44_Cuba

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1 How has the share of vulnerable employment among women evolved relative to that of men in Cuba between 1991 and 2023?

1.1 Abstract

Using World Bank World Development Indicators (WDI), this study examines the evolution of vulnerable employment in Cuba between 1991 and 2023. The analysis compares two key indicators: vulnerable employment, female (% of female employment) and vulnerable employment, male (% of male employment). Over this thirty-two-year period, both indicators increased moderately from the mid-1990s to 2010 and then rose more sharply from 2010 onward. However, vulnerable employment among men consistently remained higher than among women throughout the entire period, and the gap between the two widened over time. These trends highlight a persistent gender disparity in the nature of employment in Cuba — one that has deepened despite overall increases in vulnerable employment for both sexes, reflecting structural labor market challenges and unequal exposure to informal and insecure work conditions.

1.2 1. Question

How has the share of vulnerable employment among women evolved relative to that of men in Cuba between 1991 and 2023?

- **Female vulnerable employment proxy**: Vulnerable employment, female (% of female employment)
- **Male vulnerable employment proxy**: Vulnerable employment, male (% of male employment)

1.3 2. Data

- **Source**: World Bank World Development Indicators (WDI)
- **Indicators**:
  - Vulnerable employment, female (% of female employment)
  - Vulnerable employment, male (% of male employment)
- **Coverage**: Cuba, 1991–2023
- **Notes**: National-level data only

1.4 3. Method

1. Filtered dataset for Cuba and selected the two vulnerable employment indicators.
2. **Extracted relevant columns**: Year, Indicator Name, and Value.

3. Pivoted the dataset to enable side-by-side chronological comparison of male and female vulnerable employment shares.
4. Produced a dual-line time series plot to visualize trends, gaps, and the rate of change between male and female vulnerable employment.

(Analysis is descriptive; no causal inference applied.)

1.5 4. Results

- **Vulnerable employment, female (% of female employment)**: Increased moderately from 1996 to 2010, followed by a sharper rise from 2010 to 2023, reflecting growing exposure of women to informal and unstable forms of work.
- **Vulnerable employment, male (% of male employment)**: Displayed a similar trajectory but remained consistently higher than female levels throughout, with a widening gap in later years.
- **Comparison**: Both male and female vulnerable employment increased significantly over time, particularly after 2010. However, the persistent and expanding gender gap indicates that men are disproportionately represented in vulnerable forms of work, and that this imbalance has intensified even as overall rates have risen.

(Figure 1. Cuba: Male vs. Female Vulnerable Employment, 1991–2023)

(Table 1. Pivoted dataset summary)

1.6 5. Interpretation

- The sustained increase in vulnerable employment for both genders suggests structural weaknesses in Cuba's labor market, including limited access to formal job opportunities and persistent informality.
- The consistently higher rates among men may reflect gendered occupational structures, with male workers concentrated in sectors more prone to informality or instability.
- The widening gender gap points to diverging labor market experiences and potentially unequal access to secure, protected employment for women versus men.
- These findings highlight the importance of gender-sensitive employment policies aimed at reducing vulnerability while expanding formal work opportunities across sectors.

1.7 6. Limitations

- National aggregates may mask sectoral and regional disparities in labor conditions.
- WDI data are modeled ILO estimates and may carry uncertainty, particularly for earlier years.
- The analysis is descriptive and does not isolate causal drivers such as policy reforms, labor migration, or shifts in economic structure.

1.8 7. Next Steps / Extensions

- Disaggregate data by sector to examine gender differences in vulnerable employment across industries.
- Analyze correlations between vulnerable employment and macroeconomic indicators such as GDP growth, labor productivity, and social protection coverage.

- Compare Cuba's gender gap in vulnerable employment with those of other Caribbean or Latin American countries to contextualize its labor market dynamics.
- Conduct time-series decomposition to identify structural versus cyclical drivers of rising vulnerable employment and the widening gender gap.

[1]:
```
# How has the share of vulnerable employment among women evolved relative to␣
 ↪that of men in Cuba between 1991 and 2023?

import pandas as pd
import matplotlib.pyplot as plt
import os

# Folders
data_raw_folder = "data_raw/"
data_clean_folder = "data_clean/"
figures_folder = "figures/"

# Load CSV
filename = "social-development_cub_filtered.csv"  # Filtered dataset with only␣
 ↪relevant rows
df = pd.read_csv(os.path.join(data_raw_folder, filename))

# Keep only needed columns
df = df[["Year", "Indicator Name", "Value"]]

# Convert Year and Value to numeric, drop invalid rows
df["Year"] = pd.to_numeric(df["Year"], errors="coerce")
df["Value"] = pd.to_numeric(df["Value"], errors="coerce")
df = df.dropna(subset=["Year", "Value"])

# Pivot indicators into separate columns
df_pivot = df.pivot(index="Year", columns="Indicator Name", values="Value").
 ↪reset_index()
df_pivot = df_pivot.sort_values("Year")

print("Pivoted Cuba dataset:")
display(df_pivot)

# Interpolate missing values for smooth plotting (optional)
df_plot = df_pivot.interpolate(method='linear')

# Plot the indicators
plt.figure(figsize=(10,6))
plt.plot(df_plot["Year"], df_plot["Vulnerable employment, female (% of female␣
 ↪employment) (modeled ILO estimate)"],
         marker='o', linestyle='-', label="Vulnerable employment, female (% of␣
 ↪female employment)")
```

```
plt.plot(df_plot["Year"], df_plot["Vulnerable employment, male (% of male␣
 ↪employment) (modeled ILO estimate)"],
         marker='o', linestyle='-', label="Vulnerable employment, male (% of␣
 ↪male employment)")

plt.title("Cuba: Female vs Male vulnerable employment (%) (1991-2023)")
plt.xlabel("Year")
plt.ylabel("Percentage")
plt.legend()
plt.grid(True)
plt.tight_layout()
plt.savefig(os.path.join(figures_folder,␣
 ↪"cuba_female_vs_male_vulnerable_employment.png"))
plt.show()

# Save cleaned CSV
df_pivot.to_csv(os.path.join(data_clean_folder,␣
 ↪"cuba_female_vs_male_vulnerable_employment"), index=False)
```

Pivoted Cuba dataset:

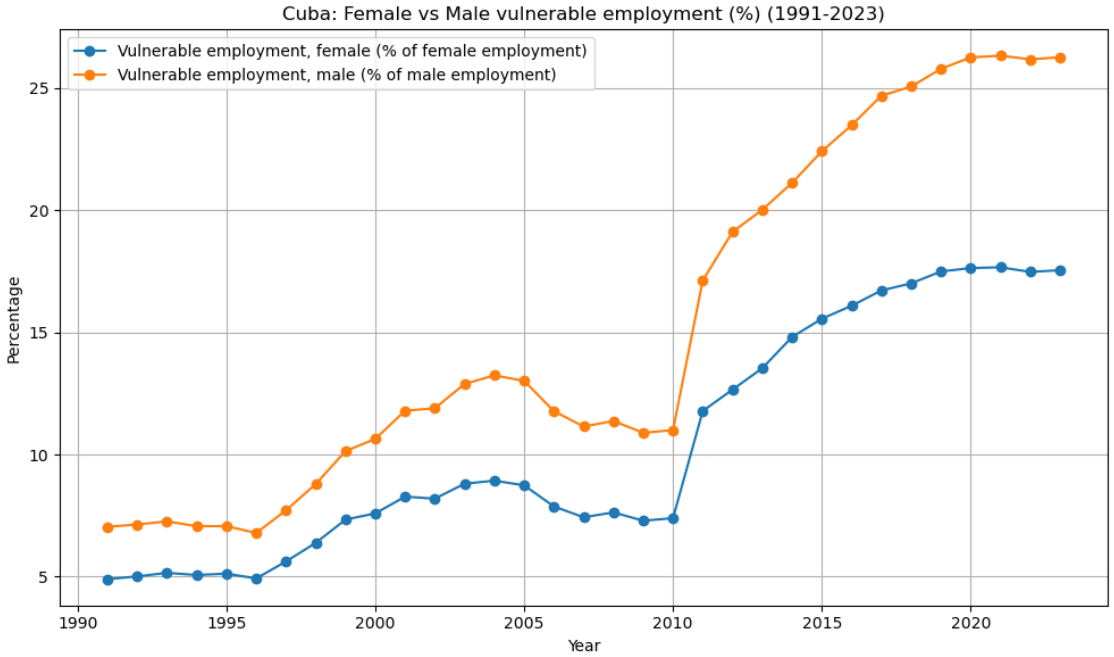
Indicator Name	Year
0	1991
1	1992
2	1993
3	1994
4	1995
5	1996
6	1997
7	1998
8	1999
9	2000
10	2001
11	2002
12	2003
13	2004
14	2005
15	2006
16	2007
17	2008
18	2009
19	2010
20	2011
21	2012
22	2013
23	2014
24	2015
25	2016

```
26              2017
27              2018
28              2019
29              2020
30              2021
31              2022
32              2023

Indicator Name  Vulnerable employment, female (% of female employment) (modeled␣
 ↪ILO estimate)  \
0                                                    4.895664
1                                                    5.010899
2                                                    5.156408
3                                                    5.067844
4                                                    5.124284
5                                                    4.927635
6                                                    5.622101
7                                                    6.384325
8                                                    7.337083
9                                                    7.592113
10                                                   8.275748
11                                                   8.194119
12                                                   8.806204
13                                                   8.931758
14                                                   8.739645
15                                                   7.873549
16                                                   7.431129
17                                                   7.631661
18                                                   7.290560
19                                                   7.396613
20                                                  11.783669
21                                                  12.658114
22                                                  13.534521
23                                                  14.812359
24                                                  15.558417
25                                                  16.091401
26                                                  16.716966
27                                                  17.008807
28                                                  17.493818
29                                                  17.634566
30                                                  17.666022
31                                                  17.476870
32                                                  17.546152

Indicator Name  Vulnerable employment, male (% of male employment) (modeled ILO␣
 ↪estimate)
0                                                    7.043313
```

1	7.134436
2	7.265717
3	7.065683
4	7.068277
5	6.788759
6	7.716966
7	8.791978
8	10.140775
9	10.639709
10	11.793033
11	11.896408
12	12.892349
13	13.239958
14	13.016782
15	11.776482
16	11.146624
17	11.373961
18	10.889773
19	11.001649
20	17.127137
21	19.113568
22	20.019131
23	21.123113
24	22.415625
25	23.484377
26	24.686998
27	25.065784
28	25.788954
29	26.259410
30	26.329206
31	26.177909
32	26.264994


Cuba: Female vs Male vulnerable employment (%) (1991-2023)
Vulnerable employment, female (% of female employment)
Vulnerable employment, male (% of male employment)
Percentage
Year
5
10
15
20
25
1990
1995
2000
2005
2010
2015
2020

[ ]: