Occupational Gender Segregation in China (2012-2021)： Implications for Business and Workforce Strategy

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Introduction

Occupational gender segregation is not just a social equality issue—it has direct implications for **business talent management and economic growth**.

This study analyzes employment data from **China's urban non-private sectors** from **2012 to 2021**:

➢ **Scope & Data**: Analyzes employment data from China's non-private sectors (2012–2021) and compares it with historical data over 40 years to examine long-term trends.

➢ **Measurement & Trends**: Uses D Index and KM Index to quantify occupational gender segregation and track its evolution over time.

➢ **Implications for Business**: Explores how gender segregation affects female employment growth, industry growth rate, profitability, and average salaries across occupations.

These insights have significant implications for **HR strategy, Diversity, Equity, and Inclusion (DEI) policies, and industry growth**.

Data Source & Methodology

Data: China Labor Statistics Yearbook (2013–2022) (Urban Non-Private Sectors).

Employment Data with Female Growth Rate
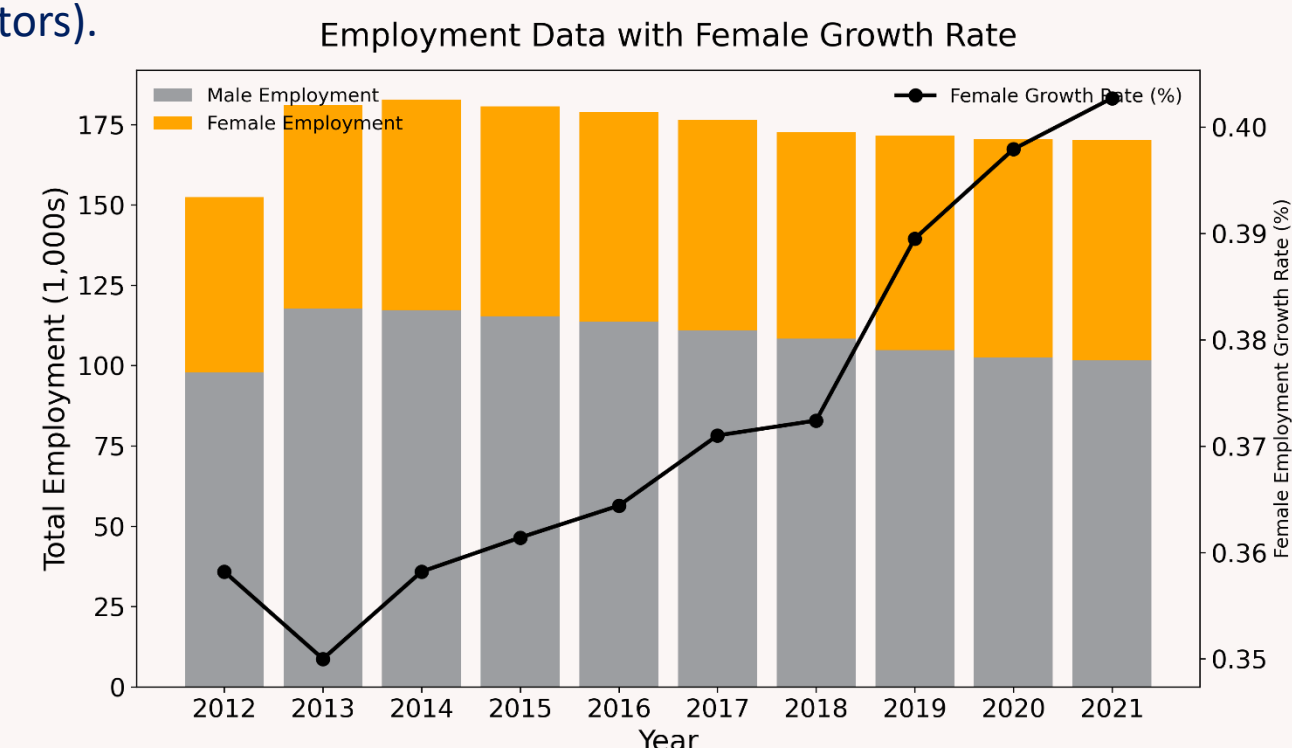
Metrics Used:
- **Comparative analysis (1982-2021)** to observe long-term trends
- **Duncan Index (D Index) & Karmel-MacLachlan Index (KM Index)** to quantify segregation

$$D = 0.5 \times \sum_{i=1}^{n} \left| \frac{F_i}{F} - \frac{M_i}{M} \right| \times 100$$

$$D_{standardized} = 0.5 \times \sum_{i=1}^{n} \left\| \left| \frac{\left(\frac{F_i}{T_i}\right)}{\sum_{i=1}^{n} \left(\frac{F_i}{T_i}\right)} - \frac{\left(\frac{M_i}{T_i}\right)}{\sum_{i=1}^{n} \left(\frac{M_i}{T_i}\right)} \right| \right\| \times 100$$

$$KM = \frac{1}{T} \sum_{i=1}^{n} |(1-\alpha)F_i - \alpha M_i| \times 100$$

- **Regression models** to assess economic impacts

Acknowledgement

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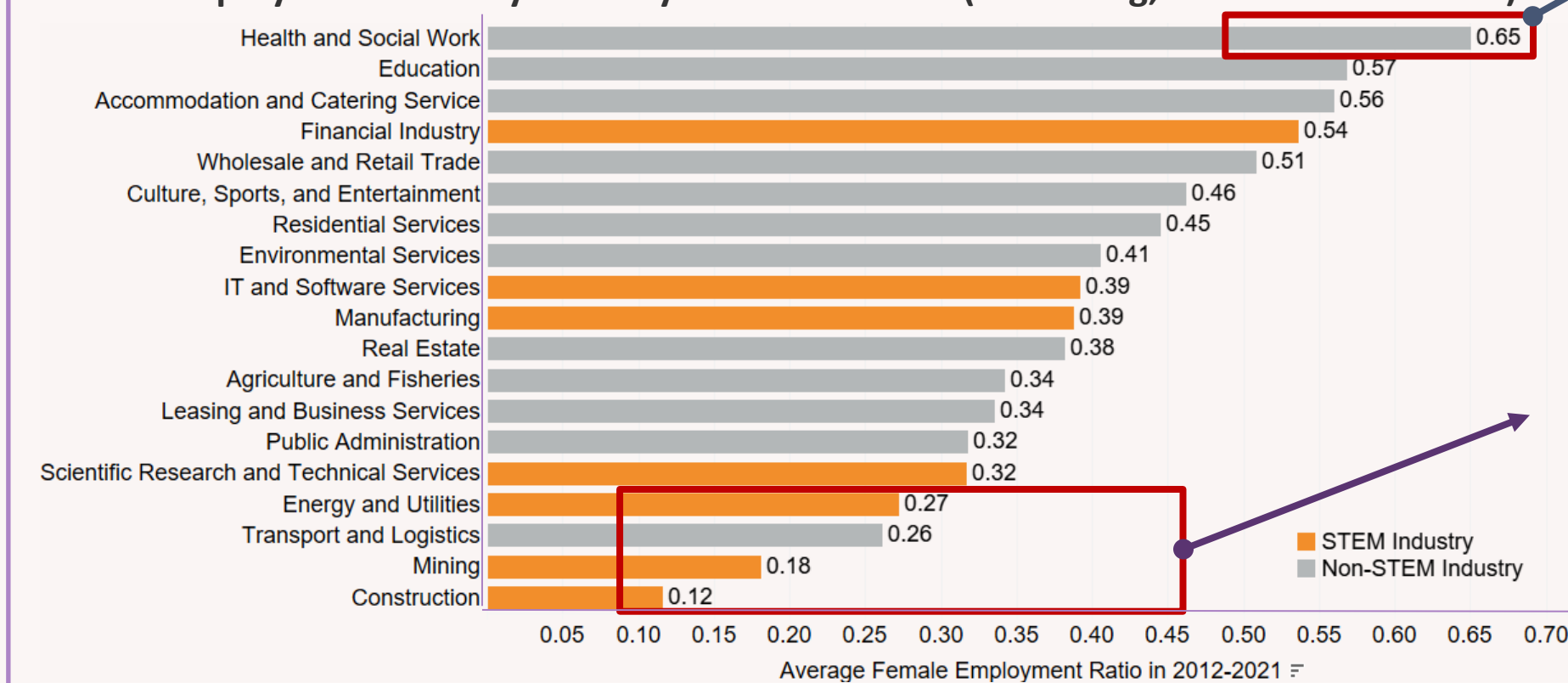ldong9@jh.edu | +1 (571)-457-0961

Occupational Gender Segregation from 2012 to 2021

We first examined the proportion of female employees from 2012 to 2021. According to Anker (1997)'s classification of occupations by gender, professions with a female proportion of over 70% are classified as female-dominated, while those with a female proportion below 30% are classified as male-dominated.

❖ Based on the Female Employment Ratio, we found that the proportion of women in **Health and Social Work** is close to 70%, identifying it as **a female-leaning occupation**.

❖ Some industries are still heavily **male-dominated**, such as mining and construction.

❖ Despite overall progress, gender segregation persists due to structural barriers and societal expectations.

❖ The **COVID-19 pandemic** has also had an impact, slowing or reversing the trend towards gender equality in some sectors.
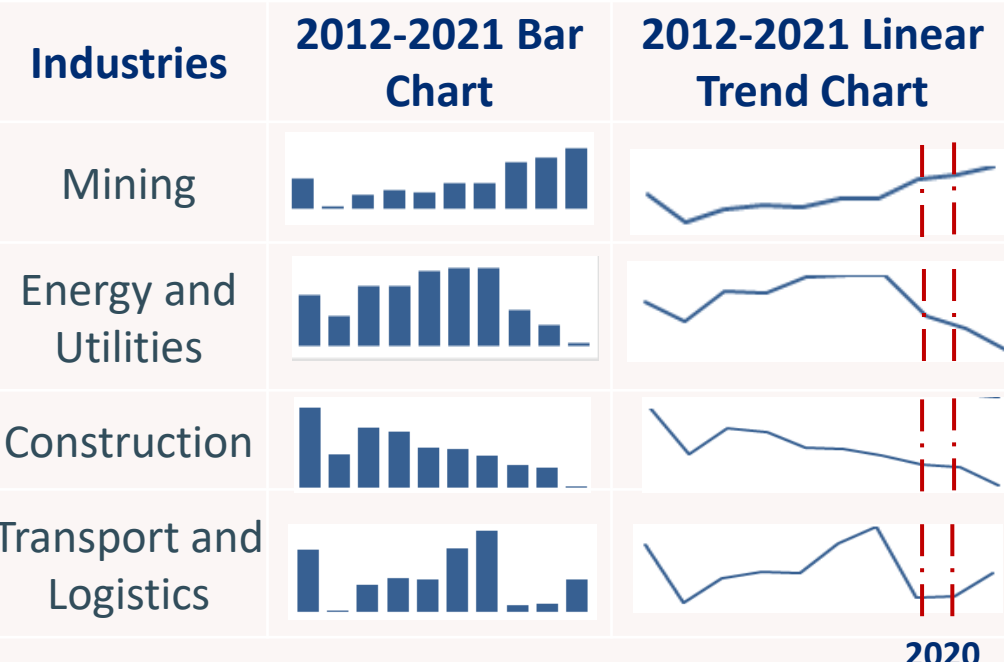
Female Employment Ratio by Industry from 2012-2021 (Ascending, STEM vs. Non-STEM)


Female-leaning Occupations

Industries	2012-2021 Bar Chart	2012-2021 Linear Trend Chart
Health and Social Work		2020

Male-dominated Occupations

Industries	2012-2021 Bar Chart	2012-2021 Linear Trend Chart
Mining		
Energy and Utilities		
Construction		
Transport and Logistics		2020

Business Impact of Gender Diversity in Industries & Recommendations

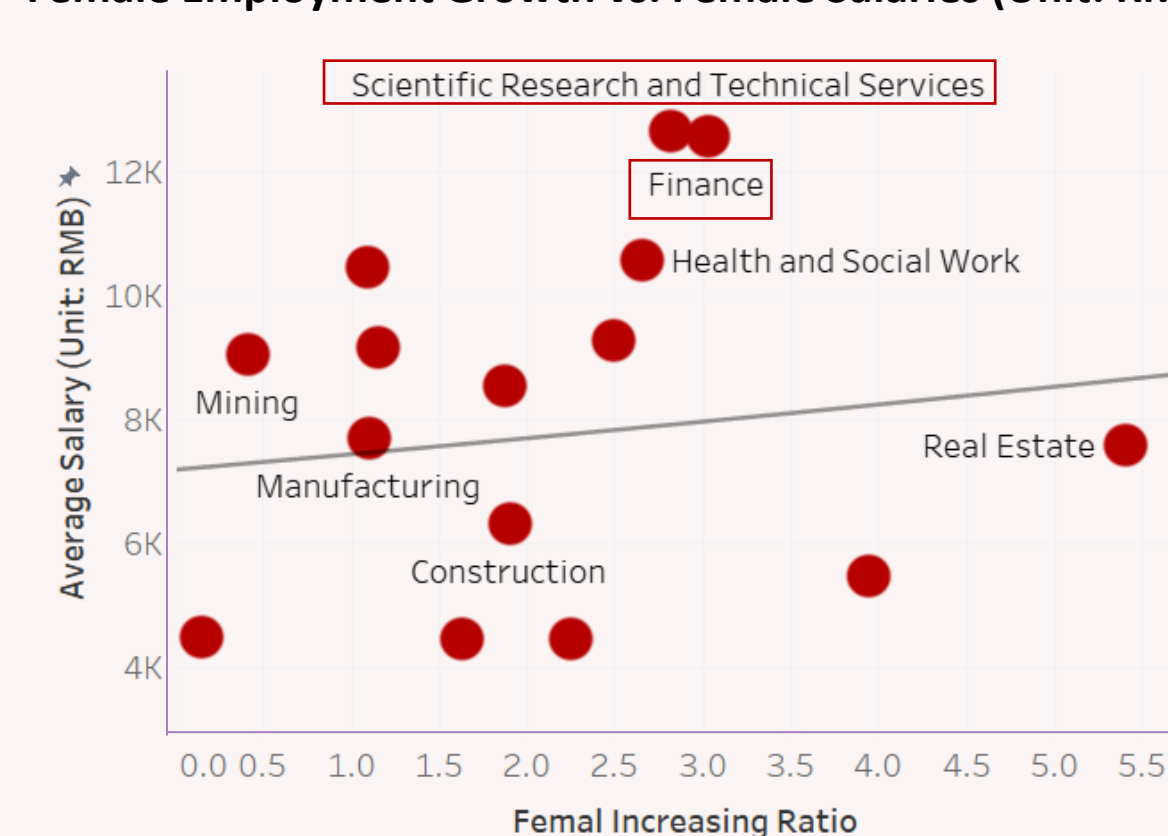**Industry Growth vs. Female Employment Growth**

Female Employment Growth vs. Female Salaries (Unit: RMB)
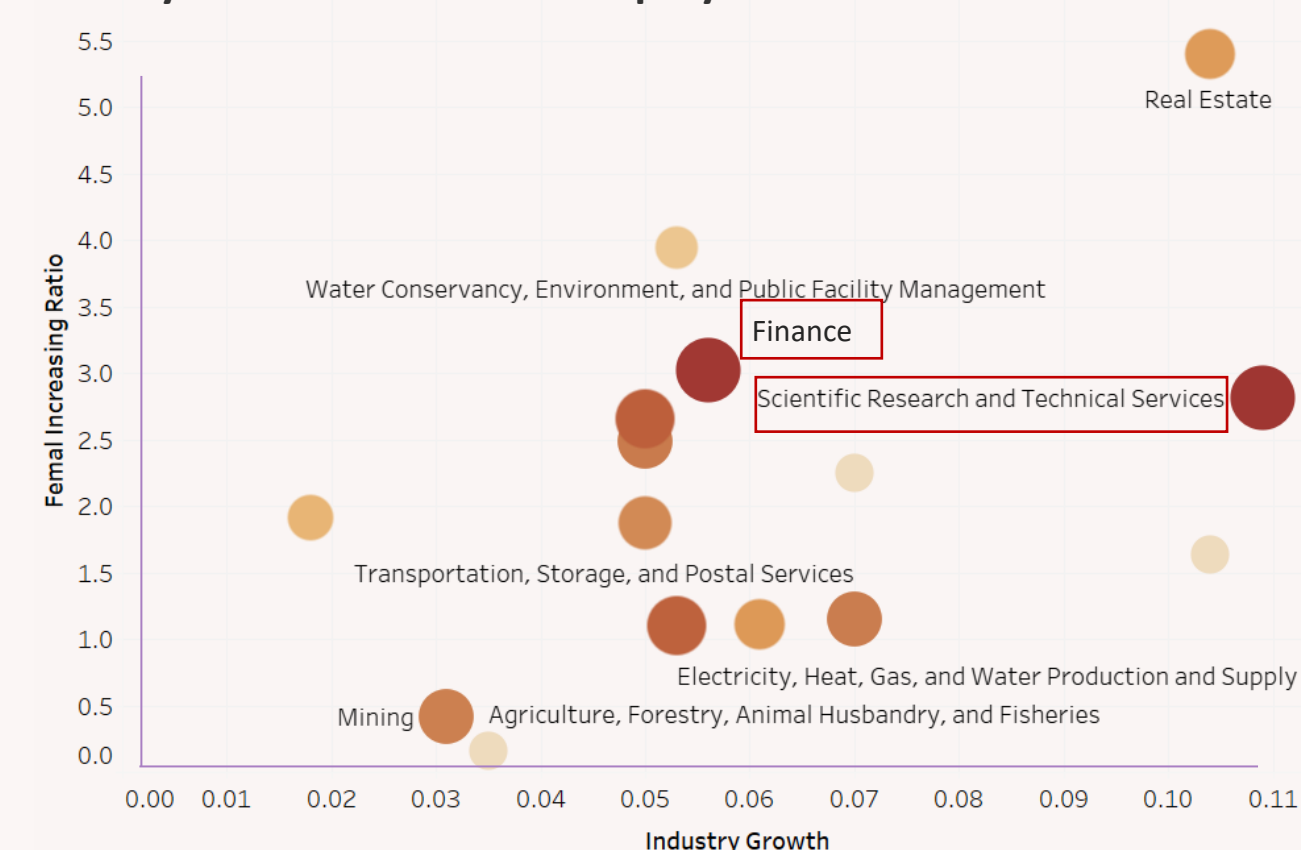
The bubble size and color represent the average salary of the industry (the darker the color, the higher the salary).

❖ There is some correlation between industry growth and female employment growth, but the **situation varies greatly by field**.

❖ **High-paying industries (e.g., finance, research) tend to have higher female employment growth**, while low-paying industries (e.g., agriculture, manufacturing) have slower female employment growth.

The horizontal axis **represents** the proportion of female employment growth, the vertical axis represents the average salary of the industry in 2021, and joins a return trend line.

Recommendations:

➢ Invest in automation & digitalization to reduce labor intensity and provide more skill-training programs to attract female workers.

➢ Policies can provide tax incentives and training programs to further support women's participation in these sectors.
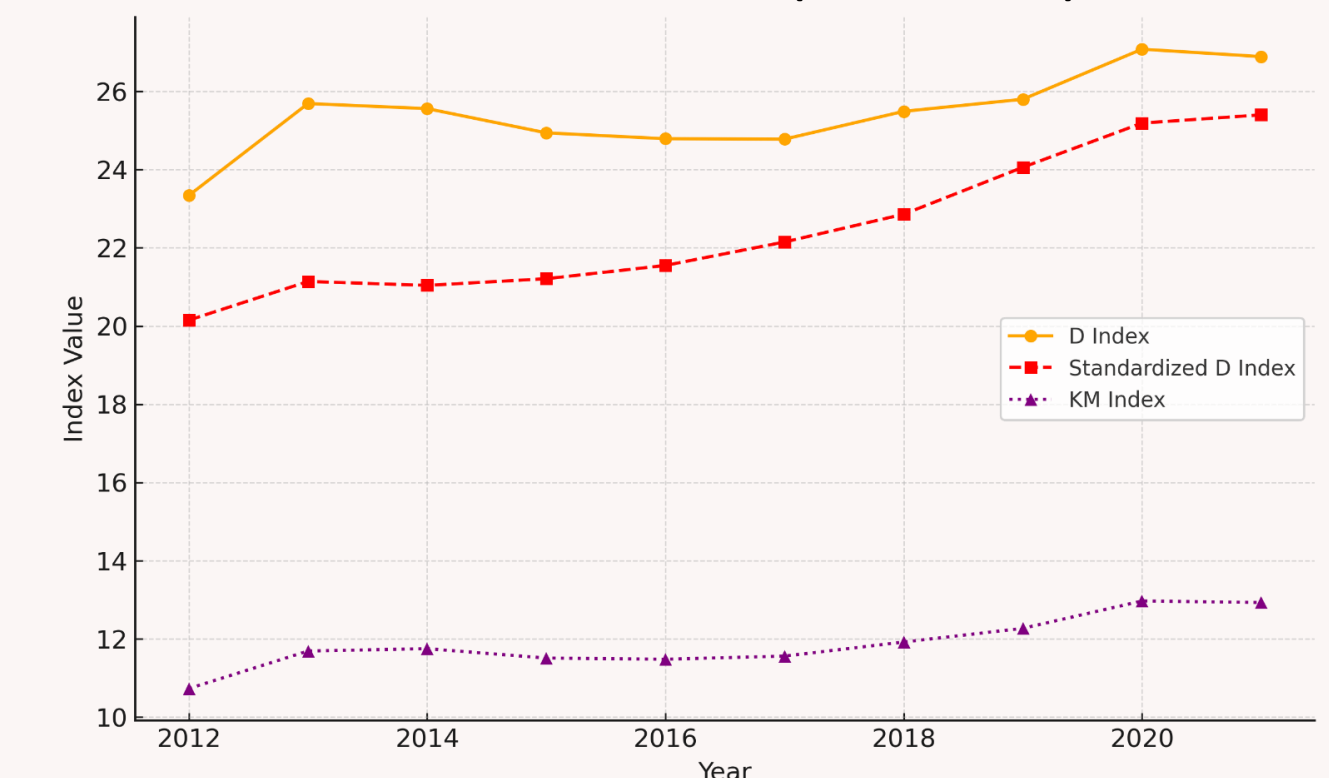
D Index & KM Index over 40 years

In this part, we calculated the **D Index, D Standardized Index and KM Index**. A lower index indicates a more pronounced gender trend.

❖ The occupational gender segregation index has increased over the past decade, indicating a shift towards a **more balanced and orderly market**.

D Index, Standardized D Index and KM Index (2012 to 2021)

D Index and Standardized D Index (1982 to 2021)
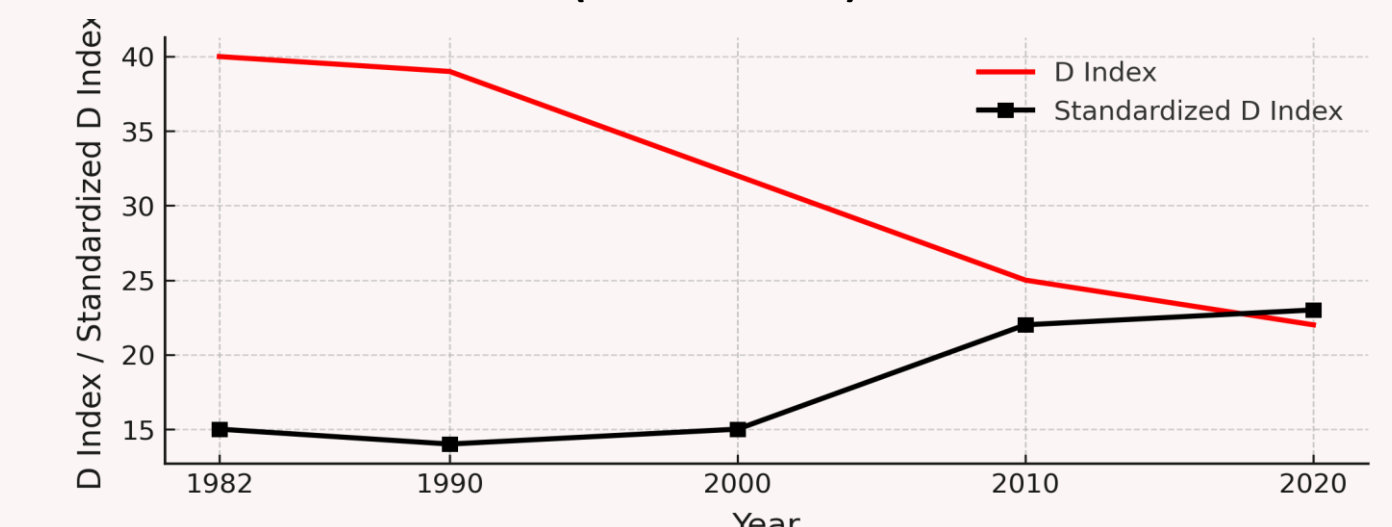
Then, we use D Index and standardized D index to do **comparative analysis (1982-2021)** to observe long-term trends.

Interestingly, these two indices reflect opposite patterns. After examining the mathematical foundation of the D Standardized Index, it means that

❖ After controlling for industry growth levels, the overall trend showed improvement.

❖ However, it remains essential to monitor the interplay between **industry growth and gender trends** for a more comprehensive understanding.

Conclusion

Our analysis highlights the persistent gender segregation in China's urban labor market from 2012 to 2021.

✓ While industries such as **real estate, environmental services, and finance** have experienced significant increases in female employment, traditionally male-dominated sectors like **mining, energy, and agriculture** continue to show minimal change.

✓ **Greater gender diversity is often associated with higher industry growth and profitability**, as seen in the financial and IT sectors. However, challenges remain in sectors requiring high physical labor and limited automation, where female participation remains low.

✓ Moving forward, policymakers and businesses can leverage these insights to implement targeted diversity initiatives, enhance workforce inclusivity, and promote technological advancements to reduce gender barriers in underrepresented industries.

Businesses should leverage diversity strategies, encourage female participation in traditionally male-dominated fields, and implement inclusive policies.