Puhani, Patrick A.

Working Paper

France and Germany Exceed Italy, South Korea and Japan in Temperature-Adjusted Corona Proliferation: A Quick and Dirty Sunday Morning Analysis

GLO Discussion Paper, No. 487

Provided in Cooperation with:
Global Labor Organization (GLO)

Suggested Citation: Puhani, Patrick A. (2020) : France and Germany Exceed Italy, South Korea and Japan in Temperature-Adjusted Corona Proliferation: A Quick and Dirty Sunday Morning Analysis, GLO Discussion Paper, No. 487, Global Labor Organization (GLO), Essen

This Version is available at:
http://hdl.handle.net/10419/214717

Terms of use:
Documents in EconStor may be saved and copied for your personal and scholarly purposes. You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.
France and Germany Exceed Italy, South Korea and Japan in Temperature-Adjusted Corona Proliferation
A Quick and Dirty Sunday Morning Analysis

Patrick A. Puhani
Leibniz Universität Hannover; CreAM, University College London;
SEW, University of St. Gallen; IZA, Bonn, GLO, Bonn

March 8th, 2020

**JEL classification:** I10, I18

**Keywords:** COVID-19, Corona outbreak, pandemic, epidemic, policy, quarantine, isolation

**Abstract:** Measures to contain the Corona virus (COVID-19) may pay off in terms of slowing down proliferation. The proliferation trend in France and Germany now exceeds the one in Italy, South Korea and Japan. At the same time, the containment measures seem more intense in Italy, South Korea and Japan than in France and Germany. Nevertheless, decision makers in France and Germany as in other countries need to compare the costs of containment (such as various forms of shut downs, cancellations of events, school closures, isolation, quarantine) with the costs of a faster proliferation of the virus. This is a “quick and dirty Sunday morning” analysis of confirmed Corona cases as published in CSSEGISandData by the Johns Hopkins Whiting School of Engineering.

Patrick A. Puhani
Leibniz Universität Hannover
Institut für Arbeitsökonomik
Königsworther Platz 1
D-30167 Hannover
Germany
E-Mail: puhani@aoek.uni-hannover.de

**Acknowledgment:** I thank Rüdiger Lehmann for pointing out the web page [https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6](https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6) to me and Axel Fiebranz and Josef Puhani for helpful comments.
1 Summary (Only Section of this Note)

Germany and France are currently (March 8th, 2020) experiencing a fast rise in confirmed Corona virus (COVID-19) cases. The proliferation trends in France and Germany exceeds the trends in Italy, South Korea and Japan, countries with similar current temperature.

I use the CSSEGISandData by the Johns Hopkins Whiting School of Engineering generally available through GitHub at https://github.com/CSSEGISandData/COVID-19/blob/master/csse_covid_19_data/csse_covid_19_time_series/time_series_19-covid-Confirmed.csv to analyze the time series for France, Germany and Italy in Europe and South Korea, Japan, Malaysia and Thailand in East Asia combined with temperature data retrieved for 9am local time in major cities in these countries (Paris, Frankfurt, Milano, Seoul, Tokyo, Kuala Lumpur and Bangkok), retrieved from the search engine DuckDuckGo. Using ordinary least square regression analysis, I estimate the time trend in the natural logarithm of the confirmed COVID-19 Corona Virus cases on a time trend for 12 days starting February 25th, 2020 and ending March 07th, 2020. The data starting on February 10th are plotted in Figure 1. The trend estimates (for the more recent period February 25th, 2020 and ending March 07th, 2020) are plotted against the 9am temperature on March 8th in Figure 2.

Figure 2 shows that the warmer temperature in Malaysia and Thailand is associated with lower proliferation rates. However, when considering countries with similar early 9am temperatures on March 8th, 2020, France and Germany have higher proliferation rates than Italy and Japan and also higher proliferation rates than South Korea.

This simple analysis suggests that measures of containment may pay off in terms of slowing down proliferation. The containment measures seem more intense in Italy, South Korea and Japan than in France and Germany (anecdotal evidence from my reading of the press). Nevertheless, decision makers in France and Germany as in other countries need to compare the costs of containment (such as various forms of shut downs, cancellations of events, school closures, isolation, quarantine) with the costs of a faster proliferation of the Corona virus (COVID-19).
Fig. 1. Natural Logarithm of Confirmed Corona Virus (COVID-19) Cases for Selected Countries from February 10th to March 07th 2020.

Fig. 2. Proliferation Trend (Regression Trend Slope Using 12 Days Since Feb 25\textsuperscript{th} 2020) Plotted Against Temperature

Source: https://github.com/CSSEGISandData/COVID-19/blob/master/csse_covid_19_data/csse_covid_19_time_series/time_series_19-covid-Confirmed.csv; retrieved on the morning of March 06\textsuperscript{th}, Central European Time. Temperature data have been taken from https://duckduckgo.com
Appendix

Remark: The data are likely to contain significant differences in measurement errors between countries and the analysis is only based on a very crude measure for climate. A more sophisticated analysis would be preferable, but would take considerably more time, when decisions might have to be made quickly.

Trend regressions are carried out using the software Stata 15.1.

<table>
<thead>
<tr>
<th>Country</th>
<th>Temperature in Celsius, 9am, March 8th 2020</th>
<th>City for Temperature</th>
<th>Regression slope using 12 days since Feb 25th 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>7</td>
<td>Frankfurt</td>
<td>0.151</td>
</tr>
<tr>
<td>France</td>
<td>9</td>
<td>Paris</td>
<td>0.160</td>
</tr>
<tr>
<td>Italy</td>
<td>6</td>
<td>Milano</td>
<td>0.113</td>
</tr>
<tr>
<td>Japan</td>
<td>7</td>
<td>Tokyo</td>
<td>0.037</td>
</tr>
<tr>
<td>South Korea</td>
<td>0</td>
<td>Seoul</td>
<td>0.078</td>
</tr>
<tr>
<td>Thailand</td>
<td>26</td>
<td>Bangkok</td>
<td>0.010</td>
</tr>
<tr>
<td>Malaysia</td>
<td>24</td>
<td>Kuala Lumpur</td>
<td>0.058</td>
</tr>
</tbody>
</table>

Source: https://github.com/CSSEGISandData/COVID-19/blob/master/csse_covid_19_data/csse_covid_19_time_series/time_series_19-covid-Confirmed.csv; retrieved on the morning of March 06th, Central European Time. Temperature data have been taken from https://duckduckgo.com. The temperature for Daegu in South Korea was 1 degree Celsius. The 9am temperature for Milano had to be read off a graph as it was retrieved later when only the digit for 10am instead of 9am appeared in print.