Discussion of
“The Causes and Consequences of the 2008 Crisis”
Early Warning (Rose & Spiegel I)
An update (Rose & Spiegel II)

Domenico Giannone
(Université Libre de Bruxelles and European Central Bank)

Joint DG EFIN, ULB, UBC conference
‘Advances in international macroeconomics – Lessons from the crisis'

Bruxelles  July 2010
Discussion of
“The Causes and Consequences of the 2008 Crisis”
Early Warning (Rose & Spiegel I)
An update (Rose & Spiegel II)

The topic is interesting and timely

Was a pleasure to read
highly recommended
A Surprisingly Synchronized Recession...

Evolution of Advanced and Emerging Economies

(\textit{percent; quarter-over-quarter, saar})

Source: Blanchard et al., (2010)
... but with Substantial Heterogeneity

GDP Growth

(\textit{percent; semester growth, 2009Q1 vs. 2008Q3, saar})

Source: Blanchard et al., (2010)
A Democratic Crisis

Rose & Spiegel I: Cross-Country Causes and Consequences of the Crisis: Early Warning

• Assess whether the cross-country incidence and severity of the financial crisis is systematically related to pre-crisis macroeconomic and financial factors.

• Interesting exercise since there was no consensus at the time on the cause(s) for the crisis.

• Any plausible theory of the crisis should at least be able to explain its incidence across countries (we think of understanding the
  ➢ timing of the crisis: more difficult exercise.

• Valuable information for building a quantitative “early warning system”
Results

• It is difficult to reliably link macroeconomic or financial indicators from 2006 or earlier to a variety of financial and real manifestations of the crisis.

• “Despite the fact that we use a wide number of possible causes in a flexible statistical framework, we are unable to link most of the commonly-cited causes of the crisis to its incidence across countries.”

• “This negative finding in the cross-section makes us skeptical of the accuracy of “early warning” systems of potential crises, which must also predict their timing.”
Very interest research agenda that has been followed by many scholar

- **Berkmen, Gelos, Rennhack and Walsh** (2009)

- **Blanchard, Faruqee and Das** (2010)
  - “The Initial Impact of the Crisis on Emerging Market Countries”

- **Claessens, Dell’Ariccia, Igan and Laeven** (2010)
  - “Cross-Country Experiences and Policy Implications from the Global Financial Crisis”

- **Giannone, Lenza and Reichlin** (2010)
  - “Market Freedom and the Global Recession”

- **Lane, Philip R., and Gian Maria Milesi-Ferretti** (2010)
  - “The Cross-Country Incidence of the Global Crisis”

- **Rose, and Spiegel** (2010b)
Results from the emerging litterature

✓ *Laissez-faire* in credit market (−)
  ✓ Financial development (+)
  ✓ Banking sector competition (+)
  ✓ Risk taking/Bubbles (−)

Giannone, Lenza and Reichlin, 2010
Results from the emerging literature

✓ *Laissez-faire* in credit market (-)
  ✓ Financial development (+)
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Giannone, Lenza and Reichlin, 2010

✓ Economic and financial openness (<>)

See also Lane and Milesi-Ferretti, 2010
Results from the emerging literature

✓ *Laissez-faire* in credit market (-)
  ✓ Financial development (+)
  ✓ Banking sector competition (+)
  ✓ Risk taking/Bubbles (-)
  Giannone, Lenza and Reichlin, 2010

✓ Economic and financial openness (<>)
  See also Lane and Milesi-Ferretti, 2010

✓ International unbalances (-)
  See also Blanchard, Faruqee, Das, 2010
Rose & Spiegel II:  
*Cross-Country Causes and Consequences of the Crisis: An update*

Study the robustness of the N&S results:

- new data;
- different measures of crisis intensity;
- different potential causes of the crisis that have worked for other researchers;
- different country samples;
- other recessionary episodes
Rose & Spiegel II: Cross-Country Causes and Consequences of the Crisis: An update

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N&S: “Despite a broad search, we have been unable to find consistent strong linkages between pre-existing variables that are plausible causes of the Great Recession and the actual intensity of the recession.”
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N&S: “Despite a broad search, we have been unable to find consistent strong linkages between pre-existing variables that are plausible causes of the Great Recession and the actual intensity of the recession.”

Andrew: “You should be happy; your EFW Credit Market regulation was the thing that worked best by far!”
The Discussion

Credit Market Regulation and the Great Recession

• An overview

• New insights from the N&S II
The Discussion

Credit Market Regulation and the Great Recession

• An overview

• New insights from the N&S II
Economic development, country risk, market regulation and the global recession

Source: Giannone et al., (2010)
# Economic Freedom and the Global Recession

Dependent variable: average GDP growth 2008-09

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R-squared</strong></td>
<td>0.15</td>
</tr>
<tr>
<td><strong>(log) GDP per capita in 2006</strong></td>
<td>-1.34**</td>
</tr>
<tr>
<td></td>
<td>(0.36)</td>
</tr>
<tr>
<td><strong>Average growth 2002-2006</strong></td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>(0.18)</td>
</tr>
<tr>
<td><strong>(log) population in 2006</strong></td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
</tr>
</tbody>
</table>

Source: Giannone et al., (2010)
## Economic Freedom and the Global Recession

Dependent variable: average GDP growth 2008-09

<table>
<thead>
<tr>
<th>Variable</th>
<th>0.15</th>
<th>0.15</th>
<th>0.23</th>
<th>0.32</th>
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<tbody>
<tr>
<td><strong>R-squared</strong></td>
<td>0.15</td>
<td>0.15</td>
<td>0.23</td>
<td>0.32</td>
</tr>
<tr>
<td><em>(log)</em> GDP per capita in 2006</td>
<td>-1.34**</td>
<td>0.01</td>
<td>-0.53</td>
<td>-0.37</td>
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<tr>
<td></td>
<td>(0.36)</td>
<td>(0.80)</td>
<td>(0.76)</td>
<td>(0.68)</td>
</tr>
<tr>
<td>Average growth 2002-2006</td>
<td>0.16</td>
<td>0.06</td>
<td>-0.07</td>
<td>-0.17</td>
</tr>
<tr>
<td></td>
<td>(0.18)</td>
<td>(0.21)</td>
<td>(0.19)</td>
<td>(0.20)</td>
</tr>
<tr>
<td><em>(log)</em> population in 2006</td>
<td>0.14</td>
<td>0.27</td>
<td>0.00</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(0.21)</td>
<td>(0.23)</td>
<td>(0.23)</td>
</tr>
<tr>
<td>Euromoney rating in March 2007</td>
<td>-0.06*</td>
<td>-0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory Quality (KKM ’02)</td>
<td>-2.85**</td>
<td>-0.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.15)</td>
<td>(0.85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Market Regulation</td>
<td>0.23</td>
<td></td>
<td>-1.18**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.37)</td>
<td></td>
</tr>
<tr>
<td>Labor Market regulation</td>
<td>-0.53</td>
<td></td>
<td>0.51*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.76)</td>
<td></td>
<td>(0.28)</td>
<td></td>
</tr>
<tr>
<td>Business Regulation</td>
<td>-0.07</td>
<td></td>
<td>-0.18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.19)</td>
<td></td>
<td>(0.37)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Giannone et al., (2010)
The robust determinants of the severity of the crisis: Bayesian Model Averaging

Consider all the possible combinations of all the potential determinants of the severity of the crisis

\[ X_1, X_2, \ldots, X_n \text{ with } n = 27 \]

Run the regressions with all possible combination of the potential determinants

\[ Y_i = c + \beta_{j_1} X_{j_1} + \beta_{j_2} X_{j_2} + \ldots + \beta_{j_k} X_{j_k} + e_i \]

Estimate all the \(2^{27} \approx 134\) million models
- Prior inclusion probability: 0.5

Compute:
- Posterior probabilities (\(\approx R^2\))
- Average the estimated regression coefficients
## Bayesian Model Averaging

Dependent variable: average GDP growth 2008-09

<table>
<thead>
<tr>
<th></th>
<th>Posterior inclusion</th>
<th>Posterior Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Account % GDP 2006 (WDI)</td>
<td>0.94</td>
<td>0.18**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.06)</td>
</tr>
<tr>
<td>Average growth 2002-2006</td>
<td>0.85</td>
<td>-0.56**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.20)</td>
</tr>
<tr>
<td>Credit Market Regulation (EFW 06)</td>
<td>0.59</td>
<td>-1.15**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.55)</td>
</tr>
<tr>
<td>Private Credit by Money Banks and other OFI% GDP 2005</td>
<td>0.57</td>
<td>3.46**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.78)</td>
</tr>
<tr>
<td>Labor Market regulation (EFW06)</td>
<td>0.54</td>
<td>0.78**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.39)</td>
</tr>
</tbody>
</table>

Source: Giannone et al., (2010)
Marginal Density: CreditMarketRegulation (PIR 68.62 %)

Source: Giannone et al., (2010)
Are effects economically important?

- If Brazil (lowest score, 5.74) deregulated the credit market to become like New Zealand (highest score, 9.97) in 2006, other things being equal, the regression predicts that 2008-09 average growth in Brazil would have been -3.2 instead of 2.2.

  Math: $2.2 - 1.28 \times 4.23 = 2.2 - 5.4 = -3.2$

  ✓ Thus, effects are economically important but reasonable in magnitude

- $R^2$ falls from 0.32 to 0.22 if credit market regulation index is excluded
  ✓ Credit regulation also explains substantial share of variance across countries

  Of course this computation ignores the fact that RHS vars are correlated
The Components of the Index of Credit Market Regulation

Dependent variable: average GDP growth 2008-09

<table>
<thead>
<tr>
<th>R-squared</th>
<th>0.32</th>
<th>0.32</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interest rate controls/</strong> negative real interest rates (EFW 06)**</td>
<td>0.35</td>
<td>(0.34)</td>
</tr>
<tr>
<td><strong>Ownership of banks (EFW 06)</strong></td>
<td>-1.28** (0.37)</td>
<td>-0.44** (0.16)</td>
</tr>
<tr>
<td><strong>Foreign bank competition (EFW 06)</strong></td>
<td>-0.69** (0.23)</td>
<td></td>
</tr>
<tr>
<td><strong>Private sector credit (EFW 06)</strong></td>
<td>-0.14</td>
<td>(0.27)</td>
</tr>
<tr>
<td><strong>Labor Market regulation (EFW06)</strong></td>
<td>0.49* (0.26)</td>
<td>0.49* (0.26)</td>
</tr>
<tr>
<td><strong>Business Regulation (EFW 06)</strong></td>
<td>-0.34 (0.33)</td>
<td>-0.34 (0.33)</td>
</tr>
</tbody>
</table>

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- An overview

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Robustness check along many dimensions

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# R&S II: Lassair-faire in credit market

*robustness across measures of crisis intensity*

## Table 4: The Effect of Using Different Crisis Measures (Regressands)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-09 Growth</td>
<td>.22** (.08)</td>
<td>-2.01** (.70)</td>
<td>-.012 (.025)</td>
<td>-.002 (.046)</td>
<td>.85 (.99)</td>
<td>-3.19** (.1.21)</td>
<td>.41</td>
<td>75</td>
</tr>
<tr>
<td>2008-09 Growth – ’05-’07 Growth</td>
<td>.15 (.09)</td>
<td>-2.30** (.84)</td>
<td>-.027 (.024)</td>
<td>.021 (.053)</td>
<td>.80 (1.08)</td>
<td>-1.52 (1.52)</td>
<td>.29</td>
<td>74</td>
</tr>
<tr>
<td>2008-09 Growth – ’90-’07 Growth</td>
<td>.17* (.08)</td>
<td>-2.50** (.77)</td>
<td>-.021 (.025)</td>
<td>.021 (.049)</td>
<td>1.00 (1.02)</td>
<td>-1.94 (1.29)</td>
<td>.36</td>
<td>74</td>
</tr>
<tr>
<td>Revised WEO 2009 Growth Forecast</td>
<td>-.03 (.04)</td>
<td>-.91* (.38)</td>
<td>-.017 (.010)</td>
<td>.049 (.019)</td>
<td>-.00 (.40)</td>
<td>.05 (.55)</td>
<td>.18</td>
<td>75</td>
</tr>
<tr>
<td>Output Gap 2009</td>
<td>.04 (.08)</td>
<td>-.77 (.55)</td>
<td>-.005 (.014)</td>
<td>-.021 (.038)</td>
<td>.59 (.82)</td>
<td>-1.01 (2.06)</td>
<td>.23</td>
<td>26</td>
</tr>
<tr>
<td>Consumption Growth 2008-09</td>
<td>.18 (.11)</td>
<td>-1.20* (.46)</td>
<td>-.025 (.015)</td>
<td>-.037 (.045)</td>
<td>-.11 (.43)</td>
<td>-.44 (.76)</td>
<td>.40</td>
<td>71</td>
</tr>
<tr>
<td>Extracted Principal Factor</td>
<td>.01 (.01)</td>
<td>-.14* (.06)</td>
<td>-.006* (.003)</td>
<td>.001 (.005)</td>
<td>-.07 (.09)</td>
<td>-3.38** (.10)</td>
<td>.52</td>
<td>70</td>
</tr>
</tbody>
</table>
Credit market regulation under the lens of R&S

Robustness check along many dimensions

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- other recessionary episodes
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### R&S II: Lassair-faire in credit market

*robustness across country samples*

#### Table 3d: Effect of Credit Market Regulation on Crisis Severity

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>High Income</th>
<th>No Advanced</th>
<th>No Oil</th>
<th>No Fin’l Centers</th>
<th>No Poor, Oil, or FCs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2008-09 Growth</strong></td>
<td>-2.38**</td>
<td>-1.15</td>
<td>-2.95**</td>
<td>-2.76**</td>
<td>-2.56**</td>
<td>-2.22</td>
</tr>
<tr>
<td></td>
<td>(.68)</td>
<td>(1.37)</td>
<td>(.82)</td>
<td>(.77)</td>
<td>(.71)</td>
<td>(1.12)</td>
</tr>
<tr>
<td><strong>2008-09 Growth</strong></td>
<td>-2.54**</td>
<td>-1.30</td>
<td>-3.10**</td>
<td>-2.84**</td>
<td>-2.75**</td>
<td>-2.51</td>
</tr>
<tr>
<td>- ‘05-’07 Growth</td>
<td>(.78)</td>
<td>(1.56)</td>
<td>(.91)</td>
<td>(.91)</td>
<td>(.81)</td>
<td>(1.27)</td>
</tr>
<tr>
<td><strong>2008-09 Growth</strong></td>
<td>-2.72**</td>
<td>-1.17</td>
<td>-3.38**</td>
<td>-3.07**</td>
<td>-2.97**</td>
<td>-2.82*</td>
</tr>
<tr>
<td>- ‘90-’07 Growth</td>
<td>(.74)</td>
<td>(1.57)</td>
<td>(.88)</td>
<td>(.85)</td>
<td>(.75)</td>
<td>(1.24)</td>
</tr>
<tr>
<td><strong>Revised WEO 2009</strong></td>
<td>-1.02**</td>
<td>-.21</td>
<td>-1.33**</td>
<td>-.97*</td>
<td>-1.13**</td>
<td>-.89</td>
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<tr>
<td>Growth Forecast</td>
<td>(.34)</td>
<td>(.72)</td>
<td>(.36)</td>
<td>(.38)</td>
<td>(.35)</td>
<td>(.53)</td>
</tr>
<tr>
<td><strong>Output Gap 2009</strong></td>
<td>-.87</td>
<td>-.55</td>
<td>n/a</td>
<td>-.87</td>
<td>-1.07*</td>
<td>-1.07*</td>
</tr>
<tr>
<td></td>
<td>(.49)</td>
<td>(.44)</td>
<td></td>
<td>(.49)</td>
<td>(.50)</td>
<td>(.50)</td>
</tr>
<tr>
<td><strong>Consumption</strong></td>
<td>-1.63**</td>
<td>-.77</td>
<td>-1.93*</td>
<td>-1.46*</td>
<td>-1.60*</td>
<td>-1.46</td>
</tr>
<tr>
<td>Growth 2008-09</td>
<td>(.61)</td>
<td>(1.17)</td>
<td>(.74)</td>
<td>(.63)</td>
<td>(.63)</td>
<td>(.74)</td>
</tr>
<tr>
<td><strong>Extracted Principal</strong></td>
<td>-.21**</td>
<td>-.08</td>
<td>-.27**</td>
<td>-.22**</td>
<td>-.21**</td>
<td>-.20</td>
</tr>
<tr>
<td>Factor</td>
<td>(.07)</td>
<td>(.14)</td>
<td>(.08)</td>
<td>(.07)</td>
<td>(.07)</td>
<td>(.10)</td>
</tr>
</tbody>
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**R&S II: This time is different!**

Table 6a: The 1991-92 Global Slowdown

<table>
<thead>
<tr>
<th>Sample Period:</th>
<th>Current Account %GDP, 1990</th>
<th>Credit Market Regulation, 1990</th>
<th>Log Real GDP per capita, 1990</th>
<th>$R^2$</th>
<th>Obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>.29** (.08)</td>
<td>.59* (.29)</td>
<td>-1.15* (.46)</td>
<td>.20</td>
<td>103</td>
</tr>
<tr>
<td>Only High Income</td>
<td>.30 (.16)</td>
<td>.26 (.58)</td>
<td>-2.53 (.67)</td>
<td>.16</td>
<td>31</td>
</tr>
<tr>
<td>Drop Advanced Economies</td>
<td>.24* (.09)</td>
<td>.83* (.33)</td>
<td>-.43 (.68)</td>
<td>.25</td>
<td>76</td>
</tr>
<tr>
<td>Drop Oil</td>
<td>.33** (.12)</td>
<td>.62 (.32)</td>
<td>-1.26* (.49)</td>
<td>.21</td>
<td>92</td>
</tr>
<tr>
<td>Drop Financial Centers</td>
<td>.29** (.09)</td>
<td>.59 (.30)</td>
<td>-1.15* (.48)</td>
<td>.20</td>
<td>95</td>
</tr>
<tr>
<td>Drop Poor, Oil, and Financial Centers</td>
<td>.57** (.19)</td>
<td>.85* (.32)</td>
<td>-3.69** (.84)</td>
<td>.42</td>
<td>42</td>
</tr>
</tbody>
</table>

**Note:** **p < .05, **p < .01
**R&S II: This time is different!**

Table 6b: The 2001-02 Global Slowdown

<table>
<thead>
<tr>
<th>Sample Period:</th>
<th>Current Account %GDP, 2000</th>
<th>Credit Market Regulation, 2000</th>
<th>Log Real GDP per capita, 2000</th>
<th>R²</th>
<th>Obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>-.03 (.04)</td>
<td>-.36 (.26)</td>
<td>-.42 (.31)</td>
<td>.09</td>
<td>112</td>
</tr>
<tr>
<td>Only High Income</td>
<td>.05* (.02)</td>
<td>.55* (.22)</td>
<td>-3.77** (.82)</td>
<td>.44</td>
<td>39</td>
</tr>
<tr>
<td>Drop Advanced Economies</td>
<td>-.05 (.06)</td>
<td>-.49 (.33)</td>
<td>-.33 (.57)</td>
<td>.07</td>
<td>80</td>
</tr>
<tr>
<td>Drop Oil</td>
<td>.06 (.07)</td>
<td>.35 (.29)</td>
<td>.43 (.32)</td>
<td>.10</td>
<td>101</td>
</tr>
<tr>
<td>Drop Financial Centers</td>
<td>-.05 (.05)</td>
<td>-.41 (.28)</td>
<td>-.45 (.33)</td>
<td>.10</td>
<td>102</td>
</tr>
<tr>
<td>Drop Poor, Oil, and</td>
<td>-.06 (.05)</td>
<td>.71* (.34)</td>
<td>-.90* (.36)</td>
<td>.10</td>
<td>49</td>
</tr>
</tbody>
</table>
Credit market regulation under the lens of R&S

Robustness check along many dimensions

✓ different measures of crisis intensity;

✓ different country samples;

  o other recessionary episodes
Credit market regulation under the lens of R&S

Robustness check along many dimensions

✓ different measures of crisis intensity;

✓ different country samples;

✗ other recessionary episodes
Conclusion
This time is different!

- The lax credit market regulation was a (THE) culprit for this crisis

- Most countries are discussing changes in financial regulation and supervision practices
Conclusion
This time is different!

Implications for the development of Early Warning Systems

✓ The perverse effects of deregulation might have operated through non traditional channels
  ✓ For the development of reliable early warning systems is crucial to go beyond traditional channels
  ✓ Need a better understanding of the interconnections between deregulation, financial sophistication, risk taking, incentive, governance structure
Additional issue: Heterogeneity and Timing

N&S: “any plausible theory of the crisis should at least be able to explain its incidence across countries (we think of understanding the timing of the crisis: more difficult exercise.”

N&S: This negative finding in the cross-section makes us skeptical of the accuracy of “early warning” systems of potential crises, which must also predict their timing.

The current/recent recession is universal and synchronized:
- Predicting cross-country heterogeneity might be more difficult than predicting the timing.
A Surprisingly Synchronized Recession

Evolution of Advanced and Emerging Economies

(percent; quarter-over-quarter, saar)

Source: Blanchard et al., (2010)
Early Warnings from Broad Money

Realized and Expected Money Growth

(percent; year on year, saar)

M3

Jan-96 Jan-97 Jan-98 Jan-99 Jan-00 Jan-01 Jan-02 Jan-03 Jan-04 Jan-05 Jan-06 Jan-07 Jan-08 Jan-09 Jan-10
“The Causes and Consequences of the 2008 Crisis”
Early Warning (Rose & Spiegel I)
An update (Rose & Spiegel II)

The topic is interesting and timely

Was a pleasure to read
highly recommended

Thank you!