Occupational Alignment of Labour Supply and Demand in Germany

Evidence from Registered Vacancies and Workers, 2019–2026

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Research question and motivation

Do available jobs and workers align across occupations, and can occupational imbalance increase while aggregate job availability declines? This study examines these questions for Germany's registered civilian labour market. It distinguishes the number of vacancies relative to available workers from the distribution of those vacancies and workers across occupations. The preliminary evidence indicates that both dimensions deteriorated recently: registered vacancies per unemployed worker declined, while occupational distributional mismatch increased in 2025–2026.

The study is motivated by the conceptual distinctions in the mismatch literature. Coraggio et al. (2026) distinguish worker–job skill mismatch from related concepts, including sectoral mismatch unemployment. Şahin et al. (2014) develop a framework connecting the distribution of vacancies and jobseekers to job finding and unemployment. The present analysis examines occupational distributions directly; it does not estimate their structural mismatch-unemployment measure or identify unemployment caused by mismatch. Its contribution is an integrated descriptive account of occupational alignment, aggregate job availability, and the relative roles of vacancy and worker composition in Germany's recent adjustment.

Data and scope

The dataset is assembled from the Bundesagentur für Arbeit's monthly Arbeitsmarkt nach Berufen reports. It contains 93 months, January 2019–September 2026, for 36 civilian two-digit occupational groups under the KldB 2010 framework, yielding 3,348 occupation–month observations. Demand is measured by the stock of registered vacancies. Supply is measured alternatively by registered unemployed workers and the broader population of registered jobseekers. These overlapping populations are analysed separately and are never added together.

The analysis excludes the armed-forces group throughout the sample because some early vacancy counts are suppressed, and excludes records without an occupational classification. All shares and ratios therefore use the same included civilian occupational universe rather than national headline totals. The extracted panel contains no missing counts or duplicate occupation–month observations. The January 2021 classification revision is flagged rather than treated as fully harmonised; the main recent-period comparison stays within the post-revision period.

Measurement and comparison

Let V_{it} and U_{it} denote registered vacancies and unemployed workers in occupation i and month t. Define $v_{it} = V_{it}/\sum_i V_{it}$ and $u_{it} = U_{it}/\sum_i U_{it}$. Occupational mismatch and aggregate tightness are

$$D_t = \frac{1}{2}\sum_i |v_{it} - u_{it}|, \qquad \theta_t = \frac{\sum_i V_{it}}{\sum_i U_{it}}. \tag{1}$$

The index is reported as $100D_t$. Zero means identical occupational shares, not equal numbers of workers and vacancies. Tightness measures vacancies per worker and is also calculated separately by occupation. Replacing U with registered jobseekers provides an alternative supply measure. The full monthly series describes developments from 2019 onward. To summarise recent changes without comparing a complete year with an incomplete one, the analysis contrasts January–September 2024 with the same months in 2026. It computes each monthly index first and then averages across months. This is a comparison of matched calendar periods, not seasonal adjustment or a causal research design.

For each matched monthly pair, a symmetric two-order decomposition separates vacancy and worker composition. Write $D(v, u) = \frac{1}{2}\sum_i |v_i - u_i|$, with 0 and 1 denoting earlier and later distributions. The vacancy component is

$$C_V = \tfrac{1}{2}\left[D(v_1, u_0) - D(v_0, u_0) + D(v_1, u_1) - D(v_0, u_1)\right]. \tag{2}$$

The worker component is $C_U = D(v_1, u_1) - D(v_0, u_0) - C_V$. Components are multiplied by 100 and averaged across the nine matched monthly pairs. This is an arithmetic decomposition, not causal attribution.

Main findings

The monthly series shows comparatively stable mismatch in 2022–2024 followed by an increase in 2025–2026 (Figure 1). The unemployed and broader jobseeker measures follow similar paths.

Average mismatch increased from 25.15 to 28.42 using unemployed workers, a rise of 3.28 index points (Table 1). Vacancy-composition changes contributed +3.79 points, while unemployment-composition changes offset 0.52 points. The broader jobseeker measure rose from 24.63 to 28.12, with corresponding contributions of +3.92 and −0.43 points. The similar patterns indicate that the result is not specific to the narrower unemployment measure. A small or negative net worker contribution does not imply an unchanged worker distribution: occupational changes may offset one another.

Table 1: Occupational mismatch and its decomposition

Measure	Unemployed	Jobseekers
Mean mismatch, Jan–Sep 2024	25.15	24.63
Mean mismatch, Jan–Sep 2026	28.42	28.12
Change in mismatch	+3.28	+3.49
Vacancy-composition contribution	+3.79	+3.92
Worker-composition contribution	−0.52	−0.43

Notes: Levels are on a 0–100 scale; changes and contributions are index points. Entries average nine matched months. Components are rounded independently. Source: author's calculations from BA reports.

Aggregate job availability moved in the opposite direction. The mean monthly vacancy-to-unemployment ratio fell from 0.269 in January–September 2024 to 0.212 in the corresponding months of 2026: approximately 26.9 versus 21.2 registered vacancies per 100 unemployed workers. Figure 2 places this decline alongside rising mismatch. The simultaneous movement implies that lower overall tightness need not be accompanied by closer occupational alignment.

Figure 3 shows the cross-sectional structure behind the index. Mechatronics and electrical occupations, metal occupations, machinery and vehicle technology, and medical health occupations account for larger shares of vacancies than of unemployed workers. Business management and organisation, cleaning, and security occupations show the reverse pattern. These differences identify where the two distributions diverge; they do not establish absolute shortages or surpluses, because the aggregate numbers of vacancies and workers differ.

Figure 4 complements the share comparison with changes in average monthly counts. It distinguishes falling vacancies from rising unemployment and shows that occupations can experience changes in both quantities in the same direction. Changes in shares need not track changes in absolute counts.

The largest positive contributions to the matched-period mismatch increase came from business management and organisation, metal production and processing, and the broad group covering education, social and domestic occupations and theology. IT and communications occupations and cleaning contributed offsets. These are contributions to changes in absolute share gaps; they need not rank occupations by unemployment growth, vacancy decline, or the level of mismatch. Figure 5 displays all occupational contributions, including offsets.

Interpretation and limitations

The findings support a descriptive conclusion: occupational alignment weakened recently while registered job opportunities per worker declined. Changes in vacancy composition account for the increase in the distributional index, with worker composition partly offsetting it. A decline in an occupation's vacancy count can nevertheless increase its vacancy share when vacancies fall faster elsewhere. Composition and count changes must therefore be interpreted jointly.

The estimates cover the registered civilian market. They do not observe all vacancies, all potential workers, actual applications, hiring transitions, or whether individual skills meet job requirements. Broad occupational groups conceal differences in skill level, geography, wages, and working conditions. Registration patterns, classification changes, and the exclusion of unclassified records may also affect comparability. Accordingly, the index is neither a share of workers unable to find a suitable job nor an estimate of unemployment attributable to mismatch.

The recent movement towards the upper-left combines a higher mismatch index with fewer vacancies per unemployed worker. This distinction matters for interpretation: aggregate labour-market easing does not by itself demonstrate that the occupational distribution of workers is becoming better aligned with available jobs. The study provides a basis for investigating occupational adjustment more closely, while leaving causal mechanisms and the effectiveness of specific policy responses open. **Keywords:** occupational mismatch; registered vacancies; unemployment; labour supply; labour-market tightness; Germany.

JEL: J21, J23, J24, J64.

References

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[3] Şahin, A., Song, J., Topa, G., and Violante, G. L. (2014). Mismatch Unemployment. American Economic Review, 104(11), 3529–3564. https://doi.org/10.1257/aer.104.11.3529

Figures

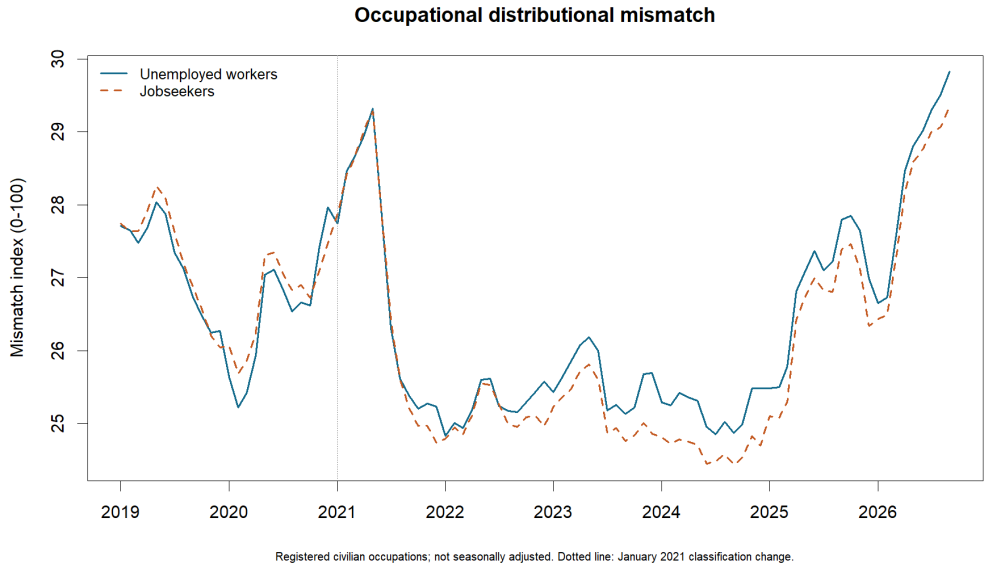


Figure 1: Monthly occupational mismatch, January 2019–September 2026. Both supply measures use the same 36 civilian groups. Series are not seasonally adjusted. The dotted line marks the January 2021 classification revision. Source: author's calculations from BA reports.

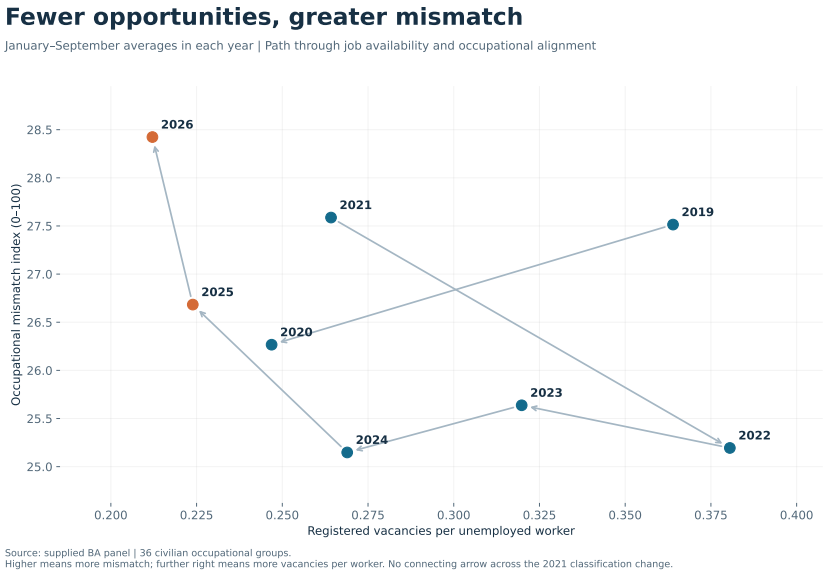


Figure 2: Occupational mismatch and job availability. Each point averages monthly indices and ratios over January–September. No arrow crosses the 2021 revision. Higher means more mismatch; further right means more vacancies per worker.

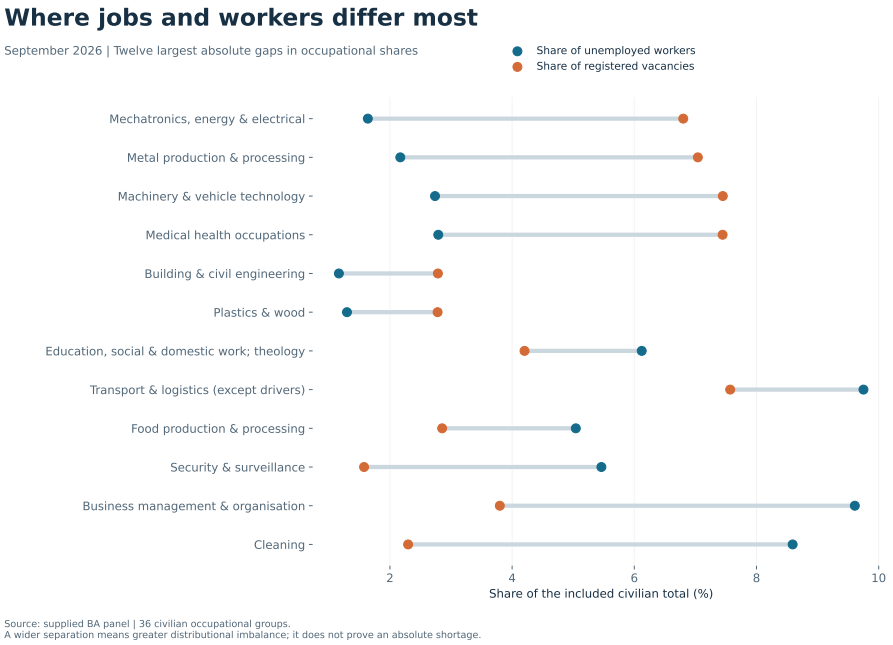


Figure 3: Occupational vacancy and unemployment shares in September 2026. The twelve largest absolute share gaps are shown. Wider gaps indicate distributional imbalance, not proven absolute shortages. English labels are shortened translations.

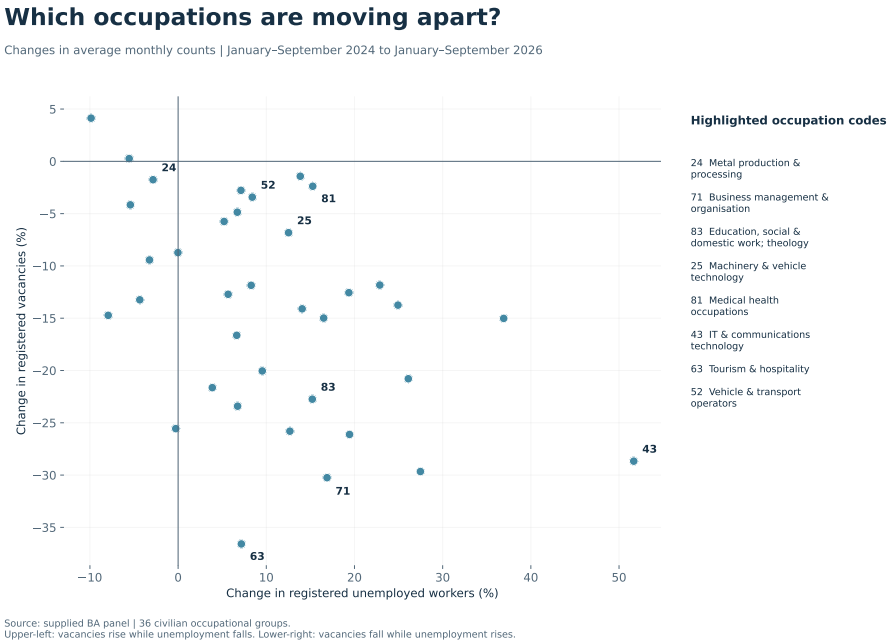


Figure 4: Changes in average monthly counts from January–September 2024 to the same months of 2026. Each point is an occupation. Selected codes highlight illustrative groups. Lower-right observations combine falling vacancies with rising unemployment.

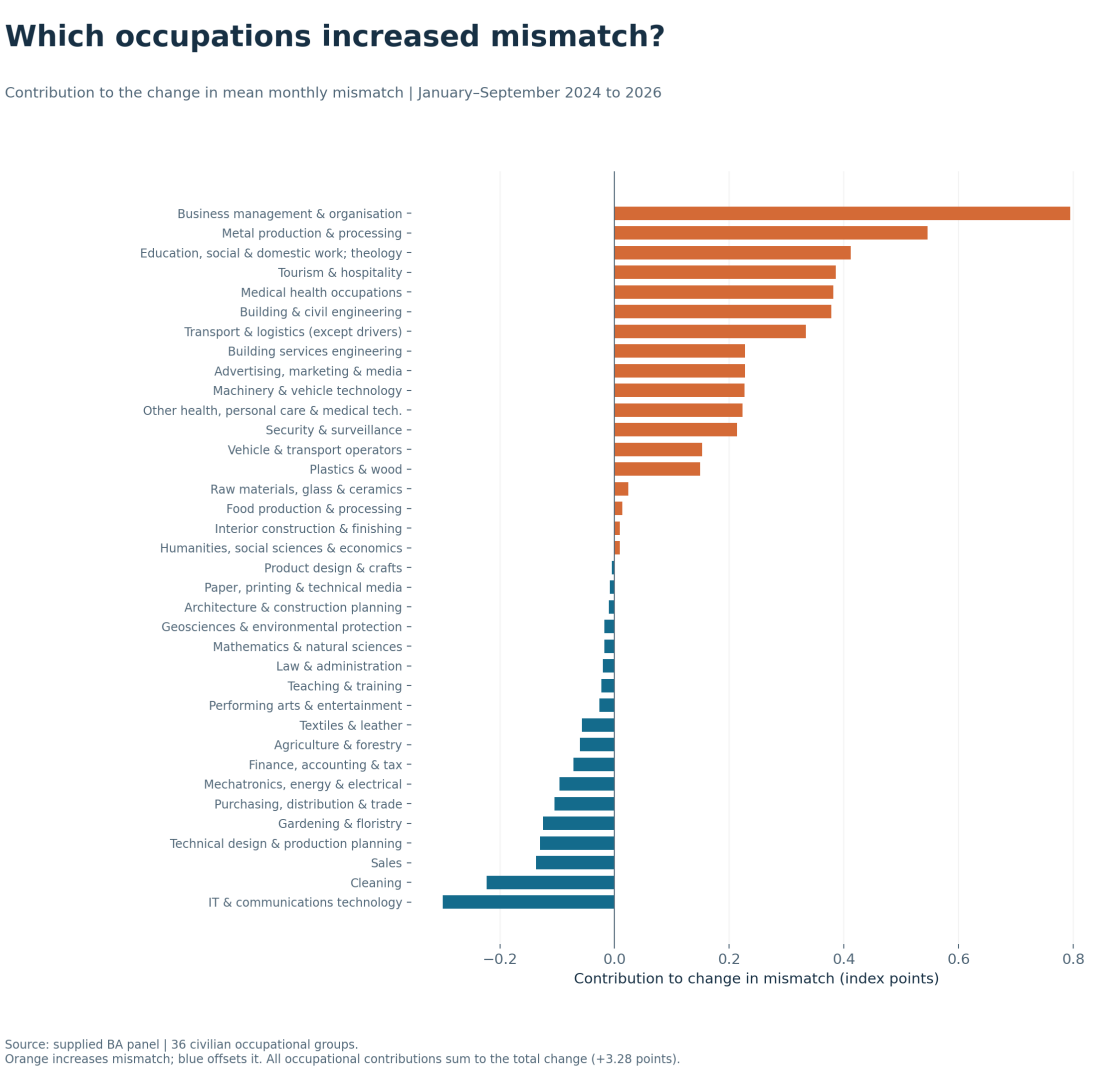


Figure 5: Occupational contributions to the change in mean monthly mismatch, January–September 2024 versus 2026. Contributions are changes in mean monthly $50|v_{it} - u_{it}|$. Orange increases mismatch; blue offsets it. All 36 contributions sum to 3.28 index points. Source: author's calculations from BA reports.