFP_{it} \cdot U_{it}^{\beta_{u,d}} \cdot K_{it}^{\beta_{k,d}} \cdot L_{it}^{\beta_{l,d}} \cdot e^{\varepsilon_{it}} \quad (1)$$

Step 2: Extract Potential Inputs: $L_{it}^{POT}, K_{it}^{POT}, U_{it}^{POT}$

Step 3: Calculate Firm-level Potential Output

$$y_{it}^{POT,UKL} = \hat{\beta}_{u,d} u_{it}^{POT} + \hat{\beta}_{k,d} k_{it}^{POT} + \hat{\beta}_{l,d} l_{it}^{POT} + \omega_{it} \quad (3)$$

Step 4: Firm-level Output Gap

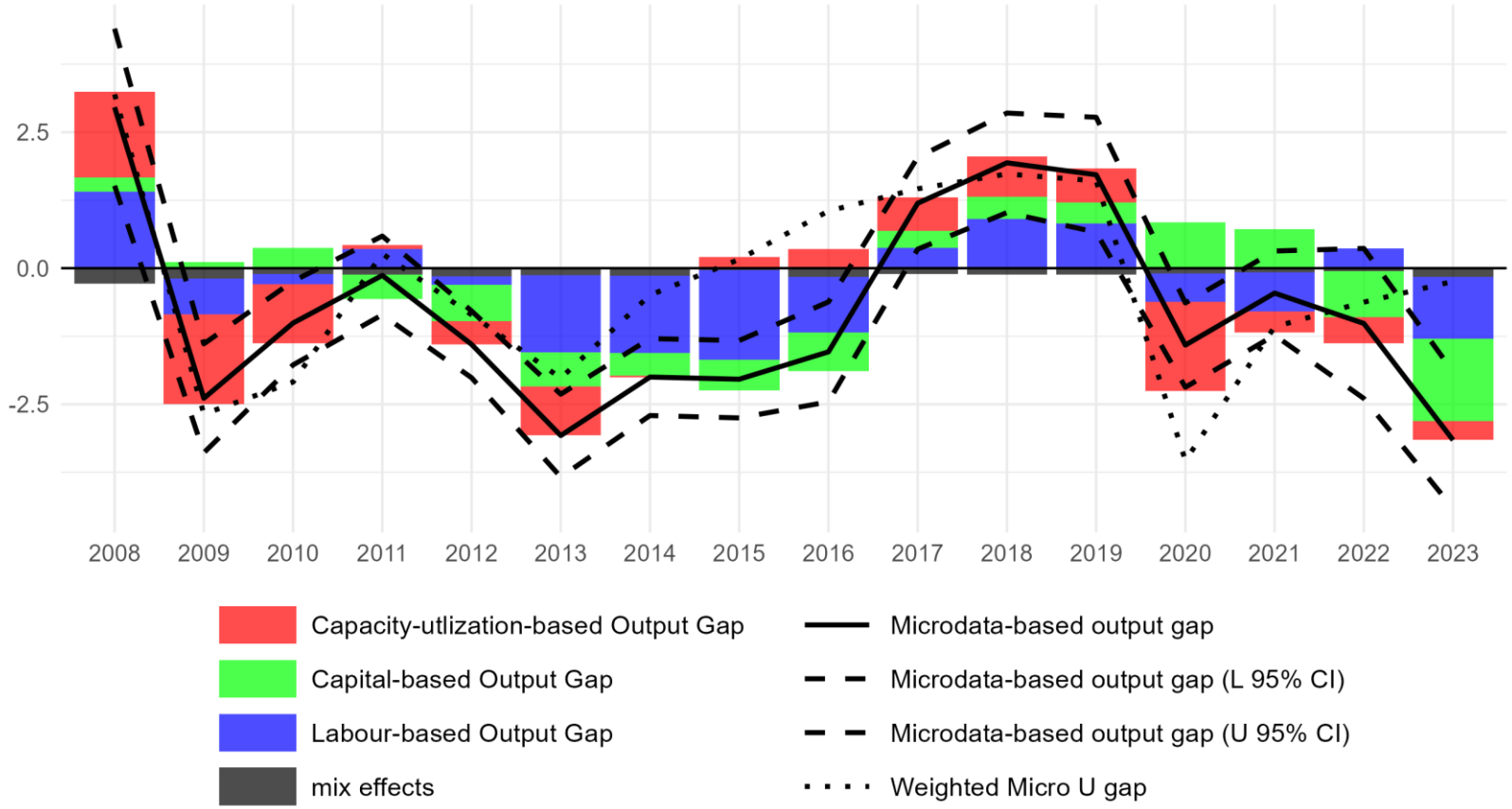
$$x_{it} = y_{it} - y_{it}^{POT,UKL} \quad (4)$$

Step 5: Aggregate to Sectoral/Regional/Economy Level

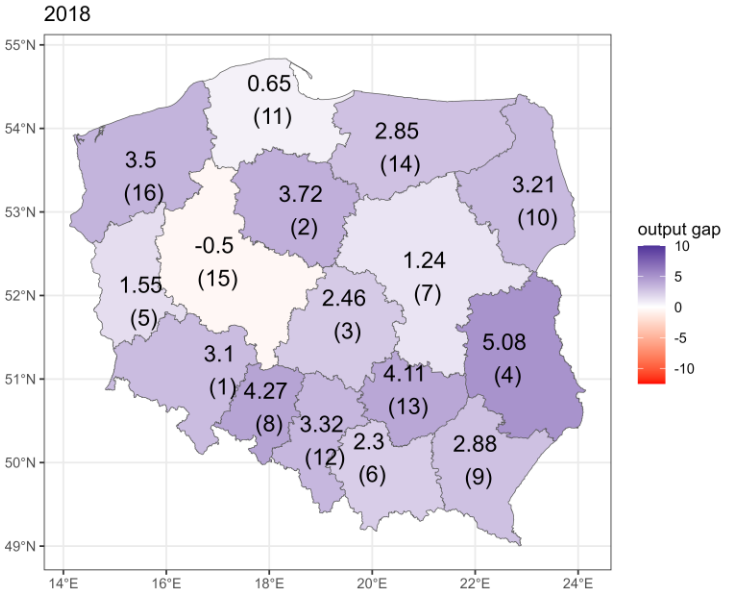
$$x_t^{UKL} = \log Y_{St} - \log Y_{St}^{POT,UKL} \quad (5)$$

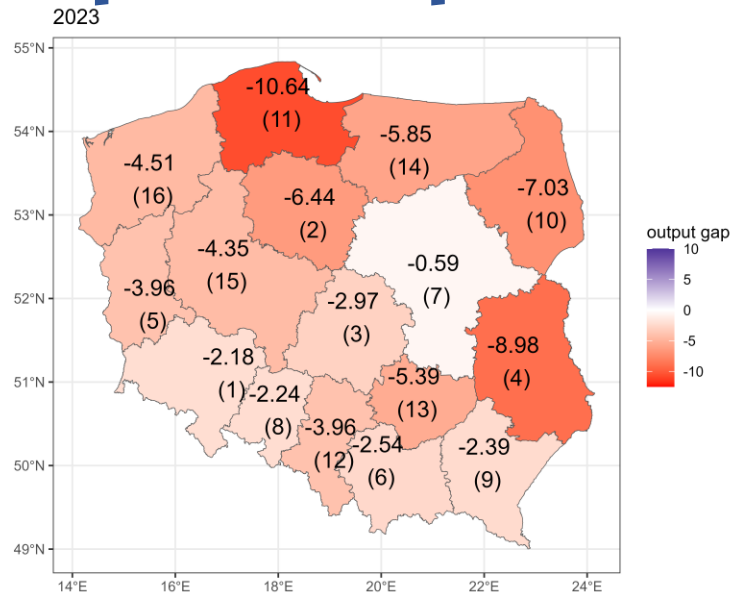
$$x_t^{W,UKL} = \sum_{i \in S} w_{t,i} x_{it}$$

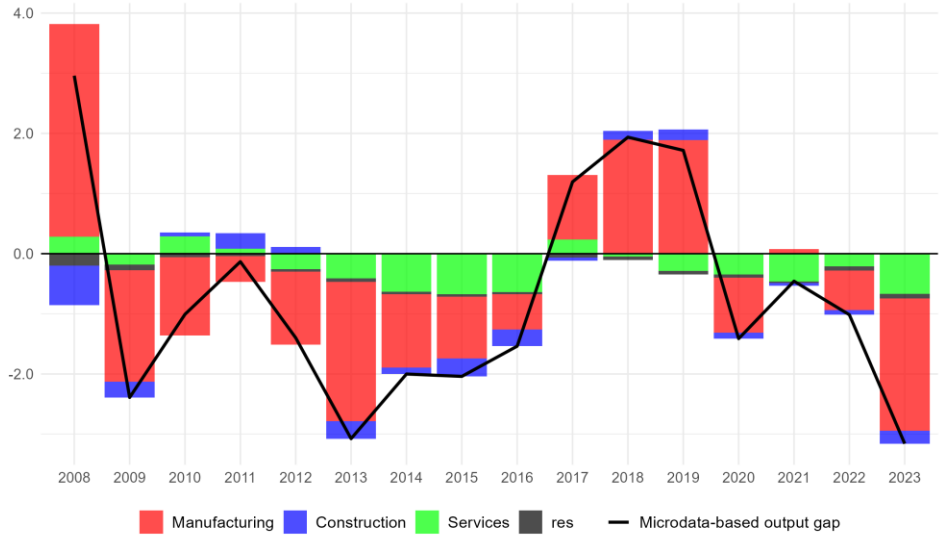
Microdata-based Output-Gap Decompositions



Microdata-based Output-Gap Decompositions







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Why TFP and Output Gap Research Matters?

- **TFP and the Output Gap are crucial** — not only academically, but also institutionally for **central banks, ministries of finance,** and the **European Commission**, informing a wide range of monetary, fiscal, industrial, regional, and cohesion policy decisions
- Existing methods for measuring - limited and unsatisfactory, especially in capturing structural and firm-level dynamics
- At **Statistics Poland, we are developing microdata-based approaches** to study both productivity and the output gap (projects with IMF, WB, OECD)

Błażej M., Górajski M., Ulrichs M. *Microdata-Based Output Gap Estimation Using Business Tendency Surveys*, Journal of Economic Dynamics & Control 174 (2025) 105068

- **Gives statistical offices a unique opportunity to strengthen their analytical position**
- **We are happy to offer suport and assistance (software, methodology, interpretation) – YOU ARE INVITED TO CONTACT ☺**

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Thank you for your attention!

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