# How Different Uses of AI Shape Labor Demand: Evidence from France

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## Online Appendix

In this appendix, we present complementary results on heterogeneous employment responses by occupation (Section I) and by AI uses (Section II).

### I. The employment response to AI adoption by type of occupation

Our paper focuses on occupations "at a high risk of displacement", where the effect of adoption of AI is expected to be negative according to prior work. Indeed, we aim to estimate the employment response to AI adoption for these occupations, where the displacement effect may more than offset the productivity effect. These "highly exposed and substitutable" occupations belong to the top-left quadrant of the AI exposure/substitutability matrix built by Bergeaud (2024), highlighted in red Figure A1.

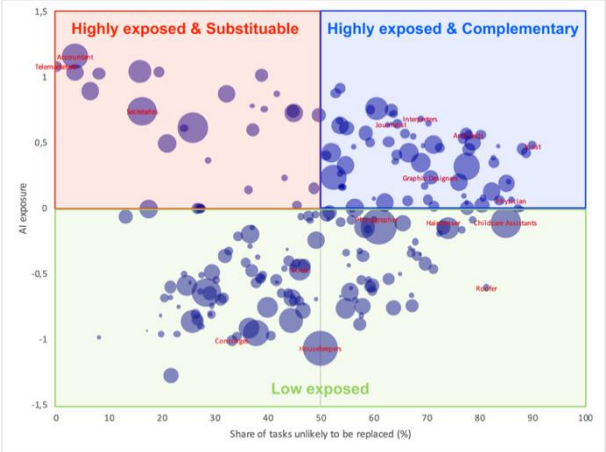



Figure A1. AI Exposure/Substitution Matrix

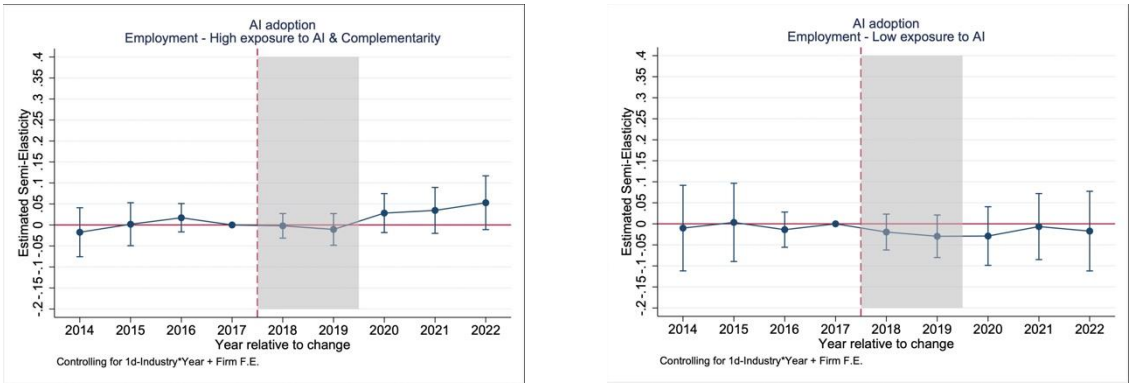
*Note:* This figure presents the overall exposure to AI (y-axis) and relative substitutability/complementarity to AI (x-axis), as built by Bergeaud (2024), following the approach of Pizzinelli et al. (2023) and Gmyrek et al. (2023) applied to French labor market data. Each circle represents an occupation, with the size proportional to the total number of employees.

Figure A2 reports results for the two other categories, highly exposed and complementary occupations and low exposed occupations, respectively in blue and green on Figure A1.

For "highly exposed and complementary" occupations, we anticipate that that the productivity effect outweighs the displacement effect, leading to a positive labor demand effect.

For example, architects and graphic designers belong to this category. As expected, employment slightly increases in firms that adopt AI (Figure A2.A).

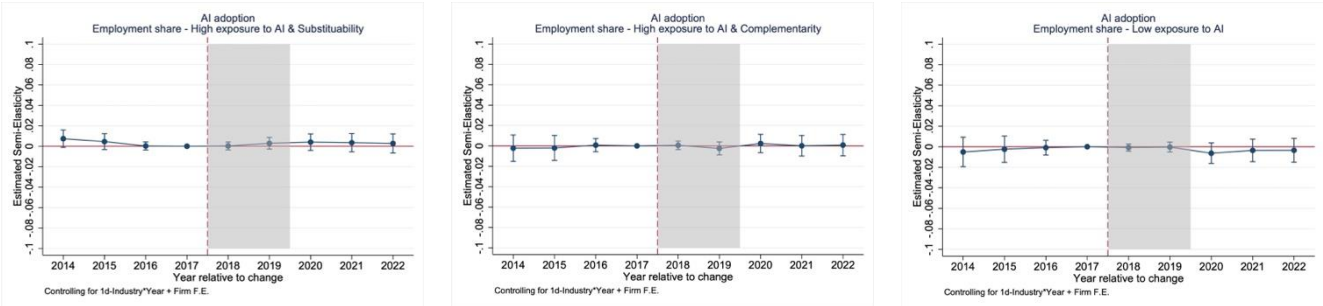
For "low-exposed" occupations, we anticipate a limited displacement effect and a limited productivity effect, leading to a weak labor demand effect. For example, housekeepers, cooks, and roofers are included in this category. As expected, we see no relationship between AI adoption and employment (Figure A2.B).




A. Highly exposed & Complementary B. Low-exposed

Figure A2. The Response of Firm Employment to AI Adoption, By Degree of Exposure to AI and Substituability with AI

*Note:* This figure documents the response of firm-level employment to AI adoption, using specification (1), considering employment in occupations that are classified as highly exposed to AI and highly substitutable with AI (A) and low-exposed to AI (B) according to the methodology of Bergeaud (2024), Pizzinelli et al. (2023) and Gmyrek et al. (2023). Standard errors are clustered by firms.




A. High Exposure & Substituable B. High Exposure & Complementary C. Low Exposure

Figure A3. The Response of Firm Employment Share to AI Adoption, by occupation

*Note:* This figure documents the response of firm-level employment shares by occupations. Employment is divided in three categories (low exposure to AI, high exposure and complementarity with AI, high exposure and substitutability with AI) according to the methodology of Bergeaud (2024), Pizzinelli et al. (2023) and Gmyrek et al. (2023). Standard errors are clustered by firms.

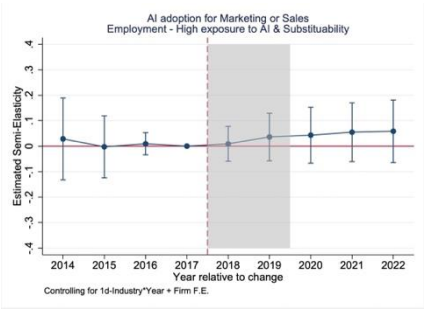
Figure A3 reports results in terms of employment share by type occupation. The share of occupations does not change after investment in AI, meaning that the increase in employment within the firm affects all jobs on average, regardless of their type of exposure to AI

(inconsistent with the predictions of the AI exposure matrix). This suggests a widespread productivity effect following the adoption of AI by firms. This illustrates that the distributional effects of AI are not inherently tied to the characteristics of the occupation.

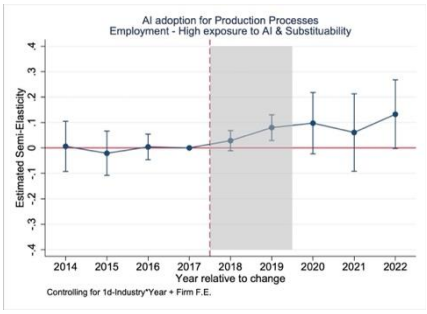
## II. Heterogeneous employment effects by occupation and AI uses

Figures A4, A5 and A6 present the response of firm employment for all types of AI uses measured in our data. We report the results in turn for highly exposed and substitutable occupations (Figure A4), highly exposed and complementary occupations (Figure A5), and occupations with low exposure (Figure A6).

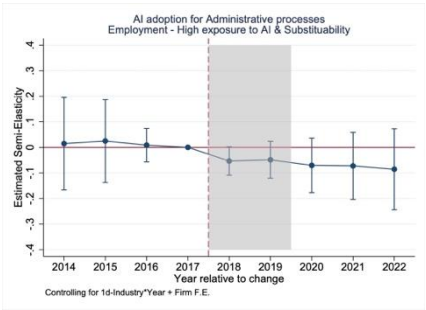
The results show significant heterogeneity across AI uses and occupations. Depending on the occupation, different uses of AI to a positive employment response for certain types of occupations and a negative response for others.



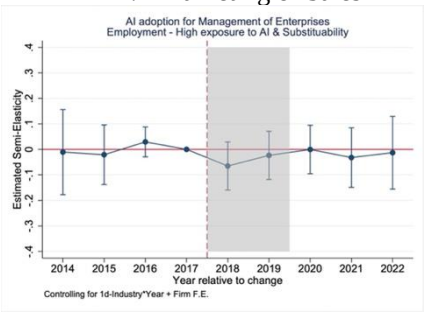

A. Marketing or Sales



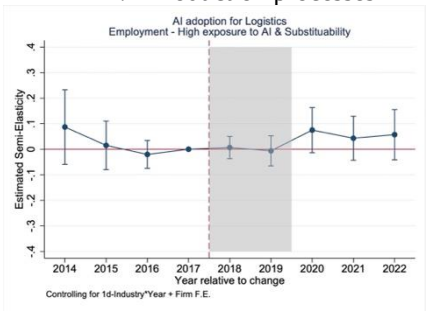

B. Production processes



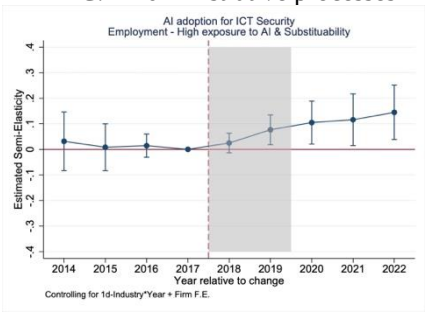

C. Administrative processes



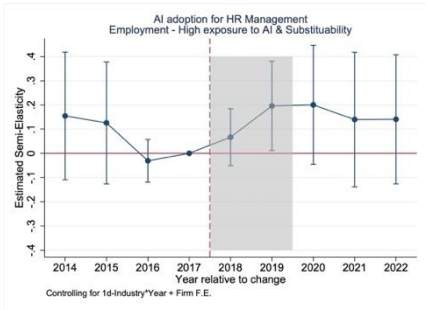

D. Management of Enterprises




E. Logistics




F. ICT Security




G. HR Management or Recruiting

Figure A4. The Response of Firm Employment to AI Adoption for Highly Exposed and Substitutable Occupations, by AI uses

*Note:* This figure documents the response of firm-level employment to AI adoption for the 7 seven types of uses: marketing or sales (A); production processes (B); administration processes (C); management of enterprises (D); logistics (E); ICT security (F); HR management or recruiting (G), using specification (1), considering only employment in occupations that are classified as highly exposed to AI and highly substitutable with AI according to the methodology of Bergeaud (2024), Pizzinelli et al. (2023) and Gmyrek et al. (2023). Standard errors are clustered by firms.

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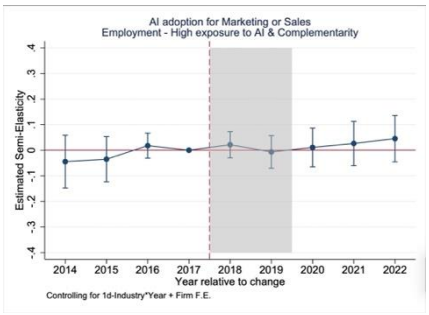
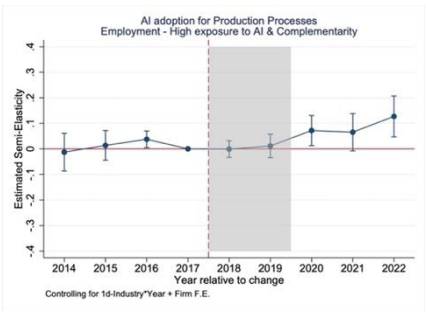
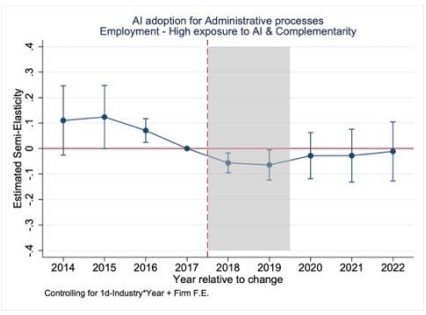


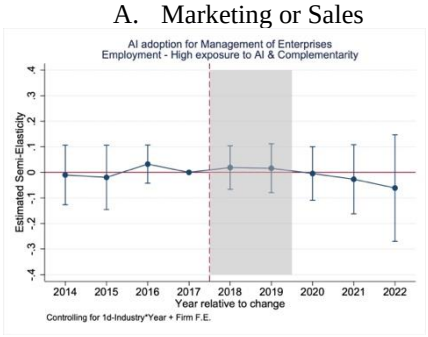

A. Marketing or Sales



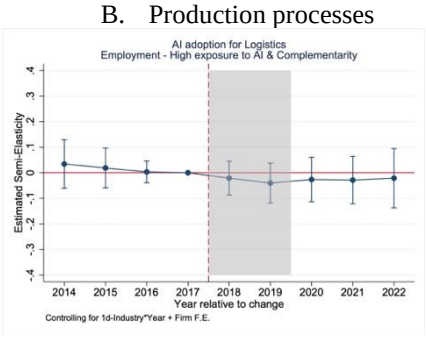

B. Production processes



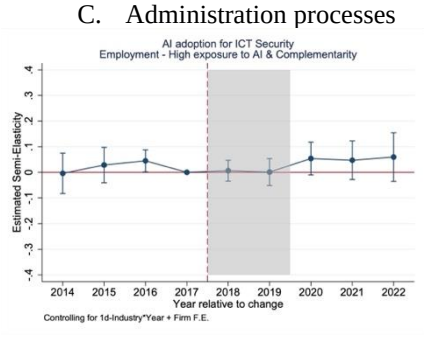

C. Administration processes



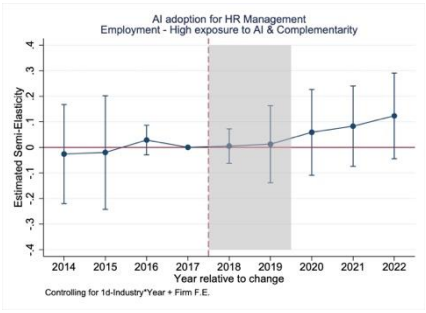

D. Management of Enterprises




E. Logistics



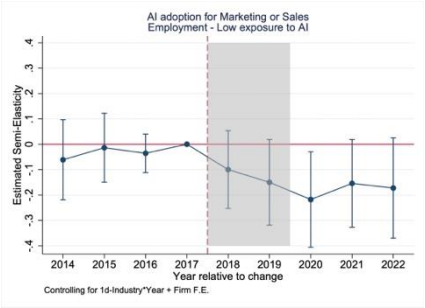

F. ICT Security



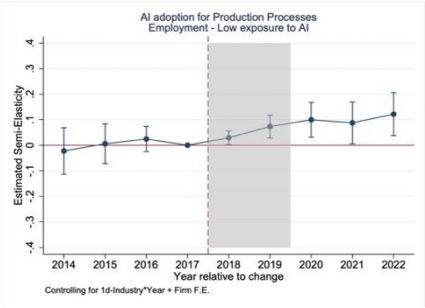

G. HR Management or Recruiting

Figure A5. The Response of Firm Employment to AI Adoption for Highly Exposed and Complementary Occupations, by AI Uses

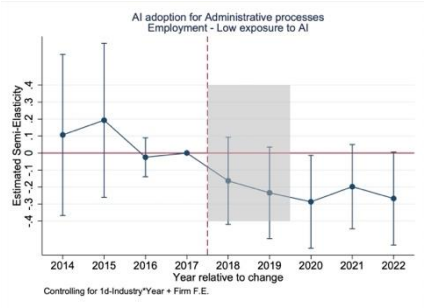
*Note:* This figure documents the response of firm-level employment to AI adoption for the 7 seven types of uses: marketing or sales (A); production processes (B); administration processes (C); management of enterprises (D); logistics (E); ICT security (F); HR management or recruiting (G), using specification (1), considering only employment in occupations that are classified as highly exposed to AI and complementary with AI according to the methodology of Bergeaud (2024), Pizzinelli et al. (2023) and Gmyrek et al. (2023). Standard errors are clustered by firms.



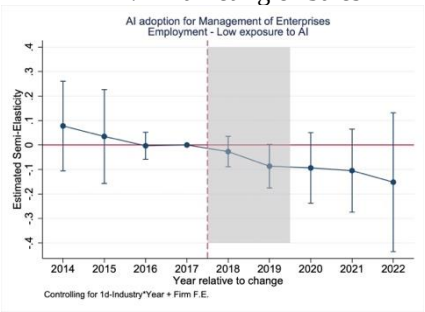

A. Marketing or Sales



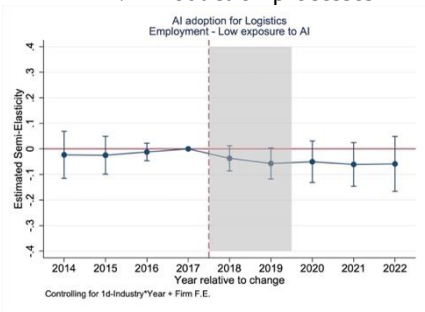

B. Production processes



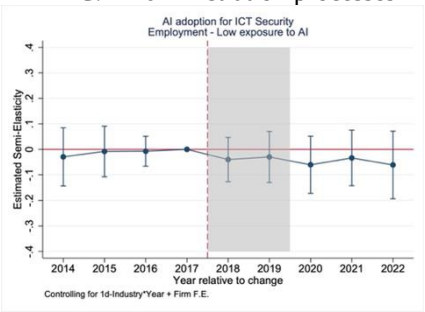

C. Administration processes



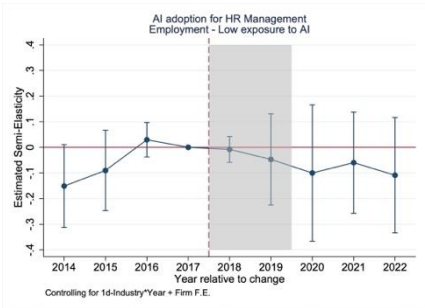

D. Management of Enterprises




E. Logistics




F. ICT Security




G.HR management or recruiting

Figure A6. The Response of Firm Employment to AI Adoption for Occupations with low AI Exposure, by AI uses

*Note:* This figure documents the response of firm-level employment to AI adoption for the 7 seven types of uses: marketing or sales (A); production processes (B); administration processes (C); management of enterprises (D); logistics (E); ICT security (F); HR management or recruiting (G), using specification (1), considering only employment in occupations that are classified as low-exposed to AI according to the methodology of Bergeaud (2024), Pizzinelli et al. (2023) and Gmyrek et al. (2023). Standard errors are clustered by firms.