

The Forecasting Power of the ifo Business Survey*

– Supplementary Material –

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Abstract

This is the supplementary material to the article by Lehmann (2022). The material contains the questionnaire, the coverage, and the industrial classification underlying the ifo Business Survey. Furthermore, the material presents the aggregation scheme of the survey and a discussion on the ifo Business Climate Germany.

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A. Industrial Classifications and Coverage

Table A1: German Classification of Economic Activities, Edition 2008 (WZ 2008)

Code	Description
WZ08-A	Agriculture, forestry and fishing
WZ08-A-01	Crop and animal production, hunting and related service activities
WZ08-A-01.1	Growing of non-perennial crops
WZ08-A-01.2	Growing of perennial crops
WZ08-A-01.3	Plant propagation
WZ08-A-01.4	Animal production
WZ08-A-01.5	Mixed farming
WZ08-A-01.6	Support activities to agriculture and post-harvest crop activities
WZ08-A-01.7	Hunting, trapping and related service activities
WZ08-A-02	Forestry and logging
WZ08-A-02.1	Silviculture and other forestry activities
WZ08-A-02.2	Logging
WZ08-A-02.3	Gathering of wild growing non-wood products
WZ08-A-02.4	Support services to forestry
WZ08-A-03	Fishing and aquaculture
WZ08-A-03.1	Fishing
WZ08-A-03.2	Aquaculture
WZ08-B	Mining and quarrying
WZ08-B-05	Mining of coal and lignite
WZ08-B-05.1	Mining of hard coal
WZ08-B-05.2	Mining of lignite
WZ08-B-06	Extraction of crude petroleum and natural gas
WZ08-B-06.1	Extraction of crude petroleum
WZ08-B-06.2	Extraction of natural gas
WZ08-B-07	Mining of metal ores
WZ08-B-07.1	Mining of iron ores
WZ08-B-07.2	Mining of non-ferrous metal ores
WZ08-B-08	Other mining and quarrying
WZ08-B-08.1	Quarrying of stone, sand and clay
WZ08-B-08.9	Mining and quarrying n.e.c.
WZ08-B-09	Mining support service activities
WZ08-B-09.1	Support activities for petroleum and natural gas extraction
WZ08-B-09.9	Support activities for other mining and quarrying
WZ08-C	Manufacturing
WZ08-C-10	Manufacture of food products
WZ08-C-10.1	Processing and preserving of meat and production of meat products
WZ08-C-10.2	Processing and preserving of fish, crustaceans and mollusks
WZ08-C-10.3	Processing and preserving of fruit and vegetables
WZ08-C-10.4	Manufacture of vegetable and animal oils and fats
WZ08-C-10.5	Manufacture of dairy products
WZ08-C-10.6	Manufacture of grain mill products, starches and starch products
WZ08-C-10.7	Manufacture of bakery and farinaceous products
WZ08-C-10.8	Manufacture of other food products
WZ08-C-10.9	Manufacture of prepared animal feeds
WZ08-C-11	Manufacture of beverages
WZ08-C-11.0	Manufacture of beverages
WZ08-C-12	Manufacture of tobacco products
WZ08-C-12.0	Manufacture of tobacco products

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Classification of Economic Activities, Edition 2008 (WZ 2008, cont.)

Code	Description
WZ08-C-13	Manufacture of textiles
WZ08-C-13.1	Preparation and spinning of textile fibers
WZ08-C-13.2	Weaving of textiles
WZ08-C-13.3	Finishing of textiles
WZ08-C-13.9	Manufacture of other textiles
WZ08-C-14	Manufacture of wearing apparel
WZ08-C-14.1	Manufacture of wearing apparel, except fur apparel
WZ08-C-14.2	Manufacture of articles of fur
WZ08-C-14.3	Manufacture of knitted and crocheted apparel
WZ08-C-15	Manufacture of leather and related products
WZ08-C-15.1	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur
WZ08-C-15.2	Manufacture of footwear
WZ08-C-16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
WZ08-C-16.1	Sawmilling and planing of wood
WZ08-C-16.2	Manufacture of products of wood, cork, straw and plaiting materials
WZ08-C-17	Manufacture of paper and paper products
WZ08-C-17.1	Manufacture of pulp, paper and paperboard
WZ08-C-17.2	Manufacture of articles of paper and paperboard
WZ08-C-18	Printing and reproduction of recorded media
WZ08-C-18.1	Printing and service activities related to printing
WZ08-C-18.2	Reproduction of recorded media
WZ08-C-19	Manufacture of coke and refined petroleum products
WZ08-C-19.1	Manufacture of coke oven products
WZ08-C-19.2	Manufacture of refined petroleum products
WZ08-C-20	Manufacture of chemicals and chemical products
WZ08-C-20.1	Manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in primary forms
WZ08-C-20.2	Manufacture of pesticides and other agrochemical products
WZ08-C-20.3	Manufacture of paints, varnishes and similar coatings, printing ink and mastics
WZ08-C-20.4	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations
WZ08-C-20.5	Manufacture of other chemical products
WZ08-C-20.6	Manufacture of man-made fibers
WZ08-C-21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
WZ08-C-21.1	Manufacture of basic pharmaceutical products
WZ08-C-21.2	Manufacture of pharmaceutical preparations
WZ08-C-22	Manufacture of rubber and plastic products
WZ08-C-22.1	Manufacture of rubber products
WZ08-C-22.2	Manufacture of plastics products
WZ08-C-23	Manufacture of other non-metallic mineral products
WZ08-C-23.1	Manufacture of glass and glass products
WZ08-C-23.2	Manufacture of refractory products
WZ08-C-23.3	Manufacture of clay building materials
WZ08-C-23.4	Manufacture of other porcelain and ceramic products
WZ08-C-23.5	Manufacture of cement, lime and plaster
WZ08-C-23.6	Manufacture of articles of concrete, cement and plaster
WZ08-C-23.7	Cutting, shaping and finishing of stone
WZ08-C-23.9	Manufacture of abrasive products and non-metallic mineral products n.e.c.

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Classification of Economic Activities, Edition 2008 (WZ 2008, cont.)

Code	Description
WZ08-C-24	Manufacture of basic metals
WZ08-C-24.1	Manufacture of basic iron and steel and of ferro-alloys
WZ08-C-24.2	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
WZ08-C-24.3	Manufacture of other products of first processing of steel
WZ08-C-24.4	Manufacture of basic precious and other non-ferrous metals
WZ08-C-24.5	Casting of metals
WZ08-C-25	Manufacture of fabricated metal products, except machinery and equipment
WZ08-C-25.1	Manufacture of structural metal products
WZ08-C-25.2	Manufacture of tanks, reservoirs and containers of metal
WZ08-C-25.3	Manufacture of steam generators, except central heating hot water boilers
WZ08-C-25.4	Manufacture of weapons and ammunition
WZ08-C-25.5	Forging, pressing, stamping and roll-forming of metal; powder metallurgy
WZ08-C-25.6	Treatment and coating of metals; machining
WZ08-C-25.7	Manufacture of cutlery, tools and general hardware
WZ08-C-25.9	Manufacture of other fabricated metal products
WZ08-C-26	Manufacture of computer, electronic and optical products
WZ08-C-26.1	Manufacture of electronic components and boards
WZ08-C-26.2	Manufacture of computers and peripheral equipment
WZ08-C-26.3	Manufacture of communication equipment
WZ08-C-26.4	Manufacture of consumer electronics
WZ08-C-26.5	Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks
WZ08-C-26.6	Manufacture of irradiation, electromedical and electrotherapeutic equipment
WZ08-C-26.7	Manufacture of optical instruments and photographic equipment
WZ08-C-26.8	Manufacture of magnetic and optical media
WZ08-C-27	Manufacture of electrical equipment
WZ08-C-27.1	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus
WZ08-C-27.2	Manufacture of batteries and accumulators
WZ08-C-27.3	Manufacture of wiring and wiring devices
WZ08-C-27.4	Manufacture of electric lighting equipment
WZ08-C-27.5	Manufacture of domestic appliances
WZ08-C-27.9	Manufacture of other electrical equipment
WZ08-C-28	Manufacture of machinery and equipment n.e.c.
WZ08-C-28.1	Manufacture of general-purpose machinery
WZ08-C-28.2	Manufacture of other general-purpose machinery
WZ08-C-28.3	Manufacture of agricultural and forestry machinery
WZ08-C-28.4	Manufacture of metal forming machinery and machine tools
WZ08-C-28.9	Manufacture of other special-purpose machinery
WZ08-C-29	Manufacture of motor vehicles, trailers and semi-trailers
WZ08-C-29.1	Manufacture of motor vehicles
WZ08-C-29.2	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers
WZ08-C-29.3	Manufacture of parts and accessories for motor vehicles
WZ08-C-30	Manufacture of other transport equipment
WZ08-C-30.1	Building of ships and boats
WZ08-C-30.2	Manufacture of railway locomotives and rolling stock
WZ08-C-30.3	Manufacture of air and spacecraft and related machinery
WZ08-C-30.4	Manufacture of military fighting vehicles
WZ08-C-30.9	Manufacture of transport equipment n.e.c.
WZ08-C-31	Manufacture of furniture
WZ08-C-31.0	Manufacture of furniture

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Classification of Economic Activities, Edition 2008 (WZ 2008, cont.)

Code	Description
WZ08-C-32	Other manufacturing
WZ08-C-32.1	Manufacture of jewellery, bijouterie and related articles
WZ08-C-32.2	Manufacture of musical instruments
WZ08-C-32.3	Manufacture of sports goods
WZ08-C-32.4	Manufacture of games and toys
WZ08-C-32.5	Manufacture of medical and dental instruments and supplies
WZ08-C-32.9	Manufacturing n.e.c.
WZ08-C-33	Repair and installation of machinery and equipment
WZ08-C-33.1	Repair of fabricated metal products, machinery and equipment
WZ08-C-33.2	Installation of industrial machinery and equipment
WZ08-D	Electricity, gas, steam and air conditioning supply
WZ08-D-35	Electricity, gas, steam and air conditioning supply
WZ08-D-35.1	Electric power generation, transmission and distribution
WZ08-D-35.2	Manufacture of gas; distribution of gaseous fuels through mains
WZ08-D-35.3	Steam and air conditioning supply
WZ08-E	Water supply; sewerage, waste management, and remediation activities
WZ08-E-36	Water collection, treatment and supply
WZ08-E-36.0	Water collection, treatment and supply
WZ08-E-37	Sewerage
WZ08-E-37.0	Sewerage
WZ08-E-38	Waste collection, treatment and disposal activities; materials recovery
WZ08-E-38.1	Waste collection
WZ08-E-38.2	Waste treatment and disposal
WZ08-E-38.3	Materials recovery
WZ08-E-39	Remediation activities and other waste management services
WZ08-E-39.0	Remediation activities and other waste management services
WZ08-F	Construction
WZ08-F-41	Construction of buildings
WZ08-F-41.1	Development of building projects
WZ08-F-41.2	Construction of residential and non-residential buildings
WZ08-F-42	Civil engineering
WZ08-F-42.1	Construction of roads and railways
WZ08-F-42.2	Construction of utility projects
WZ08-F-42.9	Construction of other civil engineering projects
WZ08-F-43	Specialized construction activities
WZ08-F-43.1	Demolition and site preparation
WZ08-F-43.2	Electrical, plumbing and other construction installation activities
WZ08-F-43.3	Building completion and finishing
WZ08-F-43.9	Other specialized construction activities
WZ08-G	Wholesale and retail trade; repair of motor vehicles and motorcycles
WZ08-G-45	Wholesale and retail trade and repair of motor vehicles and motorcycles
WZ08-G-45.1	Sale of motor vehicles
WZ08-G-45.2	Maintenance and repair of motor vehicles
WZ08-G-45.3	Sale of motor vehicle parts and accessories
WZ08-G-45.4	Sale, maintenance and repair of motorcycles and related parts and accessories

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Classification of Economic Activities, Edition 2008 (WZ 2008, cont.)

Code	Description
WZ08-G-46	Wholesale trade, except of motor vehicles and motorcycles
WZ08-G-46.1	Wholesale on a fee or contract basis
WZ08-G-46.2	Wholesale of agricultural raw materials and live animals
WZ08-G-46.3	Wholesale of food, beverages and tobacco
WZ08-G-46.4	Wholesale of household goods
WZ08-G-46.5	Wholesale of information and communication equipment
WZ08-G-46.6	Wholesale of other machinery, equipment and supplies
WZ08-G-46.7	Other specialized wholesale
WZ08-G-46.9	Non-specialized wholesale trade
WZ08-G-47	Retail trade, except of motor vehicles and motorcycles
WZ08-G-47.1	Retail sale in non-specialized stores
WZ08-G-47.2	Retail sale of food, beverages and tobacco in specialized stores
WZ08-G-47.3	Retail sale of automotive fuel in specialized stores
WZ08-G-47.4	Retail sale of information and communication equipment in specialized stores
WZ08-G-47.5	Retail sale of other household equipment in specialized stores
WZ08-G-47.6	Retail sale of cultural and recreation goods in specialized stores
WZ08-G-47.7	Retail sale of other goods in specialized stores
WZ08-G-47.8	Retail sale via stalls and markets
WZ08-G-47.9	Retail trade not in stores, stalls or markets
WZ08-H	Transportation and storage
WZ08-H-49	Land transport and transport via pipelines
WZ08-H-49.1	Passenger rail transport, interurban
WZ08-H-49.2	Freight rail transport
WZ08-H-49.3	Other passenger land transport
WZ08-H-49.4	Freight transport by road and removal services
WZ08-H-49.5	Transport via pipeline
WZ08-H-50	Water transport
WZ08-H-50.1	Sea and coastal passenger water transport
WZ08-H-50.2	Sea and coastal freight water transport
WZ08-H-50.3	Inland passenger water transport
WZ08-H-50.4	Inland freight water transport
WZ08-H-51	Air transport
WZ08-H-51.1	Passenger air transport
WZ08-H-51.2	Freight air transport and space transport
WZ08-H-52	Warehousing and support activities for transportation
WZ08-H-52.1	Warehousing and storage
WZ08-H-52.2	Support activities for transportation
WZ08-H-53	Postal and courier activities
WZ08-H-53.1	Postal activities under universal service obligation
WZ08-H-53.2	Other postal and courier activities
WZ08-I	Accommodation and food service activities
WZ08-I-55	Accommodation
WZ08-I-55.1	Hotels and similar accommodation
WZ08-I-55.2	Holiday and other short-stay accommodation
WZ08-I-55.3	Camping grounds, recreational vehicle parks and trailer parks
WZ08-I-55.9	Other accommodation
WZ08-I-56	Food and beverage service activities
WZ08-I-56.1	Restaurants and mobile food service activities
WZ08-I-56.2	Event catering and other food service activities
WZ08-I-56.3	Beverage serving activities

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Classification of Economic Activities, Edition 2008 (WZ 2008, cont.)

Code	Description
WZ08-J	Information and communication
WZ08-J-58	Publishing activities
WZ08-J-58.1	Publishing of books, periodicals and other publishing activities
WZ08-J-58.2	Software publishing
WZ08-J-59	Motion picture, video and television program production, sound recording and music publishing activities
WZ08-J-59.1	Motion picture, video and television program activities
WZ08-J-59.2	Sound recording and music publishing activities
WZ08-J-60	Programming and broadcasting activities
WZ08-J-60.1	Radio broadcasting
WZ08-J-60.2	Television programming and broadcasting activities
WZ08-J-61	Telecommunications
WZ08-J-61.1	Wired telecommunications activities
WZ08-J-61.2	Wireless telecommunications activities
WZ08-J-61.3	Satellite telecommunications activities
WZ08-J-61.9	Other telecommunications activities
WZ08-J-62	Computer programming, consultancy and related activities
WZ08-J-62.0	Computer programming, consultancy and related activities
WZ08-J-63	Information service activities
WZ08-J-63.1	Data processing, hosting and related activities; web portals
WZ08-J-63.9	Other information service activities
WZ08-K	Financial and insurance activities
WZ08-K-64	Financial service activities, except insurance and pension funding
WZ08-K-64.1	Monetary intermediation
WZ08-K-64.2	Activities of holding companies
WZ08-K-64.3	Trusts, funds and similar financial entities
WZ08-K-64.9	Other financial service activities, except insurance and pension funding
WZ08-K-65	Insurance, reinsurance and pension funding, except compulsory social security
WZ08-K-65.1	Insurance
WZ08-K-65.2	Reinsurance
WZ08-K-65.3	Pension funding
WZ08-K-66	Activities auxiliary to financial services and insurance activities
WZ08-K-66.1	Activities auxiliary to financial services, except insurance and pension funding
WZ08-K-66.2	Activities auxiliary to insurance and pension funding
WZ08-K-66.3	Fund management activities
WZ08-L	Real estate activities
WZ08-L-68	Activities auxiliary to financial services and insurance activities
WZ08-L-68.1	Buying and selling of own real estate
WZ08-L-68.2	Renting and operating of own or leased real estate
WZ08-L-68.3	Real estate activities on a fee or contract basis
WZ08-M	Professional, scientific and technical activities
WZ08-M-69	Legal and accounting activities
WZ08-M-69.1	Legal activities
WZ08-M-69.2	Accounting, bookkeeping and auditing activities; tax consultancy
WZ08-M-70	Activities of head offices; management consultancy activities
WZ08-M-70.1	Activities of head offices
WZ08-M-70.2	Management consultancy activities
WZ08-M-71	Architectural and engineering activities; technical testing and analysis
WZ08-M-71.1	Architectural and engineering activities and related technical consultancy
WZ08-M-71.2	Technical testing and analysis

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Classification of Economic Activities, Edition 2008 (WZ 2008, cont.)

Code	Description
WZ08-M-72	Scientific research and development
WZ08-M-72.1	Research and experimental development on natural sciences and engineering
WZ08-M-72.2	Research and experimental development on social sciences and humanities
WZ08-M-73	Advertising and market research
WZ08-M-73.1	Advertising
WZ08-M-73.2	Market research and public opinion polling
WZ08-M-74	Other professional, scientific and technical activities
WZ08-M-74.1	Specialized design activities
WZ08-M-74.2	Photographic activities
WZ08-M-74.3	Translation and interpretation activities
WZ08-M-74.9	Other professional, scientific and technical activities n.e.c.
WZ08-M-75	Veterinary activities
WZ08-M-75.0	Veterinary activities
WZ08-N	Administrative and support service activities
WZ08-N-77	Rental and leasing activities
WZ08-N-77.1	Renting and leasing of motor vehicles
WZ08-N-77.2	Renting and leasing of personal and household goods
WZ08-N-77.3	Renting and leasing of other machinery, equipment and tangible goods
WZ08-N-77.4	Leasing of intellectual property and similar products, except copyrighted works
WZ08-N-78	Employment activities
WZ08-N-78.1	Activities of employment placement agencies
WZ08-N-78.2	Temporary employment agency activities
WZ08-N-78.3	Other human resources provision
WZ08-N-79	Travel agency, tour operator and other reservation service and related activities
WZ08-N-79.1	Travel agency and tour operator activities
WZ08-N-79.9	Other reservation service and related activities
WZ08-N-80	Security and investigation activities
WZ08-N-80.1	Private security activities
WZ08-N-80.2	Security systems service activities
WZ08-N-80.3	Investigation activities
WZ08-N-81	Services to buildings and landscape activities
WZ08-N-81.1	Combined facilities support activities
WZ08-N-81.2	Cleaning activities
WZ08-N-81.3	Landscape service activities
WZ08-N-82	Office administrative, office support and other business support activities
WZ08-N-82.1	Office administrative and support activities
WZ08-N-82.2	Activities of call centers
WZ08-N-82.3	Organization of conventions and trade shows
WZ08-N-82.9	Business support service activities n.e.c.
WZ08-O	Public administration and defense; compulsory social security
WZ08-O-84	Public administration and defense; compulsory social security
WZ08-O-84.1	Administration of the State and the economic and social policy of the community
WZ08-O-84.2	Provision of services to the community as a whole
WZ08-O-84.3	Compulsory social security activities

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Classification of Economic Activities, Edition 2008 (WZ 2008, cont.)

Code	Description
WZ08-P	Education
WZ08-P-85	Education
WZ08-P-85.1	Pre-primary education
WZ08-P-85.2	Primary education
WZ08-P-85.3	Secondary education
WZ08-P-85.4	Higher education
WZ08-P-85.5	Other education
WZ08-P-85.6	Educational support activities
WZ08-Q	Human health and social work activities
WZ08-Q-86	Human health activities
WZ08-Q-86.1	Hospital activities
WZ08-Q-86.2	Medical and dental practice activities
WZ08-Q-86.9	Other human health activities
WZ08-Q-87	Residential care activities
WZ08-Q-87.1	Residential nursing care activities
WZ08-Q-87.2	Residential care activities for mental retardation, mental health and substance abuse
WZ08-Q-87.3	Residential care activities for the elderly and disabled
WZ08-Q-87.9	Other residential care activities
WZ08-Q-88	Social work activities without accommodation
WZ08-Q-88.1	Social work activities without accommodation for the elderly and disabled
WZ08-Q-88.9	Other social work activities without accommodation
WZ08-R	Arts, entertainment and recreation
WZ08-R-90	Creative, arts and entertainment activities
WZ08-R-90.0	Creative, arts and entertainment activities
WZ08-R-91	Libraries, archives, museums and other cultural activities
WZ08-R-91.0	Libraries, archives, museums and other cultural activities
WZ08-R-92	Gambling and betting activities
WZ08-R-92.0	Gambling and betting activities
WZ08-R-93	Sports activities and amusement and recreation activities
WZ08-R-93.1	Sports activities
WZ08-R-93.2	Amusement and recreation activities
WZ08-S	Other service activities
WZ08-S-94	Activities of membership organizations
WZ08-S-94.1	Activities of business, employers and professional membership organizations
WZ08-S-94.2	Activities of trade unions
WZ08-S-94.9	Activities of other membership organizations
WZ08-S-95	Repair of computers and personal and household goods
WZ08-S-95.1	Repair of computers and communication equipment
WZ08-S-95.2	Repair of personal and household goods
WZ08-S-96	Other personal service activities
WZ08-S-96.0	Other personal service activities
WZ08-T	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
WZ08-T-97	Activities of households as employers of domestic personnel
WZ08-T-97.0	Activities of households as employers of domestic personnel
WZ08-T-98	Undifferentiated goods- and services-producing activities of private households for own use
WZ08-T-98.1	Undifferentiated goods-producing activities of private households for own use
WZ08-T-98.2	Undifferentiated service-producing activities of private households for own use

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Classification of Economic Activities, Edition 2008 (WZ 2008, cont.)

Code	Description
WZ08-U	Activities of extraterritorial organizations and bodies
WZ08-U-99	Activities of extraterritorial organizations and bodies
WZ08-U-99.0	Activities of extraterritorial organizations and bodies

Source: Federal Statistical Office of Germany (2008). *Note:* n.e.c.: not elsewhere classified.

Table A2: Main Industrial Groupings

Group	Economic Activities
Intermediate goods	WZ08-B-07, WZ08-B-08, WZ08-B-09, WZ08-C-10.6, WZ08-C-10.9, WZ08-C-13.1, WZ08-C-13.2, WZ08-C-13.3, WZ08-C-16, WZ08-C-17, WZ08-C-20.1, WZ08-C-20.2, WZ08-C-20.3, WZ08-C-20.5, WZ08-C-20.6, WZ08-C-22, WZ08-C-23, WZ08-C-24, WZ08-C-25.5, WZ08-C-25.6, WZ08-C-25.7, WZ08-C-25.9, WZ08-C-26.1, WZ08-C-26.8, WZ08-C-27.1, WZ08-C-27.2, WZ08-C-27.3, WZ08-C-27.4, WZ08-C-27.9
Energy	WZ08-B-05, WZ08-B-06, WZ08-C-19, WZ08-D-35, WZ08-E-36
Capital goods	WZ08-C-25.1, WZ08-C-25.2, WZ08-C-25.3, WZ08-C-25.4, WZ08-C-26.2, WZ08-C-26.3, WZ08-C-26.5, WZ08-C-26.6, WZ08-C-28, WZ08-C-29, WZ08-C-30.1, WZ08-C-30.2, WZ08-C-30.3, WZ08-C-30.4, WZ08-C-32.5, WZ08-C-33
Consumer durables	WZ08-C-26.4, WZ08-C-26.7, WZ08-C-27.5, WZ08-C-30.9, WZ08-C-31, WZ08-C-32.1, WZ08-C-32.2
Consumer non-durables	WZ08-C-10.1, WZ08-C-10.2, WZ08-C-10.3, WZ08-C-10.4, WZ08-C-10.5, WZ08-C-10.7, WZ08-C-10.8, WZ08-C-11, WZ08-C-12, WZ08-C-13.9, WZ08-C-14, WZ08-C-15, WZ08-C-18, WZ08-C-20.4, WZ08-C-21, WZ08-C-32.3, WZ08-C-32.4, WZ08-C-32.9

Source: European Commission (2007).

Table A3: Industrial Coverage of the ifo Business Survey

Industry	Coverage	Weight
WZ08-A: Agriculture, forestry and fishing	–	0.9%
WZ08-B: Mining and quarrying	–	0.2%
WZ08-C: Manufacturing	all industries (2-digit level)	22.7%
WZ08-D: Electricity and gas supply	–	1.6%
WZ08-E: Water supply; disposal of waste	–	1.0%
WZ08-F: Construction	only main construction industry	5.1%
WZ08-G: Wholesale and retail trade; repair	all industries (2-digit level) except maintenance and repair of motor vehicles and wholesale on a fee or contract basis	10.0%
WZ08-H: Transportation and storage	all industries (2-digit level)	4.4%
WZ08-I: Accommodation and food service activities	all industries (2-digit level)	1.6%
WZ08-J: Information and communication	all industries (2-digit level) except publishing activities	4.6%
WZ08-K: Financial and insurance activities	–	3.9%
WZ08-L: Real estate activities	total industry	10.5%
WZ08-M: Professional, scientific and technical activities	all industries (2-digit level) except veterinary activities	6.4%
WZ08-N: Administrative and support service activities	all industries (2-digit level)	5.1%
WZ08-O: Public administration and defense	–	6.1%
WZ08-P: Education	–	4.6%
WZ08-Q: Human health and social work activities	–	7.6%
WZ08-R: Arts, entertainment and recreation	all industries (2-digit level)	1.4%
WZ08-S: Other service activities	all industries (2-digit level)	2.2%
WZ08-T: Activities of households as employers	–	0.2%

Source: Federal Statistical Office of Germany; Sauer and Wohlrabe (2020). The weights are based on gross value added figures as of 2018.

B. The ifo Questionnaire

B.1. Manufacturing

Table B1: Questions Asked in Manufacturing

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	Question: ‘We assess our current business situation as [...]’ Answers: (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Stock of Finished Products (SFP)	Question: ‘We assess our current stock of finished products as [...]’ Answers: (+) too small, (=) sufficient, or (–) too large; (X) no stock-keeping.	standard	monthly
3a	Current Orders (CO)	Question: ‘We assess our stock of current orders as [...]’ Answers: (+) relatively large, (=) sufficient, or (–) too small.	standard	monthly
3b	Foreign Orders (FO)	Question: ‘We assess our stock of current orders for the export as [...]’ Answers: (+) relatively large, (=) sufficient, or (–) too small; (X) no export activities.	standard	monthly
4	Demand Development (DD)	Question: ‘Compared to the previous month, our demand situation has [...]’ Answers: (+) improved, (=) remained unchanged, or (–) worsen.	standard	monthly
5	New Orders (NO)	Question: ‘Compared to the previous month, our stock of orders has [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
6	Production Realization (PR)	Question: ‘Compared to the previous month, production has [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased; (X) no remarkable domestic production.	standard	monthly
7	Price Development (PRD)	Question: ‘Compared to the previous month, our prices were [...]’ Answers: (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
8	Employment Development (ED)	Question: ‘Compared to the previous month, the number of our employees has [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
9	Production Expectations (PE)	Question: ‘In the next 3 months, our production will [...]’ Answers: (+) increase, (=) stay the same, or (–) decrease; (X) no remarkable domestic production.	standard	monthly
10	Price Expectations (PRE)	Question: ‘In the next 3 months, our prices will [...]’ Answers: (+) increase, (=) stay the same, or (–) decline.	standard	monthly
11	Export Expectations (EXE)	Question: ‘In the next 3 months, the extent of our export business will [...]’ Answers: (+) grow, (=) stay the same, or (–) decrease; (X) no export activities.	standard	monthly

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Questions Asked in Manufacturing (cont.)

#	Indicator	Description	Type	Frequency
12	Employment Expectations (EE)	Question: 'In the next 3 months, our number of employees will [...]' Answers: (+) increase, (=) stay the same, or (-) decrease.	standard	monthly
13	Business Expectations (BE)	Question: 'In the next 6 months, our business situation will be [...]' Answers: (+) rather favorable, (=) rather stay the same, or (-) rather unfavorable.	standard	monthly
14	Expectations Forecast (EF)	Question: 'Currently, to forecast our business expectations is [...]' Answers: (+) easy, (+) rather easy, (-) rather difficult, or (-) difficult.	standard	monthly
15	Order Range (OR)	Question: 'Our current orders come up with a production time of [...]' Answer: XX months.	special	quarterly (1st month)
16	Capacity Utilization (CU)	Question: 'The current utilization of our equipment (customary full use of the capacity = 100%) amounts to [...]' Answers: 30%, 40%, 50%, 60%, 70%, 75%, 80%, 85%, 90%, 95%, 100%, XX% (if above 100%).	special	quarterly (1st month)
17	Technical Capacity (TC)	Question: 'Given our current stock of orders and expected new orders in the next 12 months, our technical capacity is [...]' Answers: (+) more than sufficient, (=) sufficient, or (-) not sufficient.	special	quarterly (1st month)
18	Production Obstruction (PO)	Question: 'Our production activities are currently obstructed [...]' Answers: (+) yes, or (-) no. If yes, because of the following factors: insufficient orders, lack of employees, lack of specialists, financing bottleneck, lack of material, insufficient technical capacity, and other factors.	special	quarterly (1st month)
19a	Competitive Position Domestic (CPD)	Question: 'In the last 3 months, our competitive position on the domestic market has [...]' Answers: (+) increased, (=) remained unchanged, or (-) decreased.	special	quarterly (1st month)
19b	Competitive Position inside EU (CPIEU)	Question: 'In the last 3 months, our competitive position inside the European Union has [...]' Answers: (+) increased, (=) remained unchanged, or (-) decreased; (X) no export activities.	special	quarterly (1st month)
19c	Competitive Position outside EU (CPOEU)	Question: 'In the last 3 months, our competitive position outside the European Union has [...]' Answers: (+) increased, (=) remained unchanged, or (-) decreased; (X) no export activities.	special	quarterly (1st month)
20a	Return on Sales Surplus (ROSS)	Question: 'Our last year's return on sales (in % of net turnover) was in case of a surplus [...]' Answers: up to 1%, above 1% to 2%, above 2% to 3%, above 3% to 4%, above 4%, in fact ca. XX%.	special	quarterly (2nd month)
20b	Return on Sales Deficit (ROSD)	Question: 'Our last year's return on sales (in % of net turnover) was in case of a deficit [...]' Answers: 0% to -1%, below -1% to -2%, below -2% to -3%, below -3% to -4%, below 4%, in fact ca. XX%.	special	quarterly (2nd month)

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Questions Asked in Manufacturing (cont.)

#	Indicator	Description	Type	Frequency
21a	Total Investment Development (TID)	Question: ‘Our last year’s total investment [...]’ Answers: (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (2nd month)
21b	Building Investment Development (BID)	Question: ‘Our last year’s building investment [...]’ Answers: (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (2nd month)
21c	Equipment Investment Development (EID)	Question: ‘Our last year’s equipment investment [...]’ Answers: (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (2nd month)
21d	Software Investment Development (SID)	Question: ‘Our last year’s software investment [...]’ Answers: (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (2nd month)
22a	Investment Indicator (II)	Question: ‘Our total investment in the current year will [...]’ Answers: (+) increase, (=) remain unchanged, or (–) decrease.	special	quarterly (2nd month)
22b	Building Investment Expectations (BIE)	Question: ‘Our building investment in the current year will [...]’ Answers: (+) increase, (=) remain unchanged, or (–) decrease.	special	quarterly (2nd month)
22c	Equipment Investment Expectations (EIE)	Question: ‘Our equipment investment in the current year will [...]’ Answers: (+) increase, (=) remain unchanged, or (–) decrease.	special	quarterly (2nd month)
22d	Software Investment Expectations (SIE)	Question: ‘Our software investment in the current year will [...]’ Answers: (+) increase, (=) remain unchanged, or (–) decrease.	special	quarterly (2nd month)
23	Overtime (OT)	Question: ‘We currently work overtime [...]’ Answers: (+) yes, or (–) no. If yes, more than customary: (+) yes, or (–) no.	special	quarterly (3rd month)
24	Short-time Work (STW)	Question: ‘We currently apply short-time work [...]’ Answers: (+) yes, or (–) no.	special	quarterly (3rd month)
25	Short-time Work Expectations (STWE)	Question: ‘In the next 3 months, we expect to apply short-time work [...]’ Answers: (+) yes, or (–) no.	special	quarterly (3rd month)
26	Lending Activities (LA)	Question: ‘In the previous 3 months, we have been in lending negotiations with banks [...]’ Answers: (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Manufacturing; own translations.

B.2. Construction

Table B2: Questions Asked in Construction

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	Question: ‘We assess our current business situation as [...]’ Answers: (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Current Orders (CO)	Question: ‘We assess our stock of current orders as [...]’ Answers: (+) relatively large, (=) sufficient, or (–) too small.	standard	monthly
3	Order Range (OR)	Question: ‘Our current orders come up with an average production time of [...]’ Answer: XX months.	standard	monthly
4	Cost Coverage (CC)	Question: ‘Our construction prices cover [...]’ Answers: (+) more than our production costs, (=) our production costs, or (–) less than our production costs.	standard	monthly
5	Production Obstruction (PO)	Question: ‘Our production activities are currently obstructed [...]’ Answers: (+) yes, or (–) no. If yes, because of the following factors: insufficient orders, order cancellation, lack of employees, lack of specialists, financing bottleneck, lack of material, unfavorable weather conditions, and other factors.	standard	monthly
6	Construction Activity (CA)	Question: ‘Compared to the previous 3 months, our construction activity has [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
7	Order Development (OD)	Question: ‘Compared to the previous month, our stock of construction orders [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
8	Price Development (PRD)	Question: ‘Compared to the previous month, our construction prices were [...]’ Answers: (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
9	Construction Expectations (CE)	Question: ‘In the next 3 months, our construction activity will [...]’ Answers: (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
10	Price Expectations (PRE)	Question: ‘In the next 3 months, our construction prices will [...]’ Answers: (+) increase, (=) stay the same, or (–) decline.	standard	monthly
11	Business Expectations (BE)	Question: ‘In the next 6 months, our business situation will be [...]’ Answers: (+) rather favorable, (=) rather stay the same, or (–) rather unfavorable.	standard	monthly
12	Expectations Forecast (EF)	Question: ‘Currently, to forecast our business expectations is [...]’ Answers: (+) easy, (+) rather easy, (–) rather difficult, or (–) difficult.	standard	monthly

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Questions Asked in Construction (cont.)

#	Indicator	Description	Type	Frequency
13	Capacity Utilization (CU)	Question: ‘The current utilization of our machine capacity (customary full use of the capacity = 100%) amounts to [...]’ Answers: 30%, 40%, 50%, 60%, 70%, 75%, 80%, 85%, 90%, 95%, 100%, <i>XX%</i> (if above 100%).	standard	monthly
14	Employment Expectations (EE)	Question: ‘In the next 3 months, our number of employees will [...]’ Answers: (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
15	Employment Development (ED)	Question: ‘Compared to the previous month, the number of our employees has [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
16	Lending Activities (LA)	Question: ‘In the previous 3 months, we have been in lending negotiations with banks [...]’ Answers: (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Construction; own translations.

B.3. Retail Trade

Table B3: Questions Asked in Retail Trade

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	Question: ‘We assess our current business situation as [...]’ Answers: (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Stock of Finished Products (SFP)	Question: ‘We assess our current stock of finished products as [...]’ Answers: (+) too small, (=) sufficient, or (–) too large; (X) no stock-keeping.	standard	monthly
3	Turnover Development (TOD)	Question: ‘Compared to the month of the previous year, our turnover have [...]’ Answers: (+) increased, (=) remained unchanged, or (–) decreased.	standard	monthly
4	Price Development (PRD)	Question: ‘Compared to the previous month, our selling prices were [...]’ Answers: (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
5	Employment Development (ED)	Question: ‘Compared to the previous month, the number of our employees has [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
6	Price Expectations (PRE)	Question: ‘In the next 3 months, our selling prices will [...]’ Answers: (+) increase, (=) stay the same, or (–) decline.	standard	monthly

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Questions Asked in Retail Trade (cont.)

#	Indicator	Description	Type	Frequency
7	Order Expectations (OE)	Question: 'In the next 3 months, our orders will [...]' Answers: (+) increase, (=) stay the same, or (-) decrease; (X) no remarkable domestic production.	standard	monthly
8	Employment Expectations (EE)	Question: 'In the next 3 months, our number of employees will [...]' Answers: (+) increase, (=) stay the same, or (-) decrease.	standard	monthly
9	Business Expectations (BE)	Question: 'In the next 6 months, our business situation will be [...]' Answers: (+) rather favorable, (=) rather stay the same, or (-) rather unfavorable.	standard	monthly
10	Expectations Forecast (EF)	Question: 'Currently, to forecast our business expectations is [...]' Answers: (+) easy, (+) rather easy, (-) rather difficult, or (-) difficult.	standard	monthly
11	Turnover Obstruction (TOO)	Question: 'Our turnover are currently obstructed [...]' Answers: (+) yes, or (-) no. If yes, because of the following factors: weak demand, lack of employees, lack of specialists, financing bottleneck, lack of real estate, insufficient office equipment, unfavorable weather conditions, and other factors.	special	quarterly (1st month)
12a	Local Footfall (LOFO)	Question: 'In the previous quarter, the average footfall at our local position was [...]' Answers: (+) high, (=) seasonal, or (-) low; (X) no local position.	special	quarterly (1st month)
12b	Online Footfall (ONFO)	Question: 'In the previous quarter, the average footfall at our online presence was [...]' Answers: (+) high, (=) seasonal, or (-) low; (X) no online presence.	special	quarterly (1st month)
13	Lending Activities (LA)	Question: 'In the previous 3 months, we have been in lending negotiations with banks [...]' Answers: (+) yes, or (-) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (-) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Retail Trade; own translations.

B.4. Wholesale

Table B4: Questions Asked in Wholesale

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	Question: ‘We assess our current business situation as [...]’ Answers: (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Stock of Finished Products (SFP)	Question: ‘We assess our current stock of finished products as [...]’ Answers: (+) too small, (=) sufficient, or (–) too large; (X) no stock-keeping.	standard	monthly
3	Turnover Development (TOD)	Question: ‘Compared to the month of the previous year, our turnover have [...]’ Answers: (+) increased, (=) remained unchanged, or (–) decreased.	standard	monthly
4	Price Development (PRD)	Question: ‘Compared to the previous month, our selling prices were [...]’ Answers: (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
5	Employment Development (ED)	Question: ‘Compared to the previous month, the number of our employees has [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
6	Price Expectations (PRE)	Question: ‘In the next 3 months, our selling prices will [...]’ Answers: (+) increase, (=) stay the same, or (–) decline.	standard	monthly
7	Order Expectations (OE)	Question: ‘In the next 3 months, our orders will [...]’ Answers: (+) increase, (=) stay the same, or (–) decrease; (X) no remarkable domestic production.	standard	monthly
8	Employment Expectations (EE)	Question: ‘In the next 3 months, our number of employees will [...]’ Answers: (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
9	Business Expectations (BE)	Question: ‘In the next 6 months, our business situation will be [...]’ Answers: (+) rather favorable, (=) rather stay the same, or (–) rather unfavorable.	standard	monthly
10	Expectations Forecast (EF)	Question: ‘Currently, to forecast our business expectations is [...]’ Answers: (+) easy, (+) rather easy, (–) rather difficult, or (–) difficult.	standard	monthly
11	Turnover Obstruction (TOO)	Question: ‘Our turnover are currently obstructed [...]’ Answers: (+) yes, or (–) no. If yes, because of the following factors: weak demand, lack of employees, lack of specialists, financing bottleneck, lack of real estate, insufficient office equipment, unfavorable weather conditions, and other factors.	special	quarterly (1st month)
12	Lending Activities (LA)	Question: ‘In the previous 3 months, we have been in lending negotiations with banks [...]’ Answers: (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Wholesale; own translations.

B.5. Services

Table B5: Questions Asked in Services

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	Question: ‘We assess our current business situation as [...]’ Answers: (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Current Orders (CO)	Question: ‘We assess our stock of current orders as [...]’ Answers: (+) relatively large, (=) sufficient, or (–) too small.	standard	monthly
3	Employment Development (ED)	Question: ‘Compared to the previous month, the number of our employees has [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
4	Price Development (PRD)	Question: ‘Compared to the previous month, our prices were [...]’ Answers: (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
5	Order Development (OD)	Question: ‘Compared to the previous month, our stock of orders [...]’ Answers: (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
6	Business Development (BD)	Question: ‘In the past 3 months, our business situation has [...]’ Answers: (+) improved, (=) remained unchanged, or (–) worsen.	standard	monthly
7a	Turnover Development (TOD)	Question: ‘Compared to the previous 3 months, our turnover have [...]’ Answers: (+) increased, (=) remained unchanged, or (–) decreased.	standard	monthly
7b	Turnover Development (TOD)	Question: ‘Compared to the previous month, our turnover have [...]’ Answers: (+) increased, (=) remained unchanged, or (–) decreased.	standard	monthly
8	Turnover Expectations (TOE)	Question: ‘In the next 3 months, our turnover will [...]’ Answers: (+) increase, (=) remain unchanged, or (–) decrease.	standard	monthly
9	Employment Expectations (EE)	Question: ‘In the next 3 months, our number of employees will [...]’ Answers: (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
10	Price Expectations (PRE)	Question: ‘In the next 3 months, our prices will [...]’ Answers: (+) increase, (=) stay the same, or (–) decline.	standard	monthly
11	Business Expectations (BE)	Question: ‘In the next 6 months, our business situation will be [...]’ Answers: (+) rather favorable, (=) rather stay the same, or (–) rather unfavorable.	standard	monthly

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Questions Asked in Services (cont.)

#	Indicator	Description	Type	Frequency
12	Expectations Forecast (EF)	Question: ‘Currently, to forecast our business expectations is [...]’ Answers: (+) easy, (+) rather easy, (–) rather difficult, or (–) difficult.	standard	monthly
13	Business Obstruction (BO)	Question: ‘Our business is currently obstructed [...]’ Answers: (+) yes, or (–) no. If yes, because of the following factors: weak demand, lack of employees, lack of specialists, financing bottleneck, lack of technical capacity, insufficient office equipment, unfavorable weather conditions, and other factors.	special	quarterly (1st month)
14	Demand Satisfaction (DS)	Question: ‘Is it currently possible for you to satisfy an increase in demand with the technical capacity at hand?’ Answers: (+) yes, or (–) no. If yes, we can increase our business activity by XX%.	special	quarterly (1st month)
15	Lending Activities (LA)	Question: ‘In the previous 3 months, we have been in lending negotiations with banks [...]’ Answers: (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Services; own translations.

C. Aggregation and Presentation of the Survey Results

Table C1 shows a schematic aggregation example based on five firms with different weights and answers. In the case of an unweighted aggregation, 50.0% of the firms formulate a positive answer, 33.3% have a neutral assessment, and 16.7% or one firm answers the question with a negative assessment. Based on this unweighted aggregation, the largest part of the firms answer the question by a positive assessment, whereas their economic weight is smaller than the one of the firms with neutral answers (weight 8 vs. 10). By applying a weighted aggregation scheme, the economic picture changes in favor of a neutral assessment. In this case, 40.0% of the firms formulate a positive answer, 50.0% of the firms’ answers are neutral, and 10.0% of the firms have a negative assessment. In the end, this means that larger firms are more important for the business cycle assessment as smaller firms.

All indicators that the ifo Institute publishes are presented as balances. This is expressed as difference between the share of positive and negative answers, leaving the neutral category aside. For the example in Table C1, the weighted balance statistic is $40.0\% - 10.0\% = 30.0\%$. The balance methodology leads to natural boundaries of the indicators ranging from -100 to $+100$. If all firms report a positive assessment, the balance becomes $100.0\% - 0.0\% = 100.0\%$; the opposite holds if all firms formulate a negative assessment: $0.0\% - 100.0\% = -100.0\%$. In the end, each indicator can be treated as stationary by construction.

Table C1: Aggregation Example ifo Business Survey

Firm #	Answer	Weight	Distribution of Answers		
			(+)	(=)	(-)
A	(=)	5		5	
B	(+)	2	2		
C	(+)	4	4		
D	(-)	2			2
E	(=)	5		5	
F	(+)	2	2		
Sum (unweighted)		6	3	2	1
Sum (weighted)		20	8	10	2
Percent (unweighted)		100.0%	50.0%	33.3%	16.7%
Percent (weighted)		100.0%	40.0%	50.0%	10.0%

Source: Marjenko *et al.* (2020, p.15).

D. The ifo Business Climate

The two most important standard questions that experience the largest medial attention are the ones on the assessment of the current business situation (*ifo Business Situation*, BS) and the business expectations for the next six months (*ifo Business Expectations*, BE). The wording is as follows: situation: ‘We assess our current business situation as [...]’; expectations: ‘In the next six months, our business situation will be [...]’. For each question, the firm can choose from three different, qualitative answers reflecting a positive (+), neutral (=), or negative (−) assessment. In case of the business situation, the three answers are: (+) good, (=) satisfactory, and (−) bad; the three answers for the business expectations are: (+) rather favorable, (=) stay the same, and (−) rather unfavorable.

The Business Climates (BC) of each branch of the economy or for Germany are the averages of the Business Situation (BS) and the Business Expectations (BE) balances according to the following formula:

$$BC_t = \sqrt{(BS_t + 200)(BE_t + 200)} - 200.$$

Each balance statistic is increased by 200 in advance to ensure non-negative terms in the square root. After the calculation of the geometric average, 200 are subtracted again so that the Business Climate fluctuates around zero in a range between −100 and +100. The zero serves as a natural reference as values above this threshold indicate that more firms formulate a positive assessment compared to those reporting a negative answer. The opposite holds true for negative values. Usually, the ifo Institute does not publish the balance statistics but transforms the indicators to indices, referring the current value of the indicator to the value in a base year. For example, the formula for the Business Climate index is as follows:

$$BC_t^I = \left(\frac{BC_t + 200}{BC^B + 200} \right) \times 100 .$$

The Business Climate as index value (BC_t^I) is the ratio between the balance of the Business Climate in month t increased by 200, $BC_t + 200$, and the average balance of the Business Climate in the base year increased by 200, $BC^B + 200$. If, for example, the current value of the Business Climate is $BC_t = 25$ and the average value of the Business Climate in the base year is $BC^B = 20$, the index value amounts to $BC_t^I = 225/220 = 102.3$; the current base year is 2015 as it is for all statistics of the Federal Statistical Office of Germany.

For each of the four aggregated industries a Business Climate is calculated according to the introduced rules. To calculate the *ifo Business Climate Germany*, the ifo Institute applies constant weights as follows: manufacturing 30.2%, construction 6.0%, wholesale 7.1%, retail trade 6.2%, and services 50.5% (see Sauer and Wohlrabe, 2018).

The ifo Business Climate is a *business cycle* indicator, thus, its natural reference series it should be able to early describe is the *cyclical component* of German GDP (Abberger and Nierhaus, 2007a,b). To extract the cyclical component of German GDP, I have to eliminate the underlying economic growth trend. For this purpose, and to keep it as simple as possible, I apply a Hodrick-Prescott-Filter (HP-Filter) with a $\lambda = 1,600$ for quarterly data. The ifo Business Climate is kept in levels as the survey results are by construction stationary and show no inherent trending behavior. To compare GDP and the ifo Business Climate, I need to calculate three-month-averages of the latter in order to have the same time frequency. Panel A in Figure D1 shows the cyclical component of German GDP together with the ifo Business Climate in levels since the first quarter of 1991. It is obvious from Panel A that the ifo Business Climate serves as a leading indicator for the cyclical component of German GDP, which is also the main result of Abberger and Nierhaus (2007a,b).

In the public debate, nobody talks about the cyclical component of German GDP. The largest part of medial reporting deals with the development of GDP, namely its percentage change over the same quarter of the previous year. On the opposite, in applied forecasting work GDP is usually transformed into its percentage change over the previous quarter. Both transformations come with the price that the leading properties of the ifo Business Climate in levels become disguised. As argued by Abberger and Nierhaus (2007a, footnote 7, p.29, free translation from German), this is mainly because “the calculation of growth rates is the result of an asymmetric filtering, leading to a phase shifting in the series. Due to this asymmetric filtering, the transformed GDP series and its business cycle turning points are shifted backwards in time.” Both authors conclude: “The leading properties of the ifo Business Climate can be restored by applying the same filtering procedure as for GDP.” This means that either differences to the quarter of the previous year or differences to the previous quarter should be applied to the ifo Business Climate if the reference series is annual or quarterly GDP growth, respectively. Panel B (annual growth) and Panel C (quarterly

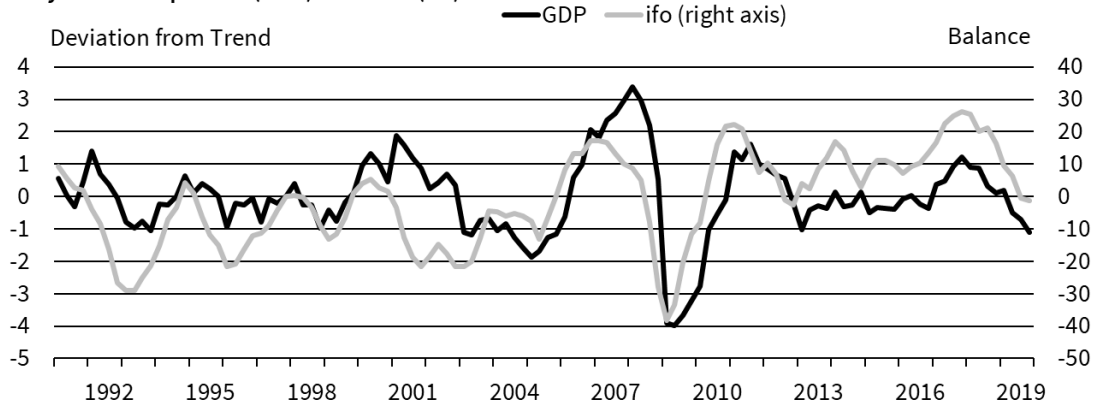
growth) in Figure D1 point to these two transformations. The ifo Business Climate retains its leading properties in both the annual and quarterly transformation, whereas the quarterly transformation is much noisier compared to annual growth rates. This transformation debate is crucial for the assessment of the leading and forecasting properties.

Figure D1: GDP Transformation and ifo Business Climate

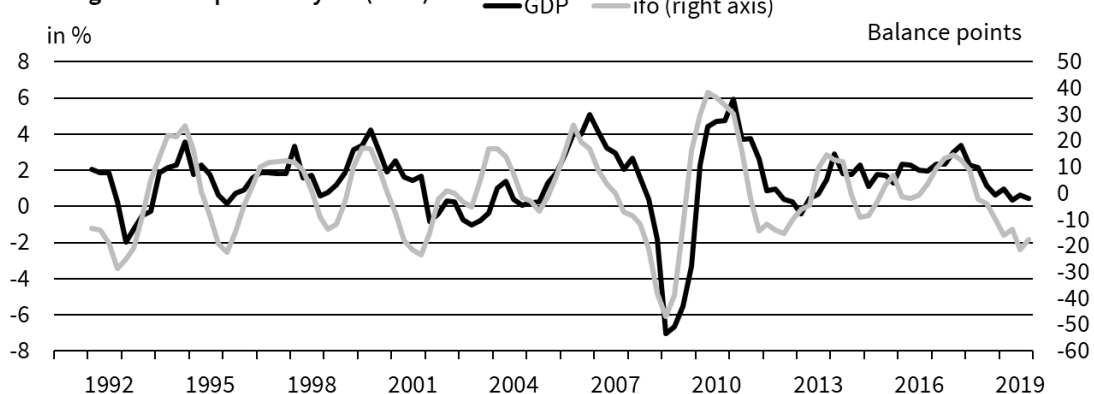
Comparison between GDP and ifo Business Climate ^a

Three transformations

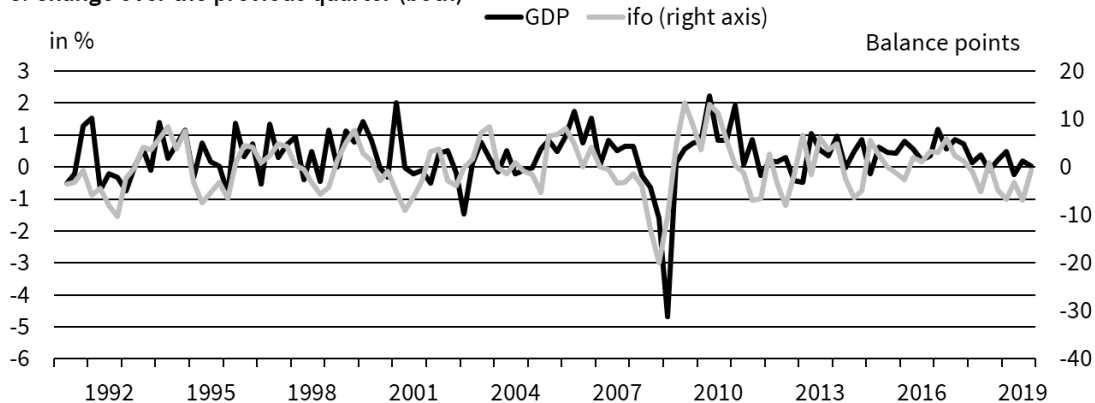
A. Cyclical Component (GDP) vs. Level (ifo)



B. Change over the previous year (both)



C. Change over the previous quarter (both)



^a Price-, seasonal- and calendar-adjusted GDP. Trend extracted via a HP-Filter ($\lambda = 1,600$).

Source: Federal Statistical Office; ifo Business Survey; own calculations.

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