Shift Work in Europe: Ten facts

Natalia Bermúdez¹ and Sam Desiere²

¹Department of Economics, UGent - Ghent University and IRES/LIDAM, UCLouvain - Université Catholique de Louvain. Email: natalia.bermudez@UGent.be
²Department of Economics, UGent- Ghent University, Belgium. Email: Sam.Desiere@UGent.be

8th European User Conference
March 18, 2023

(*) The usual disclaimer applies. We thank the Eurostat Micro-data Access Team for providing us with the data and useful information.
Introduction


Common belief: “shift workers as low educated men toiling at a conveyor belt in a car plant” → Update?

Policymakers mostly focused on the adverse effects of shift work on health. Economic incentives for doing shifts? Are these incentives different across countries?

Bermúdez & Desiere (UGent) Shift Work in Europe: Ten facts 8th European User Conference 2 / 20
Introduction


- Shift work - common in Europe.
  - \( \approx 29 \text{ M} \) (17.7\% of employees between 15 and 64 years old in 2019; EU-27).

Common belief: “shift workers as low educated men toiling at a conveyor belt in a car plant” → Update?

Policymakers mostly focused on the adverse effects of shift work on health. Economic incentives for doing shifts? Are these incentives different across countries?
Introduction


- Shift work - common in Europe.
  ▶ ≈ 29 M (17.7% of employees between 15 and 64 years old in 2019; EU-27).

- Common belief: “shift workers as low educated men toiling at a conveyor belt in a car plant” → Update?
Introduction


- Shift work - common in Europe.
  - ≈ 29 M (17.7% of employees between 15 and 64 years old in 2019; EU-27).

- Common belief: “shift workers as low educated men toiling at a conveyor belt in a car plant” → Update?

- Policymakers mostly focused on the adverse effects of shift work on health.
Introduction


- Shift work - **common** in Europe.
  - ≈ 29 M (17.7% of employees between 15 and 64 years old in 2019; EU-27).

- **Common belief**: “shift workers as low educated men toiling at a conveyor belt in a car plant” → Update?

- Policymakers mostly focused on the adverse effects of shift work on health.

- Economic incentives for doing shifts? Are these incentives different across countries?
What do we do?

- We formulate 10 stylized facts of shift work in Europe with the aim of updating the view of shift work in the economy.

- Micro-data aggregated at the country and sectoral level from two surveys (EU-LFS and SES).
What do we do?

- We formulate 10 stylized facts of shift work in Europe with the aim of updating the view of shift work in the economy.

- Micro-data aggregated at the country and sectoral level from two surveys (EU-LFS and SES).

- Three groups of facts:
  - Patterns of shift work prevalence in the EU-15.
What do we do?

- We formulate 10 stylized facts of shift work in Europe with the aim of updating the view of shift work in the economy.

- Micro-data aggregated at the country and sectoral level from two surveys (EU-LFS and SES).

- Three groups of facts:
  - Patterns of shift work prevalence in the EU-15.
  - The shift worker profile.
What do we do?

- We formulate 10 stylized facts of shift work in Europe with the aim of updating the view of shift work in the economy.

- Micro-data aggregated at the country and sectoral level from two surveys (EU-LFS and SES).

- Three groups of facts:
  - Patterns of shift work prevalence in the EU-15.
  - The shift worker profile.
  - Shift work incidence, the shift premium and economic growth.
Data

- The European Union Labor Force Survey (EU-LFS).
  - Section “Special schedule during the reference month (main activity)”.
    → Prevalence of shift work ($\text{shiftwk}$): share of shift workers from the population of employees between 15 and 64 years old.
  - Occupations, sectors, workers characteristics.
  - The EU-15
**Data**

- The European Union Labor Force Survey (**EU-LFS**).
  - Section “Special schedule during the reference month (main activity)”.
    → **Prevalence of shift work** (*shiftwk*): share of shift workers from the population of employees between 15 and 64 years old.
  - Occupations, sectors, workers characteristics.
  - The EU-15

- Structure of Earnings Survey (**SES**).
  - Statistics on firms with at least 10 employees (conducted every four years).
  - Main interest: wage premium for shift work.
    → **Special Payments for shift work** (*B422*)
1. Shift work prevalence and cross countries differences
Fact I. Shift work is a common practice and has remained stable over time.

![Graph showing the percentage of employees engaged in shift work from 2001 to 2019. The graph indicates that the share of shiftworkers across countries has remained relatively stable over the years.](image-url)

Source: Microdata EU–LFS.
Fact II. The incidence of shift work differs across countries.

Source: Microdata EU-LFS
Fact III. Changes in the evolution of shift work (2008-2019) are mainly explained by changes in the sectoral composition of the economies.
2. The shift worker profile
Fact IV. Almost half of shift workers are employed in the health and manufacturing sectors (2019).

![Bar chart showing the percentage of shift workers in various European countries, with bars divided into two sections: Manufacturing and Health Services and Social Work. The chart includes countries such as Greece, Ireland, Finland, Spain, Italy, Luxembourg, Portugal, Austria, Sweden, United Kingdom, Germany, Netherlands, Denmark, Belgium, and France. The data is based on Microdata EU-LFS.](chart.png)
Fact V. About one third of the shift workers are service and sales workers.

- Shift workers are common in certain occupations and almost non-existent in others.
Fact V. About one third of the shift workers are service and sales workers.

- Shift workers are common in certain occupations and almost non-existent in others.
- This proportion has remained stable over the last decade.
Fact V. About one third of the shift workers are service and sales workers.

- Shift workers are common in certain occupations and almost non-existent in others.
- This proportion has remained stable over the last decade.
- Countries with a high prevalence of shift work have more than 30% of shift workers in these occupations.
Fact VI. Shift workers are young, high school graduates.

- A popular belief: “shift workers are low educated”.
- In the EU-15, shift workers have completed an upper secondary education.
- Differences across countries are related to their average population level of education.
- Non-significant differences exist in the distribution of shift workers by sex.
- Around 50% of shift workers are between **25 and 44 years old** (+4 p.p. than non-shift workers).
Fact VII. Night shifts, the least desirable shifts, have decreased during the last decade.
3. Shift work, the shift premium and economic growth.
Fact VIII. The shift premium ranges from 5% to 16% of gross earnings in the EU-15.

<table>
<thead>
<tr>
<th>Country</th>
<th>SES 2010</th>
<th>SES 2014</th>
<th>SES 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>8.5%</td>
<td>8.7%</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>6.9%</td>
<td>7.6%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td>7.5%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Greece</td>
<td>15.5%</td>
<td>13.6%</td>
<td>15.3%</td>
</tr>
<tr>
<td>Spain</td>
<td>11.6%</td>
<td>10.7%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Finland</td>
<td>11.0%</td>
<td>11.0%</td>
<td>11.3%</td>
</tr>
<tr>
<td>France</td>
<td>8.9%</td>
<td>8.0%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Italy</td>
<td>7.2%</td>
<td>4.8%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>8.0%</td>
<td>8.8%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>10.7%</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>11.0%</td>
<td>11.5%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Sweden</td>
<td>9.4%</td>
<td>9.1%</td>
<td>10.1%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>12.6%</td>
<td>11.5%</td>
<td></td>
</tr>
</tbody>
</table>
Fact IX. Shift work is positively correlated to the shift premium.

<table>
<thead>
<tr>
<th></th>
<th>SES 2014</th>
<th>SES 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Shift premium (as a share of gross earnings)</td>
<td>0.9750***</td>
<td>0.6130**</td>
</tr>
<tr>
<td></td>
<td>(0.3426)</td>
<td>(0.3012)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.0600**</td>
<td>0.0050</td>
</tr>
<tr>
<td></td>
<td>(0.0293)</td>
<td>(0.0250)</td>
</tr>
<tr>
<td>Wave Control</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Country Control</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>R2</td>
<td>0.0883</td>
<td>0.2436</td>
</tr>
<tr>
<td>Observations</td>
<td>214</td>
<td>214</td>
</tr>
</tbody>
</table>
Fact X. Shift work is weakly associated with economic growth.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of GDP per capita</td>
<td>-0.0418***</td>
<td>-0.0865**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0087)</td>
<td>(0.0363)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln(Gross Added Value Manufacturing)</td>
<td></td>
<td>-0.0036</td>
<td>-0.0419</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0045)</td>
<td>(0.0393)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.6002***</td>
<td>1.0833***</td>
<td>0.2611***</td>
<td>0.8072</td>
</tr>
<tr>
<td></td>
<td>(0.0897)</td>
<td>(0.3773)</td>
<td>(0.0614)</td>
<td>(0.4955)</td>
</tr>
<tr>
<td>Time Control</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Country Control</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>R2</td>
<td>0.0931</td>
<td>0.8864</td>
<td>0.0159</td>
<td>0.9109</td>
</tr>
<tr>
<td>Observations</td>
<td>275</td>
<td>275</td>
<td>178</td>
<td>178</td>
</tr>
</tbody>
</table>

Mayshar and Halevy (1997) and Mayshar and Solon (1993) examine shift work in the U.S over the period between 1951 and 1990 and find evidence of a pro-cyclical trend.
Conclusions

- Surprisingly, not many studies document statistics about shift work in the EU.
- We uncover some surprising facts.
- This research is by definition descriptive but raises many interesting questions for future research with more refined approaches.
  - Shift work seems to have remained stable even if GDP has on average increased. Why?
  - Shift work is more prevalent in Greece than in Belgium. Why? Do labor market institutions play a role?
  - Firms are still opting for shift work. Is replacing shift work by standard hours of work unfeasible? Or is it the fact that shift work is relatively cheap?
Thank you!
Contact: natalia.bermudez@uclouvain.be