
Nicolas Crouzet
Northwestern University and Chicago Fed
2020 Winter EFG
Summary

1. US macro “symptoms” of declining competition are hard(er) to find in the EU

\[ \frac{\text{Markups Concentration}}{\text{US}} \downarrow \rightarrow \text{or} \uparrow \rightarrow \uparrow \rightarrow \downarrow \rightarrow \downarrow \rightarrow \text{or} \downarrow \rightarrow \downarrow \rightarrow \text{or} \downarrow \]

2. Why? The EU has chosen to empower a strongly independent, supra-national regulator

- endogenous outcome of institutional design game among EU countries

3. Evidence suggesting that DG comp is a tougher regulator

- enforces antitrust law — mergers, abuse of dominance, cartels — more actively
Summary

1. US macro “symptoms” of declining competition are hard(er) to find in the EU
Summary

1. US macro “symptoms” of declining competition are hard(er) to find in the EU

<table>
<thead>
<tr>
<th></th>
<th>I/K</th>
<th>II/K</th>
<th>Markups</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>↓</td>
<td></td>
<td>↑</td>
<td></td>
</tr>
</tbody>
</table>
Summary

1. US macro “symptoms” of declining competition are hard(er) to find in the EU

<table>
<thead>
<tr>
<th></th>
<th>$I/K$</th>
<th>$\Pi/K$</th>
<th>Markups</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>↓</td>
<td>→ or ↑</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>EU</td>
<td>↓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

1. US macro “symptoms” of declining competition are hard(er) to find in the EU

<table>
<thead>
<tr>
<th></th>
<th>$I/K$</th>
<th>$\Pi/K$</th>
<th>Markups</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>↓</td>
<td>→ or ↑</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>EU</td>
<td>↓</td>
<td>↓</td>
<td>→ or ↓</td>
<td>→ or ↓</td>
</tr>
</tbody>
</table>
Summary

1. US macro “symptoms” of declining competition are hard(er) to find in the EU

<table>
<thead>
<tr>
<th></th>
<th>I/K</th>
<th>II/K</th>
<th>Markups</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>↓</td>
<td>→ or</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>EU</td>
<td>↓</td>
<td>↓</td>
<td>→ or ↓</td>
<td>→ or ↓</td>
</tr>
</tbody>
</table>

2. Why? The EU has chosen to empower a strongly independent, supra-national regulator
Summary

1. US macro “symptoms” of **declining competition** are hard(er) to find in the EU

<table>
<thead>
<tr>
<th></th>
<th>I/K</th>
<th>Π/K</th>
<th>Markups</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>↓</td>
<td>→ or ↑</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>EU</td>
<td>↓</td>
<td>↓</td>
<td>→ or ↓</td>
<td>→ or ↓</td>
</tr>
</tbody>
</table>

2. Why? The EU has chosen to empower a strongly independent, supra-national regulator
   - endogenous outcome of institutional design game among EU countries
Summary

1. US macro “symptoms” of declining competition are hard(er) to find in the EU

\[
\begin{array}{cccc}
  I/K & \Pi/K & \text{Markups} & \text{Concentration} \\
  \text{US} & \downarrow & \rightarrow \text{or} \uparrow & \uparrow & \uparrow \\
  \text{EU} & \downarrow & \downarrow & \rightarrow \text{or} \downarrow & \rightarrow \text{or} \downarrow \\
\end{array}
\]

2. Why? The EU has chosen to empower a strongly independent, supra-national regulator
   
   · endogenous outcome of institutional design game among EU countries

3. Evidence suggesting that DG comp is a tougher regulator
Summary

1. US macro “symptoms” of declining competition are hard(er) to find in the EU

<table>
<thead>
<tr>
<th></th>
<th>$I/K$</th>
<th>$\Pi/K$</th>
<th>Markups</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>↓</td>
<td>→ or ↑</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>EU</td>
<td>↓</td>
<td>↓</td>
<td>→ or ↓</td>
<td>→ or ↓</td>
</tr>
</tbody>
</table>

2. Why? The EU has chosen to empower a strongly independent, supra-national regulator
   · endogenous outcome of institutional design game among EU countries

3. Evidence suggesting that DG comp is a tougher regulator
   · enforces antitrust law — mergers, abuse of dominance, cartels — more actively
1. The macro symptoms
PPE investment rates are falling both the US and in the EU
Average returns to physical capital are stable in the US
Average returns to physical capital are stable in the US, falling in the EU.
Intangible capital is rising in the US

$K_1 = \text{PPE and } K_2 = \text{R&D capital.}$
Intangible capital is rising in the US, not in the EU

\[ \frac{K_2}{K_1} \text{ (US)} \quad \frac{K_2}{K_1} \text{ (EU)} \]

\( K_1 \) = PPE and \( K_2 \) = R&D capital.
Quantifying the role of rents vs. intangibles

\[ V_t = q_{1,t} K_{1,t} + q_{2,t} K_{2,t} + \sum_{n=1}^{\infty} \sum_{k=1}^{\infty} E_t [M_{t+k} (\mu - 1) \prod_{n=1}^{k}] \]

- \( \mu = 1 \), no intangibles:
  \[ V_t = q_{1,t} K_{1,t} + 1 \]

- \( \mu > 1 \), intangibles:
  \[ V_t = q_{1,t} K_{1,t} + q_{2,t} K_{2,t} + 1 \]

Lindenberg and Ross (1981)
Quantifying the role of rents vs. intangibles

\[ V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} + \sum_{n=1}^{2} \sum_{k \geq 1} \mathbb{E}_t [M_{t,t+k} (\mu - 1) \Pi_{n,t+k} K_{n,t+k}] \]
Quantifying the role of rents vs. intangibles

Crouzet and Eberly (2020)

\[ V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} + \sum_{n=1}^{2} \sum_{k \geq 1} E_t [M_{t,t+k}(\mu - 1) \Pi_{n,t+k}K_{n,t+k}] \]

- \( \mu = 1 \), no intangibles: \( V_t = q_{1,t}K_{1,t+1} \)

Hayashi (1982)
Quantifying the role of rents vs. intangibles

\[ V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} + \sum_{n=1}^{2} \sum_{k \geq 1} \mathbb{E}_t[M_{t,t+k} (\mu - 1) \Pi_{n,t+k} K_{n,t+k}] \]

- \( \mu = 1 \), no intangibles: \( V_t = q_{1,t}K_{1,t+1} \)  
  Hayashi (1982)

- \( \mu = 1 \), intangibles: \( V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} \)  
  Hayashi and Inoue (1991)
Quantifying the role of rents vs. intangibles

Crouzet and Eberly (2020)

\[ V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} + \sum_{n=1}^{2} \sum_{k \geq 1} \mathbb{E}_t [M_{t,t+k} (\mu - 1) \Pi_{n,t+k} K_{n,t+k}] \]

- \( \mu = 1 \), no intangibles: \( V_t = q_{1,t}K_{1,t+1} \)
  Hayashi (1982)

- \( \mu = 1 \), intangibles: \( V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} \)
  Hayashi and Inoue (1991)

- \( \mu > 1 \), intangibles: \( V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} \)
Quantifying the role of rents vs. intangibles

Crouzet and Eberly (2020)

\[ V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} + \sum_{n=1}^{2} \sum_{k \geq 1} \mathbb{E}_t \left[ M_{t,t+k}(\mu - 1) \prod_{n,t+k} K_{n,t+k} \right] \]

- \( \mu = 1 \), no intangibles: \( V_t = q_{1,t}K_{1,t+1} \)  
  Hayashi (1982)

- \( \mu = 1 \), intangibles: \( V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} \)  
  Hayashi and Inoue (1991)

- \( \mu > 1 \), intangibles: \( V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} \)  
  + rents \( \rightarrow \) physical capital  
  Lindenberg and Ross (1981)
Quantifying the role of rents vs. intangibles

Crouzet and Eberly (2020)

\[ V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} + \sum_{n=1}^{2} \sum_{k \geq 1} \mathbb{E}_t \left[ M_{t,t+k}(\mu - 1) \Pi_{n,t+k} K_{n,t+k} \right] \]

- \( \mu = 1 \), no intangibles: \( V_t = q_{1,t}K_{1,t+1} \)
  \[ \text{Hayashi (1982)} \]

- \( \mu = 1 \), intangibles: \( V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} \)
  \[ \text{Hayashi and Inoue (1991)} \]

- \( \mu > 1 \), intangibles: \( V_t = q_{1,t}K_{1,t+1} + q_{2,t}K_{2,t+1} \)
  + rents \( \rightarrow \) physical capital
  \[ \text{Lindenberg and Ross (1981)} \]
  + rents \( \rightarrow \) intangibles
Quantifying the role of rents vs. intangibles

“Investment gap”
Quantifying the role of rents vs. intangibles

“Investment gap” = \( Q_1 - q_1 \)
Quantifying the role of rents vs. intangibles

"Investment gap" = \( Q_1 - q_1 = \frac{\mu - 1}{r - g} R_1 \) (rents \( \rightarrow \) physical capital)

\[ R_n = \text{Hall-Jorgenson user cost, modified for adjustment costs:} \]

\[ R_n \equiv r + \delta_n + \gamma_n gr, \quad n = 1, 2, \]

where \( \gamma_n \) = curvature of adjustment cost function.
Quantifying the role of rents vs. intangibles

"Investment gap" = \( Q_1 - q_1 \) = \( \frac{\mu - 1}{r - g} R_1 \) (rents → physical capital)

\[ \quad + \frac{K_2}{K_1} q_2 \] (omitted capital effect)

\( R_n = \) Hall-Jorgenson user cost, modified for adjustment costs:

\[ R_n \equiv r + \delta_n + \gamma_n g r, \quad n = 1, 2, \]

where \( \gamma_n = \) curvature of adjustment cost function.
Quantifying the role of rents vs. intangibles

“Investment gap” = $Q_1 - q_1 = \frac{\mu - 1}{r - g} R_1$  
(rents → physical capital)

+ $\frac{K_2}{K_1} q_2$  
(omitted capital effect)

+ $\frac{\mu - 1}{r - g} R_2 \times \frac{K_2}{K_1}$  
(rents → intangibles) ×  
(omitted capital effect)

$R_n =$ Hall-Jorgenson user cost, modified for adjustment costs:

$R_n \equiv r + \delta_n + \gamma_n gr, \quad n = 1, 2,$

where $\gamma_n =$ curvature of adjustment cost function.
Quantifying the role of rents vs. intangibles

Crouzet and Eberly (2020)

“Investment gap” = \( Q_1 - q_1 = \frac{\mu - 1}{r - g} R_1 \) (rents → physical capital)

+ \( \frac{K_2}{K_1} q_2 \) (omitted capital effect)

+ \( \frac{\mu - 1}{r - g} R_2 \times \frac{K_2}{K_1} \) (rents → intangibles) \times (omitted capital effect)

This simple version of the investment gap can be constructed using a few (6) time series.

But the decomposition is very general — see our paper!
The investment gap in the US

1947-2017; sources: BEA fixed tables and Flow of Funds
The investment gap in the US

Crouzet and Eberly (2020)

1947-2017; sources: BEA fixed tables and Flow of Funds
The investment gap in the US

Crouzet and Eberly (2020)

Rents attributable to physical capital
Intangibles
Rents attributable to intangibles
Total

1947-2017; sources: BEA fixed tables and Flow of Funds
The investment gap in the US

Crouzet and Eberly (2020)

1947-2017; sources: BEA fixed tables and Flow of Funds
The investment gap in the EU

1995-2017; source: OECD
The investment gap in the EU

1995-2017; source: OECD
The investment gap in the EU

1995-2017; source: OECD
Underlying structural changes

Cobb-Douglas intan share \( K_t = K_{1,t}^{1-\eta} K_{2,t}^\eta \)

Rents/v.a. \( s = (1 - WL/PY) (1 - \frac{1}{\mu}) \)
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
  - rising intangible share
  - rising rents
- Neither are clearly visible in EU data
- Comment 1: structural breaks
  - "we argue that much has changed since then [late 90's]" — Lisbon Strategy
- Comment 2: heterogeneous sectoral trends
  - no single common macro story across sectors in the US
  - Crouzet and Eberly (2020)
  - telecom evidence: compelling, but nationally regulated?
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
Macro symptoms: takeaways

- US, 1980-2015: **two** structural changes contributing to investment gap
  - rising intangible share
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
  - rising intangible share + rising rents

Comment 1: structural breaks
  "we argue that much has changed since then [late 90's] — Lisbon Strategy"
  unclear whether structural break in the EU data — but short sample

Comment 2: heterogeneous sectoral trends
  no single common macro story across sectors in the US
  Crouzet and Eberly (2020)
  telecom evidence: compelling, but nationally regulated?
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
  
  · rising intangible share + rising rents

- Neither are clearly visible in EU data
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
  - rising intangible share + rising rents

- Neither are clearly visible in EU data

- Comment 1: structural breaks
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
  - rising intangible share + rising rents

- Neither are clearly visible in EU data

- Comment 1: structural breaks
  - “we argue that much has changed since then [late 90’s]” — Lisbon Strategy
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
  
  · rising intangible share + rising rents

- Neither are clearly visible in EU data

- Comment 1: structural breaks
  
  · “we argue that much has changed since then [late 90’s]” — Lisbon Strategy
  
  · unclear whether structural break in the EU data
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
  - rising intangible share + rising rents

- Neither are clearly visible in EU data

- Comment 1: structural breaks
  - “we argue that much has changed since then [late 90’s]” — Lisbon Strategy
  - unclear whether structural break in the EU data — but short sample
The investment gap in France

1980-2017; source: OECD, INSEE, and Global Financial Database
Macro symptoms: takeaways

- US, 1980-2015: two structural changes contributing to investment gap
  - rising intangible share + rising rents
- Neither are clearly visible in EU data
- Comment 1: structural breaks
  - “we argue that much has changed since then [late 90’s]” — Lisbon Strategy
  - unclear whether structural break in the EU data — but short sample
- Comment 2: heterogeneous sectoral trends
Macro symptoms: takeaways

- US, 1980-2015: **two** structural changes contributing to investment gap
  
  · rising intangible share + rising rents

- **Neither** are clearly visible in EU data

- Comment 1: structural breaks
  
  · “we argue that much has changed since then [late 90’s]” — Lisbon Strategy
  
  · unclear whether structural break in the EU data — but short sample

- Comment 2: heterogeneous sectoral trends
  
  · no single common macro story across sectors in the US  
  
  Crouzet and Eberly (2020)
Macro symptoms: takeaways

- US, 1980-2015: **two** structural changes contributing to investment gap
  
  · rising intangible share + rising rents

- **Neither** are clearly visible in EU data

- **Comment 1**: structural breaks
  
  · “we argue that much has changed since then [late 90’s]” — Lisbon Strategy
  
  · unclear whether structural break in the EU data — but short sample

- **Comment 2**: heterogeneous sectoral trends
  
  · no single common macro story across sectors in the US
  
  · telecom evidence: compelling, but nationally regulated?

  [Crouzet and Eberly (2020)]
2. Equilibrium regulation: theory
A simplified environment

- Two goods $i = 1, 2$
- Two countries $j = 1, 2$
- Firm in country $j$ uses linear technology:
  \[ x_1^j + x_2^j = z_n^j \]
- Household in country $j$:
  \[ U_j = \log(x_1^j) + \log(x_2^j) - n_j \]
- Regulator chooses markups $\leftrightarrow$ prices $\leftrightarrow$ quantities $x_1, x_2$
A simplified environment

- Two goods $i = 1, 2$; two countries $j = 1, 2$
A simplified environment

- Two goods $i = 1, 2$; two countries $j = 1, 2$

- Firm in country $j$ uses linear technology: $x_{1j} + x_{2j} = zn_j$
A simplified environment

- Two goods $i = 1, 2$; two countries $j = 1, 2$

- Firm in country $j$ uses linear technology: $x_{1j} + x_{2j} = zn_j$

- Household in country $j$:

$$U_j = \log(x_{1j}) + \log(x_{2j}) - n_j$$
A simplified environment

- Two goods $i = 1, 2$; two countries $j = 1, 2$
- Firm in country $j$ uses linear technology: $x_{1j} + x_{2j} = zn_j$
- Household in country $j$:

$$U_j = \log(x_{1j}) + \log(x_{2j}) - n_j$$

- Regulator chooses markups $\leftrightarrow$ prices $\leftrightarrow$ quantities $x_1, x_2$
Unbiased supra-national regulator
Unbiased supra-national regulator

$$\max_{x_1, x_2} \ U_1 + U_2$$

$$x_1 = z$$

$$x_2 = z$$

$$U_1 = U^* = 2 (\log(z) - 1)$$

$$U_2 = U^*$$
Biased supra-national regulator
Biased supra-national regulator

$$\max_{x_1, x_2} U_1 + (1 - \theta) U_2$$
Biased supra-national regulator

\[
\max_{x_1, x_2} \ U_1 + (1 - \theta)U_2
\]

\[
x_1 = (1 - \theta/2)z < z
\]

\[
x_2 = \frac{(1 - \theta/2)z}{1 - \theta} > z
\]
Biased supra-national regulator

\[
\begin{align*}
\max_{x_1, x_2} & \quad U_1 + (1 - \theta)U_2 \\
\end{align*}
\]

\[
\begin{align*}
x_1 &= (1 - \theta/2)z \quad < z \\
x_2 &= \frac{(1 - \theta/2)z}{1 - \theta} \quad > z
\end{align*}
\]

\[
\begin{align*}
U_1 &= U_{SR}^+(\theta) \quad \approx \quad -\log(1 - \theta) \quad > \quad U^* \quad \text{as} \quad \theta \to 1 \\
U_2 &= U_{SR}^-(\theta) \quad \approx \quad -\frac{1}{1 - \theta} \quad < \quad U^* \quad \text{as} \quad \theta \to 1
\end{align*}
\]
Ex-ante optimal design

\[
\theta \text{E}\left[U_{SR}(\theta)\right] = \frac{1}{2}U_{SR} + (\theta) + \frac{1}{2}U_{SR} - (\theta) \quad \forall j = 1, 2
\]

\[
\approx -\frac{1}{2} \times 1 - \theta - \frac{1}{2} \log(1 - \theta)
\]

\[
\rightarrow -\infty \quad \text{as} \quad \theta \rightarrow 1
\]

Choose \(\theta\) away from 1 — i.e. away from capture by a particular country.

Cost of capture by other country always outweighs benefits of control.
Ex-ante optimal design

\[
\max_{\theta} \mathbb{E} \left[ U_j^{SR}(\theta) \right] = \frac{1}{2} \times U_+^{SR}(\theta) + \frac{1}{2} \times U_-^{SR}(\theta) \quad \forall j = 1, 2
\]
Ex-ante optimal design

$$\max_{\theta} \mathbb{E} \left[ U_j^{SR}(\theta) \right] = \frac{1}{2} \times U_+^{SR}(\theta) + \frac{1}{2} \times U_-^{SR}(\theta) \quad \forall j = 1, 2$$

$$\approx -\frac{1}{2} \times \frac{1}{1 - \theta} - \frac{1}{2} \times \log(1 - \theta)$$

$$\rightarrow -\infty \quad \text{as} \quad \theta \rightarrow 1$$
Ex-ante optimal design

\[
\max_\theta \mathbb{E} \left[ U_{j}^{SR}(\theta) \right] = \frac{1}{2} \times U_{+}^{SR}(\theta) + \frac{1}{2} \times U_{-}^{SR}(\theta) \quad \forall j = 1, 2
\]

\[
\approx -\frac{1}{2} \times \frac{1}{1-\theta} - \frac{1}{2} \times \log(1 - \theta)
\]

\[
\rightarrow -\infty \quad \text{as} \quad \theta \rightarrow 1
\]

Choose \( \theta \) away from 1 — i.e. away from capture by a particular country

Cost of capture by other country always outweighs benefits of control
Ex-ante optimal design

\[
\max_{\theta} \mathbb{E} \left[ U_j^{SR}(\theta) \right] = \frac{1}{2} \times U_+^{SR}(\theta) + \frac{1}{2} \times U_-^{SR}(\theta) \quad \forall j = 1, 2
\]

\[
\approx -\frac{1}{2} \times \frac{1}{1 - \theta} - \frac{1}{2} \times \log(1 - \theta)
\]

\[
\rightarrow -\infty \quad \text{as} \quad \theta \rightarrow 1
\]

Choose \(\theta\) away from 1 — i.e. away from capture by a particular country

Cost of capture by other country always outweighs benefits of control
Theory: comments

- Model in the paper has another friction:
  \[ U_1 + (1 - \theta) U_2 + \theta \gamma \Pi_1 \cdot \]

- Comment 1: what does \( \gamma > 0 \) buy? does the model speak to the single market even if \( \gamma = 0 \)?

- Comment 2: what changed in the EU? in the US? EU: why shift from NR to SR—within single market?
- Model in the paper has another friction: \( U_1 + (1 - \theta)U_2 + \theta \gamma \Pi_1 \)
Theory: comments

- Model in the paper has another friction: \( U_1 + (1 - \theta)U_2 + \theta \gamma \Pi_1 \)

  - ex-post: supra-national regulator further restricts domestic output
- Model in the paper has another friction: \( U_1 + (1 - \theta)U_2 + \theta \gamma \Pi_1 \)

  · ex-post: supra-national regulator further restricts domestic output
Theory: comments

- Model in the paper has another friction: $U_1 + (1 - \theta)U_2 + \theta\gamma\Pi_1$
  
  · ex-post: supra-national regulator further restricts domestic output

- Comment 1: what does $\gamma > 0$ buy?
  
  · does the model speak to the single market even if $\gamma = 0$?
Theory: comments

- Model in the paper has another friction: \( U_1 + (1 - \theta)U_2 + \theta \gamma \Pi_1 \)
  
  - ex-post: supra-national regulator further restricts domestic output

- Comment 1: what does \( \gamma > 0 \) buy?
  
  - does the model speak to the single market even if \( \gamma = 0 \)?
Theory: comments

- Model in the paper has another friction: \( U_1 + (1 - \theta)U_2 + \theta \gamma \Pi_1 \)

  - ex-post: supra-national regulator further restricts domestic output

- **Comment 1:** what does \( \gamma > 0 \) buy?
  
  - does the model speak to the single market even if \( \gamma = 0 \)?

- **Comment 2:** what changed in the EU? in the US?
  
  - EU: why shift from NR to SR — within single market?
3. Evidence on competition regulation in the EU vs. the US
The DG comp is a tougher regulator (1/2)

- Evidence:

1. framework: DG comp stricter than FTC/DOJ and national EU regulators
2. enforcement: DG comp more active on mergers, abuse of dominance, and cartels
Abuse of dominance cases

Figure 10: Abuse of Dominance Enforcement, DG Comp vs. DoJ

Notes: DoJ Annual Reports for the US; Russo et al. (2010) for Europe, extended to 2017 based on DG Comp case database.

The number of cases has decreased, but the number of investigations has also fallen close to zero.

Let us move on to Cartel enforcement. Figure 11 (left panel) shows the number of DG Comp Formal decisions (left axis) and the number of DoJ Investigations and corporations charged (right axis). DG Comp enforcement is stable/rising while DoJ enforcement is falling. It should be noted, however, that the comparison is complicated. Cartels are typically charged criminally in the US while DG Comp only pursue civil cases. In addition, we could measure the number of individuals charged, or the number of corporations charged. We show Investigations and Corporations charged in the US because they better reflect the number of violations pursued by the DoJ. In recent years, however, the DoJ has increased its focus on charging individuals as well as corporations – which has resulted in more individuals being incarcerated and for longer periods of time.

As a result, one could argue that cartel enforcement has not decreased in the US, or at least not as much as suggested by Figure 11. The increase in EU enforcement, however, is unambiguous.

Figure 11 (right panel) shows that the EU has imposed substantially higher fines for Cartel Cases than the DoJ. The increase in Europe was particularly pronounced after 2000, with total cartel fines increasing from about 600 MM Euros in the 1990s to more than 15 billion from 2005 to 2014 (the last decade with available data). Considering all antitrust cases in Europe and controlling for the number of corporations fined we reach similar conclusions. The average fine per corporation imposed by DG Comp increased from less than 20 MM euros before 2000 to more than 300 MM in 2006-2008 (Russo et al., 2010), while the average fine imposed by DoJ remained under $50 MM for most of the 2000s.

We find similar results including EU NCAs, as shown in Appendix Figure 44. Nearly 40% of cases brought by European NCAs relate to Abuse of Dominance.

This is a stated policy objective (link). See figure 45 in the Appendix for additional details.
The DG comp is a tougher regulator (1/2)

- Evidence:

1. framework: DG comp stricter than FTC/DOJ and national EU regulators
2. enforcement: DG comp more active on mergers, abuse of dominance, and cartels
3. product market regulation: EU countries now score higher than the US
The DG comp is a tougher regulator (1/2)

- Evidence:
  1. framework: DG comp stricter than FTC/DOJ and national EU regulators
  2. enforcement: DG comp more active on mergers, abuse of dominance, and cartels
  3. product market regulation: EU countries now score higher than the US

- Model interpretation: \( \hat{\theta}_{EU,SR} < \hat{\theta}_{US}, \hat{\theta}_{EU,NR} \)
The DG comp is a tougher regulator (1/2)

- Evidence:
  1. framework: DG comp stricter than FTC/DOJ and national EU regulators
  2. enforcement: DG comp more active on mergers, abuse of dominance, and cartels
  3. product market regulation: EU countries now score higher than the US

- Model interpretation: \( \hat{\theta}_{EU,SR} < \hat{\theta}_{US}, \hat{\theta}_{EU,NR} \)

- Further evidence consistent with (extensions of) the model
  - countries with ex-ante weaker institution benefit more from integration
  - lower political expenditures
The DG comp is a tougher regulator (1/2)

- Evidence:
  1. framework: DG comp stricter than FTC/DOJ and national EU regulators
  2. enforcement: DG comp more active on mergers, abuse of dominance, and cartels
  3. product market regulation: EU countries now score higher than the US

- Model interpretation: \( \hat{\theta}_{EU,SR} < \hat{\theta}_{US}, \hat{\theta}_{EU,NR} \)

- Further evidence consistent with (extensions of) the model
  - countries with ex-ante weaker institution benefit more from integration
  - lower political expenditures
The DG comp is a tougher regulator (2/2)

- Comment 1: scope of national regulators vs. DG comp, particularly for antitrust
  - “concentrations with an EU dimension” i.e. meeting certain thresholds
  - discrete change in enforcement around thresholds?

- Comment 2: is DG comp tougher because it is supranational?
  - economic conditions: bigger gains from abusive consolidation in the EU?
  - innovation: DG Comp less concerned about preserving quasi-rents?
  - risk attitudes: FTC/DoJ — short-run consumer prices; DG Comp — long-run precautionary approach?
The DG comp is a tougher regulator (2/2)

- **Comment 1**: scope of national regulators vs. DG comp, particularly for antitrust
The DG comp is a tougher regulator (2/2)

- **Comment 1**: scope of national regulators vs. DG comp, particularly for antitrust
  
  · “concentrations with an EU dimension” i.e. meeting certain thresholds
The DG comp is a tougher regulator (2/2)

- Comment 1: scope of national regulators vs. DG comp, particularly for antitrust
  - “concentrations with an EU dimension” i.e. meeting certain thresholds
  - discrete change in enforcement around thresholds?
The DG comp is a tougher regulator (2/2)

- **Comment 1**: scope of national regulators vs. DG comp, particularly for antitrust
  - “concentrations with an EU dimension” i.e. meeting certain thresholds
  - discrete change in enforcement around thresholds?

- **Comment 2**: is DG comp tougher *because* it is supranational?
The DG comp is a tougher regulator (2/2)

- **Comment 1**: scope of national regulators vs. DG comp, particularly for antitrust
  - “concentrations with an EU dimension” i.e. meeting certain thresholds
  - discrete change in enforcement around thresholds?

- **Comment 2**: is DG comp tougher *because* it is supranational?
  - *economic conditions*: bigger gains from abusive consolidation in the EU?
The DG comp is a tougher regulator (2/2)

- **Comment 1**: scope of national regulators vs. DG comp, particularly for antitrust
  
  - “concentrations with an EU dimension” i.e. meeting certain thresholds
  
  - discrete change in enforcement around thresholds?

- **Comment 2**: is DG comp tougher *because* it is supranational?
  
  - *economic conditions*: bigger gains from abusive consolidation in the EU?
  
  - *innovation*: DG Comp less concerned about preserving quasi-rents?
The DG comp is a tougher regulator (2/2)

- **Comment 1**: scope of national regulators vs. DG comp, particularly for antitrust
  - “concentrations with an EU dimension” i.e. meeting certain thresholds
  - discrete change in enforcement around thresholds?

- **Comment 2**: is DG comp tougher *because* it is supranational?
  - *economic conditions*: bigger gains from abusive consolidation in the EU?
  - *innovation*: DG Comp less concerned about preserving quasi-rents?
  - *risk attitudes*: FTC/DoJ — short-run consumer prices; DG Comp — long-run precautionary, approach?
Conclusion
Conclusion

- Ambitious, important paper

- Shifted my priors on
  - macro symptoms in US vs. EU
  - enforcement of antitrust in US vs. EU

- But is it really the *supranational* nature of DG comp that matters?
  - would be better for the US if the answer were no!
Additional slides
National regulator

\[
\max_{x_1} U_1 = \log(x_1) + \log(x_2) - \frac{2x_1}{z}
\]

\[
x_1 = \frac{1}{2} z < z
\]

\[
x_2 = \frac{1}{2} z < z
\]

\[
U_1 = U^{NR} \equiv U^* - (2 \log(2) - 1) < U^*
\]

\[
U_2 = U^{NR}
\]

National regulators ~ monopolists