Generative AI and Firm Values

Eisfeldt, Schubert, Taska and Zhang

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Overview

- **First** study to measure **labor force exposure** to GenAI at firm level
  - Distinguishing between **substitution** and **complementarity** effects
- Quantifies impact on **firm earnings**, **profitability**, and **labor demand**
- Argues that firms work forces exposed to GenAI experienced a significant **increase** in firm valuations
  - more pronounced for firms with great data assets
  - not driven by firms product market exposure

Finance Result

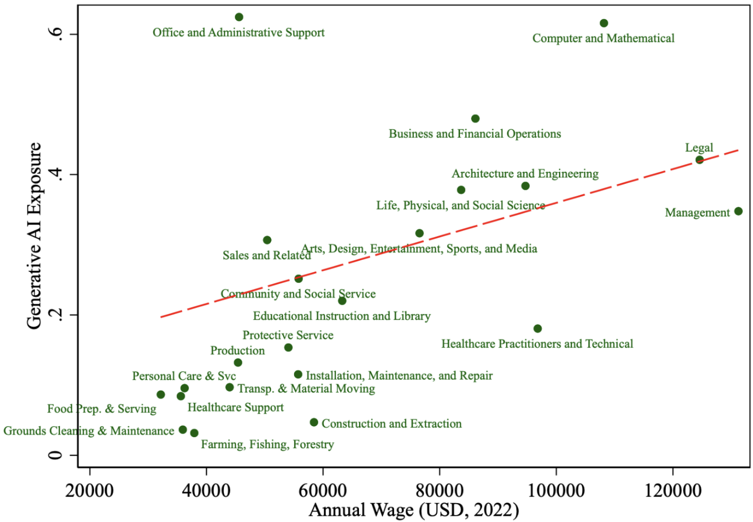
- Firms with workforces highly exposed to Generative AI saw a **5% increase in market value** relative to low-exposure firms
- The "Artificial-Minus-Human" (AMH) portfolio earned **0.44% daily returns** in the two weeks following ChatGPT's release
- Effect persists after controlling for:
  - Market factors and Fama-French 5 factors
  - Firm characteristics
  - Industry effects
  - Product market exposure to AI

Empirics

Three-step approach to measure firm exposure:

1. **Task level**: Used GPT to classify 19,265 tasks across 923 occupations
   - Direct exposure (1.0): ChatGPT reduces time by at least half
   - Indirect exposure (0.5): Software built on LLMs could reduce time
   - No exposure (0): Tasks not affected by Generative AI
2. **Occupation level**: Aggregated task scores by occupation
3. **Firm level**: Weighted average using firm workforce composition

GenAI exposure has "intuitive" dispersion across labour types



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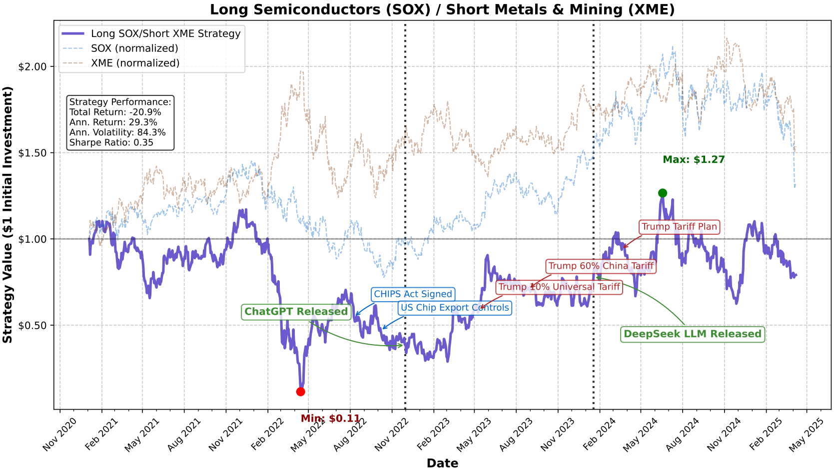

Long-short strategy capturing semiconductor outperformance vs. mining in response to tariffs and AI

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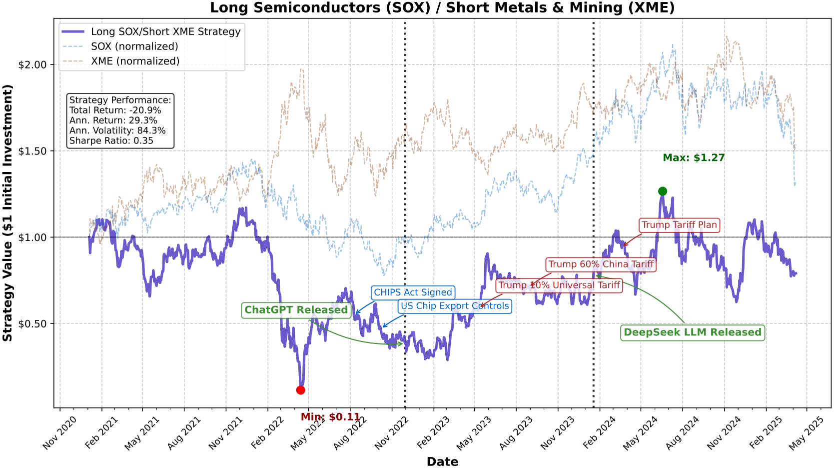

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$$P_t = E_t\left[\sum_{s=t+1}^{\infty} M_s \cdot D_s\right]$$: where are the shocks and how persistent are they ?

Comment 2: cash flows vs discount rates

$$\begin{tikzcd}
A \arrow[r, bend left] \arrow[rd, bend right] & \bullet & x_u^A = +1, & B \arrow[r, bend left] \arrow[rd, bend right] & \bullet & x_u^B = -1 \\
& \bullet & x_d^A = -1, & & \bullet & x_d^B = +1
\end{tikzcd}$$

$$\begin{tikzcd}
\square \arrow[r, bend left] \arrow[rd, bend right] & \bullet & \xi_u = +1 \\
& \bullet & \xi_d = +5
\end{tikzcd}$$

Comment 2: cash flows vs discount rates (continued)

There are **great** theory papers to guide the thought process (and the reader) on this point:

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Pricing with heterogeneity in labour in come risk:

Constantinides and Duffie (1996): "In an economy with heterogeneity in [...] labor income shocks [...] Euler equations that depend not only on the per capita consumption growth but also on the cross-sectional variance of the individual consumers' consumption growth."

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Pricing under uncertainty with new technologies:

Pastor & Veronesi (2004) : "The fundamental value of a firm increases with uncertainty about average future profitability, and this uncertainty was unusually high in the late 1990s."

Comment 3: avoid cross-sectional asset pricing look at more events

- A novel papers **main job** is to document a new and exciting facts.
  - This paper delivers: computation of the AMH factor is stand-alone contribution

- I don't believe in cross-sectional asset pricing ... don't get lost in the zoo

⋆ I suggest to push that AMH **makes sense economically** by studying more events (DeepSeek, Trumps tariffs, what comes next) and concede with the data available its limited what one can robustly say about firm valuation and new technologies

⋆ Avoid noisy returns and look directly at analyst (IBES) beliefs about cash flows and returns

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- Admission: this discussion was written with the help of GenAI