

**Winners-take-More:
Firm-level Evidence on the State
of Competition in Austria**

Michael Peneder
Fabian Unterlass

Winners-take-More: Firm-level Evidence on the State of Competition in Austria

Michael Peneder, Fabian Unterlass

Austrian Institute of Economic Research

WIFO Research Briefs 15/2024
December 2024

Abstract

The Research Brief summarises new evidence from micro data on the state of competition in Austria. The results show that industry concentration has remained relatively stable, while corporate dynamics have promoted the reallocation of output and employment to more productive firms. However, average markups have increased in various sectors, particularly in non-tradable services. The largest increases are in the top decile of the mark-up distribution, indicating a self-reinforcing dynamic where the winners-take-more.

E-Mail: michael.peneder@wifo.ac.at, fabian.unterlass@wifo.ac.at

2024/1/RB/0

© 2024 Austrian Institute of Economic Research

Media owner (publisher), producer: Austrian Institute of Economic Research
1030 Vienna, Arsenal, Objekt 20 | Tel. (43 1) 798 26 01 0 | <https://www.wifo.ac.at>
Place of publishing and production: Vienna

Free download: <https://www.wifo.ac.at/publication/pid/53502116>

Winners-take-more: Firm-level evidence on the state of competition in Austria

Michael Peneder, Fabian Unterlass

The Research Brief summarises new evidence from micro data on the state of competition in Austria. The results show that industry concentration has remained relatively stable, while corporate dynamics have promoted the reallocation of output and employment to more productive firms. However, average markups have increased in various sectors, particularly in non-tradable services. The largest increases are in the top decile of the mark-up distribution, indicating a self-reinforcing dynamic where the winners-take-more.

1. Context

The growing concern about a general trend towards decreasing competition and declining corporate dynamism has triggered a wave of international research in recent years. The debate began in the USA, where studies have shown a sustained long-term increase in the concentration of production. This is exacerbated by the observation of a general decline in business dynamism (firm entries, exits, etc.) since the early 1980s, accompanied by a strong increase of average markups. The distribution of markups also changed considerably, as only companies in the higher percentiles of the markup distribution tend to participate in this increase. In Europe, Calligaris et al. (2024) provide the most recent evidence of a similar trend of increasing industry concentration and average markups, with the latter again primarily due to the companies in the top decile of the markup distribution.

Austria has long lacked empirical evidence on the intensity of competition and its changes in a broad range of sectors. Reiner and Bellak (2023A, p. 50) critically note that "[i]nstead, the intensity of competition is conjectured and formulations are often kept in the subjunctive."¹ In Peneder and Unterlass (2024),² we aim to reduce this gap with a first empirical investigation of selected key indicators on the intensity of competition that is based on a comprehensive set of Austrian firm-level data.³ The analysis covers the period from 2008 to 2020 and was carried out in cooperation with the OECD project *Multiprod 2.0*. It was one of the first studies to benefit from the new Austrian Micro Data Center (AMDC) established by Statistics Austria in 2023. We

¹ For earlier discussions, see e.g. Böheim (2013) and Erharter (2015). See also Reiner and Bellak (2023B) for a comprehensive assessment of available studies and (aggregate) data for Austria.

² See <https://www.wifo.ac.at/publication/269530>.

³ The firm population comprises enterprises with their main activity in accordance with ÖNACE Sections B to N and Division S95 and are active in the reporting year with sales revenue of more than 10 thousand € and/or are employers.

are extremely grateful to our colleagues from the OECD and the AMDC for their excellent co-operation and support.

An important caveat to mention is that the Austrian data do not contain book values for the determination of the capital stock.⁴ Together with the relatively short observation period and the often small sample sizes, this can lead to distortions in the estimation of capital services. Therefore, caution is generally required in the interpretation, but especially so for all sectors outside manufacturing (NACE C) and non-financial market services (NACE G to N, excluding K).⁵ Relatedly, we consider this kind of monitoring of competition mainly to be a tool for the general structural analysis of an economy. It is of particular interest for competition policy, but cannot establish a detailed diagnosis needed for public interventions. These must inevitably call for the much more specific inquiry of particular markets or industries.

2. Key findings

The focus shall be on three dimensions of effective competition: (i) industry concentration, (ii) firm-level markups, and (iii) business dynamics. Depending on the variables and methods required for the respective computations, the indicators cover different years from 2008 to 2020 and refer to different levels of aggregation by sector. The main findings of our analysis are as follows:

- **Industry concentration:** We observe no general trend towards increasing concentration of production in Austria, at least at the level of 191 3-digit NACE industries (Figure 1). In 2020, the average output shares of the four, eight and twenty largest enterprises were 52.9%, 65.3% and 79.0% with an average Herfindahl-Hirschman index (HHI)⁶ of 0.16. The HHI remained virtually unchanged, while the other metrics increased only slightly over a ten-year period.
- **Dynamic reallocation:** For the broad sector of non-financial market services, the analysis confirms that competition effectively contributes to the reallocation of production towards the more productive firms. Relatedly, the companies with higher productivity also create more jobs. From 2013 to 2020 employment growth was by far the highest in the top ten percent of all companies in terms of both labour productivity and multifactor productivity (MFP) (Figure 2).
- **Firm-level markups:** In 2020, the average markups across 26 STAN sectors amounted to 33.05%, an increase of 1.47 percentage points since 2008 (Table 1). They were highest in the non-financial market services (39.6%), followed by manufacturing (18.7%) and construction (13.0%). From 2008 to 2020, they increased in the non-financial services and in construction, while the manufacturing sector recorded a slight decline (Figure 3(a)).

⁴ Capital services are calculated using the perpetual inventory method and by linking the sectoral capital intensities in the OECD STAN database with the firm-level employment data.

⁵ Within the latter group, this also applies, for example, to transport and storage (NACE H), real estate activities (L), advertising, market research, etc. (MC) or administrative and support service activities (N).

⁶ HHI measures the size of firms in the entire population relative to the industry.

- **Winners-take-more:** The strongest increases of markups occurred in *Real estate* and the typical business services of *Legal and accounting, Advertising and market research, Administrative and support activities*. Here and in other sectors, the micro-data reveal a self-reinforcing dynamic, where companies in the higher percentiles of the initial distribution increase their markups significantly more than those in the lower percentiles (Figure 3(b)).

The empirical evidence is therefore mixed, but nonetheless **worrying overall**. To begin with, industry concentration does not show a general trend, but if anything it is tending slightly upwards. In order to further advance these preliminary results, a more fine-grained analysis at lower levels of aggregation is certainly warranted. However, the confidentiality rules will then also lead to more missing observations precisely in the cells with the highest concentration (i.e. in which fewer than four companies report their main activity). Second, the observed business dynamics confirm that competition is generally effective in stimulating the reallocation of economic activity and productivity growth. Longer time series are needed to assess also the change in business dynamics, for which more aggregate studies show, for instance, a decline in the number of young firms (Peneder et al., 2023). Finally, the clearest indication of a general weakening of competition is provided by the firm-level markups, which this study has analyzed comprehensively for Austria for the first time. In many of the non-tradable sectors in particular, these have moved upwards on average - not to the benefit of all companies, however, but unevenly in favor of firms that already enjoyed higher markups and thus greater market power.

3. Discussion

The breadth and scope of the observed empirical trends do not allow any simple conclusions to be drawn about the presumed anti-competitive behavior of individual companies. Rather, the results point to more general structural factors shifting the balance against effective competition in various sectors. So what factors might be involved?

- First of all, **anti-competitive behaviour** by individual companies are a possible explanation, and if this is suspected, they must be targeted through specific market investigations by the competition authorities. However, the observation of increasing market power in a large number of sectors raises the question of why such cases would have occurred more frequently than before.
- Secondly, an alleged softening of **competition policy**, as has been discussed in the USA, seems an unlikely explanation in the case of Austria. In the past, experts often used to suspect a 'soft touch' related to Austria's particular institutional setup. However, EU accession and reforms in recent years should rather have strengthened it.
- Third, specific **sector regulations**, such as the strict occupational entry requirements in many professional services, are repeatedly criticized by international organizations. Although we are not aware of any major reforms in this area, the lack of significant changes in the regulatory environment would in turn make this an implausible explanation for the recent rise in average markups. Existing entry barriers may nevertheless have established a regulatory environment that facilitates the observed uneven dynamics in the markup distribution.

None of the above arguments can or should invalidate the necessary call for regulatory reform and a vigorous competition policy. However, the empirical evidence suggests that larger secular trends are at play. Most likely, the answer is to be found in a combination of (i) technological change, (ii) business strategy and (iii) firm organization:

- When **innovation** raises the competitive edge in terms of the required technologies and capabilities, firms need to achieve higher markups to cover the required fixed investments in tangible and intangible assets. In many cases, this also lowers marginal costs, as is often true with the introduction of new digital technologies and the use of artificial intelligence (AI). In the wake of the recent wave of digitalization, which simultaneously affects many industries, the technology-driven channel of fixed investments is gaining additional weight and may explain a general trend towards increasing markups.
- If we add the dimension of **corporate strategy**, Sutton's (1991) theory of endogenous sunk costs has shown how firms can deliberately increase such investments, e.g. in RTD, brands or networks, to prevent entry and thus protect their market power. Considering both mechanisms, endogenous sunk costs can explain why industry concentration remains stable, while increasing fixed investments and the expected reduction in marginal costs foster the growth of markups.
- **Business intelligence** is an increasingly important example of such strategically sunk investments, where technology and corporate strategy co-evolve in a likely self-reinforcing process. Through big data, highly skilled professionals and new analytical tools, companies tend to become smarter and increasingly capable to exploit new profit opportunities, e.g. from personalized marketing and pricing or *algorithmic cooperation* (Berry et al., 2019; Assad et al., 2024; Kasberger et al., 2024).
- Finally, **technology adoption** frequently calls for major complementary investments, e.g. in labour skills, firm organization, or business models, before companies can fully exploit the inherent economic potential (Bresnahan et al., 2002). In combination with the previous arguments about sunk investment and business intelligence, this may contribute to the presumed slowdown in technology diffusion (Akcigit and Ates, 2023), which we also see as a likely cause of the asymmetric distribution of markups and their self-reinforcing dynamics in our data.

4. Conclusions

As the research briefly summarized represents only a first and preliminary attempt at a comprehensive competition monitoring in Austria, it would be premature to draw sweeping policy conclusions. Although the increase in average markups and the observed tendency towards a self-reinforcing unequal distribution are consistent with the latest findings from the international literature, no consensus has yet been reached there on the likely causes or possible policy implications. Clearly, this development poses major challenges for the traditional methods and tools of sector regulation and competition policy. What is still entirely unclear, however, is the specific channels through which public interventions could remedy its possible negative consequences.

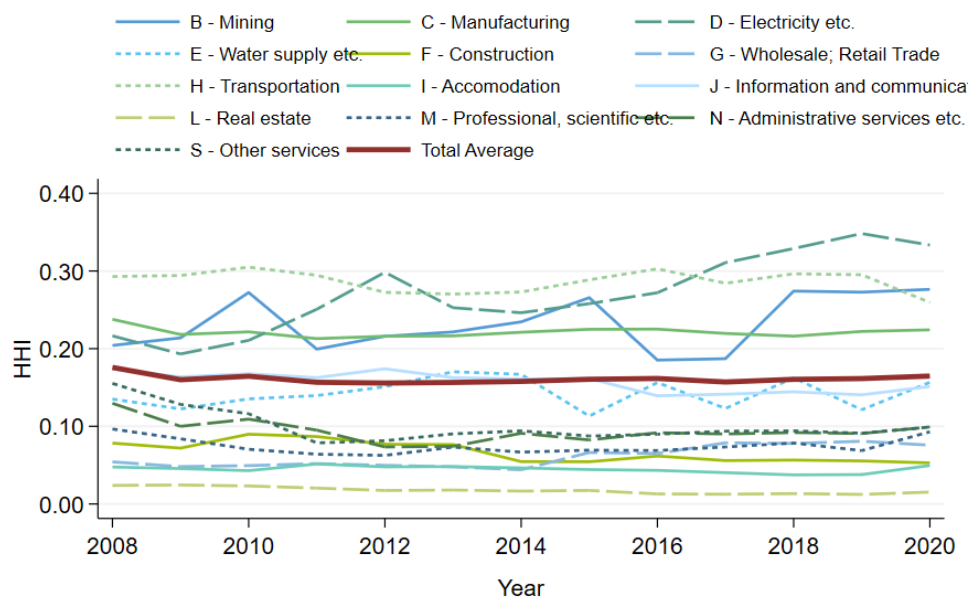
Our discussion of potential causes suggests a comprehensive approach that also targets the dynamic capabilities of firms at the lower end of the markup distribution to become effective contenders to industry leaders. In some cases, this may involve removing barriers to entry, such as enabling data portability when switching between different service providers. In other situations, attempts can be made to limit the build-up of a dominant position, e.g. by narrowing the scope of intellectual property rights. Both require coordinated reforms at the European level. Finally, if the widespread adoption of innovations is a major obstacle to catching up with the industry leaders, it may be appropriate to use tools aimed at technology diffusion. In any case, the rise of average markups and the observed *winner-take-more* dynamic are an obvious reason for increased alertness and further highlight the urgency of a regular and systematic monitoring of competition based on micro data.

5. References

- Akcigit, U., & Ates, S.T. (2023). What Happened to US Business Dynamism? *Journal of Political Economy*, 131(8), 2059–2124. <https://doi.org/10.1086/724289>.
- Assad, S., Clark, R., Ershov, D., & Xu, L. (2024). Algorithmic Pricing and Competition. Empirical Evidence from the German Retail Gasoline Market. *Journal of Political Economy*, 132(3), 723–771. <https://doi.org/10.1086/726906>.
- Berry, S., Gaynor, M., & Morton, F.S. (2019). Do Increasing Markups Matter? Lessons from Empirical Industrial Organization. *Journal of Economic Perspectives*, 33(3), 44–68. <https://doi.org/10.1257/jep.33.3.44>.
- Böheim, M. (2013). Wettbewerbsmonitoring im Spannungsfeld zwischen ökonomischen Gestaltungsmöglichkeiten und wettbewerbsspolitischen Erwartungen. *WIFO-Monatsberichte*, 86(3), 225–336. <https://www.wifo.ac.at/publication/117439/>.
- Bresnahan, T.F., Brynjolfsson, E., & Hitt, L.M. (2002). Information Technology, Workplace Organisation, and the Demand for Skilled Labor. Firm-level Evidence. *Quarterly Journal of Economics*, 117(1), 339–376. <https://doi.org/10.1162/003355302753399526>.
- Calligaris, S., Chaves, M., Criscuolo, C., de Lyon, J., Greppi, A., & Pallanch, O. (2024). Exploring the Evolution and the State of Competition in the EU. https://competition-policy.ec.europa.eu/system/files/2024-06/Exploring_the_evolution_and_the_state_of_competition_in_the_EU_launch.pdf.
- Erharter, D. (2015). Arbeitspapier der BWB zu Wettbewerbsmonitoring.
- Kasberger, B., Martin, S., Normann, H.T., & Tobias, W. (2024). Algorithmic Cooperation. CESifo Working Papers, (11124). <http://dx.doi.org/10.2139/ssrn.4389647>.
- Peneder, M., Bittschi, B., Burton, A., Köppl, A., & Url, T. (2025). Standort Österreich: Wettbewerbsfähigkeit und nachhaltige Entwicklung, Wiesbaden, Springer (erscheint demnächst).
- Peneder, M., & Unterlass, F. (2024). Industry Concentration, Firm-level Markups and Business Dynamics from Austrian Micro-data. *WIFO Working Papers*, (683). <https://www.wifo.ac.at/publication/269530>.
- Reiner, C., & Bellak, C. (2023A). Hat die Macht von Unternehmen in Österreich zugenommen? Teil 1. *Wirtschaft und Gesellschaft*, 49(1), 21–59. <https://doi.org/10.59288/wug491.152>.
- Reiner, C., & Bellak, C. (2023B). Hat die Macht von Unternehmen in Österreich zugenommen? Teil 2. *Wirtschaft und Gesellschaft*, 49(2), 17–76. <https://doi.org/10.59288/wug492.153>.
- Sutton, J. (1991). Sunk Costs and Market Structure. Price Competition, Advertising, and the Evolution of Concentration. Cambridge, MIT Press.

Selected Table & Figures

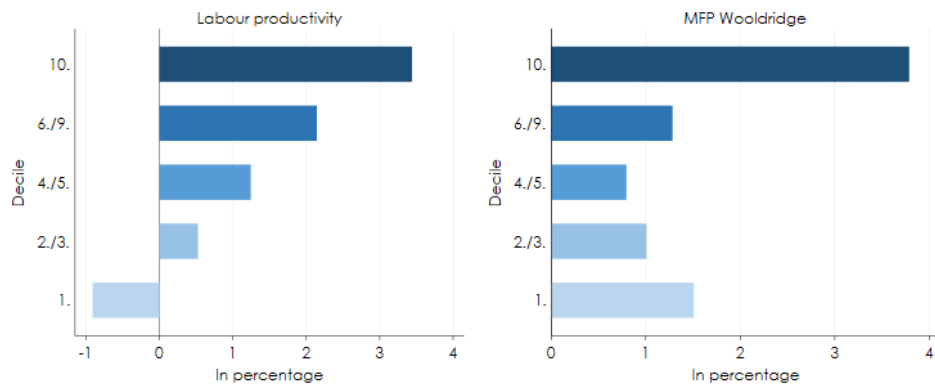
Figure 1: Industry concentration from 2008 to 2020: HHI (unweighted mean of NACE 3-digits)



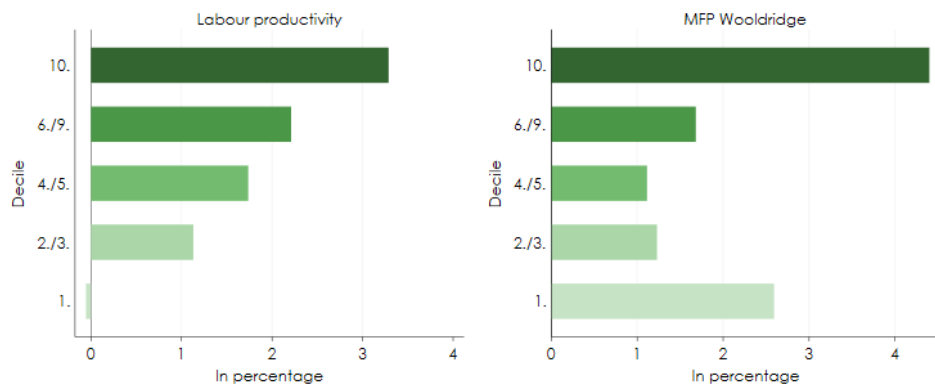
Q: OECD, STAT, WIFO calculations.

Figure 2: Average change in the number of employees by decile of the productivity distribution, 2013-2019

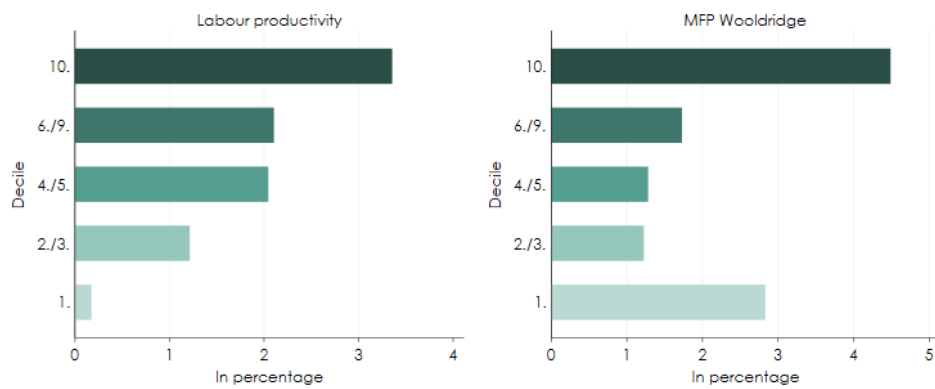
(a) After 1 year: 2013-2019



(b) After 3 years: 2013-2019

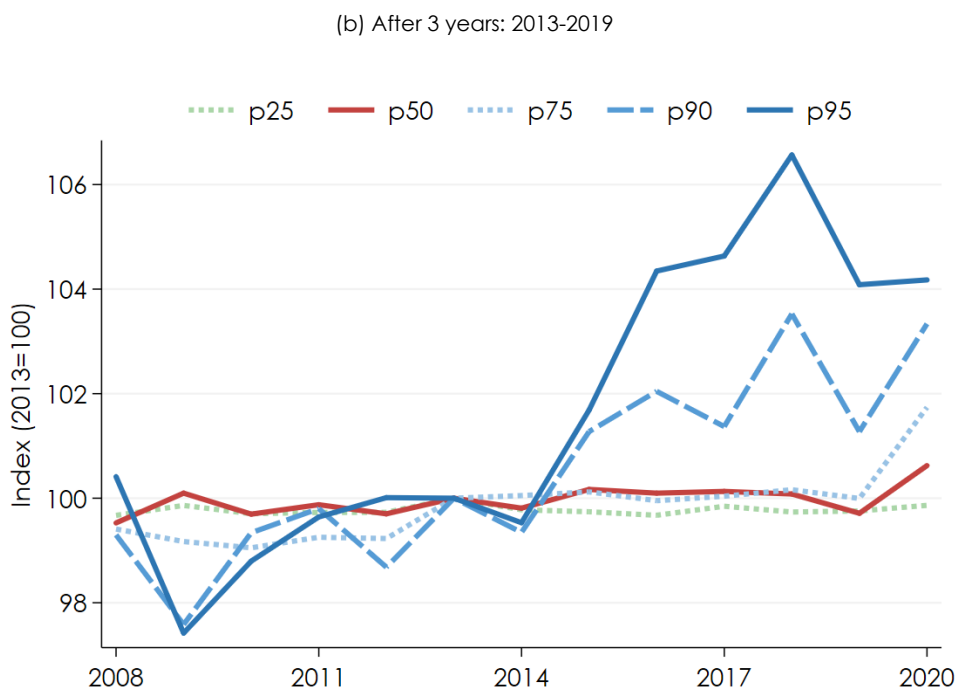
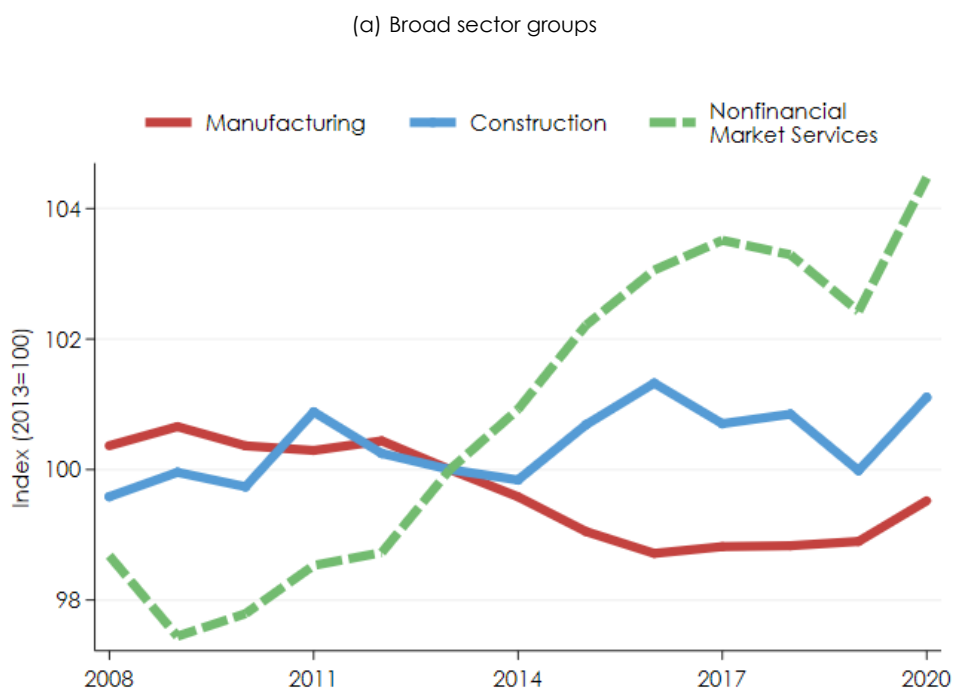


(c) After 5 years: 2013-2019



Q: Multiprod 2.0 - OECD, STAT, WIFO calculations.

Figure 3: **Development of average markups, index 2013 = 100**



Q: Multiprod 2.0 - Multiprod 2.0 - OECD, STAT, WIFO calculations. Since Multiprod sets negative markups to 1, the lowest percentiles (p5, p10) may not be include

Table 1: **Average firm level-markups by broad sectors and percentile of the markup distribution**

STAN	Sector	Markup 2020 (%)	Change 2008/20 (percentage points)					
			All	25th	50th	75th	90th	95th
B	Mining and quarrying	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CA	Food products, beverages, tobacco	17.29	-0.64	-0.11	-0.99	-1.28	-4.31	-1.62
CB	Textiles, wearing apparel, etc.	15.16	-0.90	-0.78	0.53	1.77	0.03	-17.49
CC	Wood & paper products, printing	15.76	-4.56	-3.32	-6.82	-7.60	-5.39	-5.80
CD	Coke, refined petroleum products	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CE	Chemicals and chemical products	14.43	6.01	0.00	5.12	9.30	21.35	14.79
CF	Basic pharmaceuticals and products	30.94	-5.46	-8.08	-8.64	-13.78	17.67	16.88
CG	Rubber and plastics products	18.45	-1.76	1.06	-2.85	-1.80	-6.12	-8.83
CH	Basic metals and products	21.22	-3.27	-1.85	-1.78	-7.72	-7.05	-1.70
CI	Computer, electronic, optical products	25.52	-0.76	-3.27	2.12	-3.00	-1.64	-2.91
CJ	Electrical equipment	8.25	-1.84	-2.61	-4.11	-3.15	0.99	1.89
CK	Machinery and equipment n.e.c.	17.82	1.29	0.00	2.01	3.49	3.35	-0.35
CL	Transport equipment	10.36	2.37	1.73	-0.67	5.16	9.75	5.52
CM	Furniture; other manufacturing	23.23	3.09	3.39	1.53	1.43	4.86	12.62
D	Electricity, gas, steam, etc.	34.03	-6.16	-5.13	-6.80	-12.52	-3.80	-11.94
E	Water supply; sewerage, waste	27.39	-13.02	-3.88	-12.93	-24.66	-41.57	-42.31
F	Construction	13.79	1.71	0.32	0.62	1.75	6.48	2.99
G	Wholesale, retail, repair motor vehicles	8.26	0.95	0.00	0.13	1.70	4.50	4.06
H	Transportation and storage	23.26	4.09	1.72	3.49	9.30	7.57	-2.65
I	Accommodation and food services	28.58	3.31	2.12	3.99	5.24	5.32	3.84
JA	Publishing, audiovisual, broadcasting	17.71	1.02	-1.31	2.95	1.75	21.16	21.19
JB	Telecommunications	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
JC	IT and other information services	43.64	5.89	5.29	7.92	9.63	7.08	-3.69
L	Real estate activities	95.56	19.76	-1.43	7.29	32.07	47.50	125.44
MA	Legal, accounting activities, etc.	61.46	6.05	0.66	1.22	4.08	22.26	29.37
MB	Scientific research and development	40.56	4.40	-6.50	-1.36	22.18	-1.52	36.02
MC	Advertising & market research; veterinary	73.76	23.83	16.48	30.66	31.90	44.93	64.74
N	Administrative and support services	159.88	14.78	-0.93	-3.56	10.01	72.81	129.86
QB	Residential care and social work	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
S	Other service activities	13.01	-21.89	-19.33	-20.64	-32.83	-33.85	-34.62
Total (unweighted mean)		33.05	1.47	-0.99	-0.06	1.63	7.40	12.90

Q: Multiprod 2.0 - OECD, STAT, WIFO calculations.