The Bright Side of the Doom Loop: Banks’ Exposure and Default Incentives

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(This presentation does not represent the view of the Bank of Spain)

8.9.2020
The Doom Loop and the European Debt Crisis

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- Key driver of European debt crisis
- Potential concern as the health crisis drives up sovereign debt
- Policy proposal:
  - limit exposure of the financial sector to the government (e.g. Brunnermeier et al., 2016, Benassy-Quere et al., 2018)
The special role of domestic banks’ sovereign debt holdings

▶ Theory:
  ▶ Defaulting is less tempting if a larger share of debt is domestically held
    ⇒ Bank’s bond holdings = less temptation
The special role of domestic banks’ sovereign debt holdings

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  - Domestic bank’s fragility makes defaulting particularly costly when they hold sovereign debt (e.g. Bolton and Jeanne, 2011)
    ⇒ Bank’s bond holdings = commitment device
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▶ Empirics:
  ▶ Domestic banks’ bond holdings reduce sovereign default premia (e.g. Gennaioli et al., 2014)
This paper

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- Bridge the two literatures:
  - Extend the doom loop theory to include how **domestic banks’ balance sheets** affect the **strategic default** decision of the government
  - Reassess the proposed **policies**
Model

simple 3-period model of a small open economy

- agents
  - home: government, banks, households
  - rest of the world: foreign investors
Model

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  ▶ $t = 0$:
    ▶ Government issues bonds to finance fixed expenditures, bought by local bank and international creditors
    ▶ Banks are financed by deposits and equity
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  - $t = 1$:
    - **Sunspot** or **fundamental** shock
    - Asset markets open (only foreign investors trade), bonds are repriced
    - If banks insolvent: Government decides on bailout and issues necessary debt
    - Consequence of insolvency: Some loans destroyed
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  - \( t = 2 \):
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    - Government decides whether to default nondiscriminately, maximizing household utility
    - Consequences of default: Bank insolvency (some loans destroyed), exogenous output cost
    - Production, household consumes.
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- Default decision: \( \text{foreign debt} \) vs. \((\text{loan destr.} + \text{exog. costs}) \times \text{loans} \times \text{TFP}\)

\[\text{default benefit vs. default cost}\]
The doom loop

- The sunspot / fundamental shock triggers investors to expect a higher default probability,
- this reduces the bond price,
- this makes banks insolvent,
- this causes a bailout,
- that increases foreign debt,
- which makes default more attractive and hence increases the default probability,
- which confirms the negative expectations / amplifies the fundamental shock.

multiplicity / amplification
Policy 1: No exposure

- Policy 1: Reduce bank’s exposure so much that they cannot fail
  - increase in equity ratio
  - a portfolio reallocation from bonds to the safe asset

Result: The doom loop disappears...

...but: the commitment value of banks' bond holdings disappears

⇒ normal times get worse

Higher default probability

Lower welfare (under mild conditions)

So policy undesirable if panic/bad shock sufficiently unlikely

Extension: Symmetric multi country setting + ESBies

a new union-wide doom loop arises
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- Extension: Symmetric multi country setting + ESBies
  - a new union-wide doom loop arises
Policy 2: Debt repatriation

- Policy 2: Banks are able to trade government bonds after a bailout in $t = 1$. 

Result: The doom loop disappears because the bailout no longer increases foreign debt and hence default incentives. Normal times are unaffected. Hence limits to banks' exposure are particularly bad in times of market turmoil.
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- Hence limits to banks’ exposure are particularly bad in times of market turmoil
Conclusion

- Introducing the effect of banks’ bond holdings on **default incentives** into a model of the doom loop leads to different policy conclusions
  - Limiting banks’ exposure may be undesirable
  - ... especially in times of market turmoil!
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  - ... especially in times of market turmoil!

- We thus provide an argument
  - Against policies that restrict the financial sectors’ exposure to domestic debt (e.g. German and French economists’ proposal Benassy-Quere et al., 2018).
  - In favor of debt repatriation in crisis times – such as now
Appendix: Multiple equilibria

\[ q(\omega) = 1 - F(\omega) \]
Appendix: Amplification
Appendix: Stability

\[ q \]

\[ \omega \]

\[ \omega(q) \]

\[ q|_{E_1=0} \]

\[ q^n \]

\[ q^p \]

\[ \omega^n \]

\[ \omega^p \]

\[ q(\omega) = 1 - F(\omega) \]
Appendix: Model in extensive form

<table>
<thead>
<tr>
<th></th>
<th>$t = 0$</th>
<th>$t = 1$</th>
<th>$t = 2$</th>
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<tbody>
<tr>
<td></td>
<td>$q^n$</td>
<td>$L_1 = L_0$</td>
<td>$L_2 = (1 - \theta)L_1$</td>
</tr>
<tr>
<td></td>
<td>$L_1 = L_0$</td>
<td>$q^{p_1}$</td>
<td>$C_2 = \omega(L_0 - B_0^f)$</td>
</tr>
<tr>
<td></td>
<td>$S_1 = D_0 - L_0 - q^{p_1}B_0^h$</td>
<td>$\Delta B_1^f = \frac{S_1}{q^{p_1}}$</td>
<td>$L_2 = (1 - \theta)(L_0 + S_1)$</td>
</tr>
<tr>
<td></td>
<td>$\omega$</td>
<td></td>
<td>$C_2 = \omega(L_0 + S_1 - B_0^f - \frac{S_1}{q^{p_1}})$</td>
</tr>
<tr>
<td>normal times</td>
<td></td>
<td>repay</td>
<td></td>
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<tr>
<td>panic</td>
<td></td>
<td>default</td>
<td>$L_2 = L_1$</td>
</tr>
<tr>
<td>bailout</td>
<td>$B_0^f$</td>
<td></td>
<td>$C_2 = \omega L_0 - B_0^f$</td>
</tr>
<tr>
<td>no bailout</td>
<td>$L_0$</td>
<td>repay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$D_0$</td>
<td>default</td>
<td>$L_2 = (1 - \theta)L_1$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$C_2 = \omega(1 - \theta)(1 - \phi)L_0$</td>
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<tr>
<td></td>
<td></td>
<td>repay</td>
<td>$L_2 = (1 - \theta)L_1$</td>
</tr>
<tr>
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<td></td>
<td>$C_2 = \omega(1 - \theta)(1 - \phi)L_0 - B_0^f$</td>
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</tbody>
</table>
Appendix: Sovereign debt holders

General government gross debt by sector of debt holder, 2019

- Resident non-financial sectors (S.11, S.14, S.15**)
- Non-residents (rest of the world S.2)
- Resident financial (financial corporations S.12)
- Sector of debt holder not determined

* (partially) missing information  ** non-financial corporations, households, non-profit institutions serving households

Source: Eurostat (online data code: gov_10dd_ggd, EU/EA aggregates based on gov_10q_ggddebt)
Appendix: Literature

Doom loop

- **Multiple equilibria**: Brunnermeier et al. (2016), Cooper and Nikolov (2018)
- **Amplification mechanism**: Acharya et al. (2014), Farhi and Tirole (2016), Leonello (2017), Abad (2020)

Banks’ exposure as commitment device

Appendix: References


