

Regulatory stringency as a competitive tool for financial centres ¹

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¹**Usual disclaimer:** The views expressed in this paper are those of the authors and do not reflect the views of the Bank of England, the PRA or any of its committees, nor those of the UK Competition and Markets Authority.

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- Three of the top four financial centres in the world² are overseen by a regulator with an explicit objective to enhance growth:
 - 1. New York, 2. **London**, 3. **Singapore**, 4. **Hong Kong**.
- According to our textual analysis of annual reports MAS is most growth focused followed by HKMA:

*"[One HKMA key function is to] help **maintain Hong Kong's status as an international financial centre** ... "*
- PRA acquired a new secondary competitiveness and growth objective (SCGO) in 2023.

²Global Financial Centre Index

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 - yes capital requirements; but also
 - streamlined rules for risk calculations with respect to counterparties; more leniency on internal models; information collection demands; frequency of supervisory meetings.
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 - Regulators cannot observe the level of regulatory stringency which the rival regulator has offered.
 - And some, but not all, banks are internationally mobile.
- **Tradeoff:** Low stringency (to a point) attracts banks delivering growth – high stringency delivers stability from the banks which do come

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 - **Global financial regulation can even strengthen.**
- ④ **But** if more stability-focused regulator increases her focus on growth then **it causes regulatory stringency to decline globally**
 - *though not to the bottom* if externality significant.

Value added

- ① Acharya (2003) shows that under a sequential game, a regulator that incorporates a dual-objective function, when a regulator becomes more forbearing, a competing regulator also turn more forbearing.
 - We show that under a simultaneous game environment, race-to-the-bottom not always happen.
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- ③ Morrison & White (2009) show race-to-the-bottom don't arise in vertically differentiated regulators
 - We show that even equally-skilled regulators, but with different growth preference can deter race-to-the-bottom.

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 - International investors are risk neutral & in excess supply.

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 - International investors are risk neutral & in excess supply.
- Banks fail if their projects fail (return = 0). Happens w. prob. $g(t_i)$.
 - $g(\cdot)$ captures regulatory skill/efficiency: $g' < 0$, $g'' > 0$.

The Regulator's objective function

- **Closed economy benchmark:** no competition to attract mobile banks.
Objective function is :

$$W(t_i; \alpha_i) := \alpha_i \underbrace{(\Pi_E + \Pi_B)}_{\text{Surplus from financial intermediation}} - (1 - \alpha_i) \underbrace{Lg(t_i)}_{\text{Bank failure externality}}$$

- **Concavity** yields: $\underline{t}_B < t^*(\alpha) := \arg \max_t W(t, \alpha) < \bar{t}$.
- **Labeling:** Regulator 1 is relatively more '**stability focused**' while Regulator 2 is relatively more '**growth focused**' Text-based evidence :

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- **Open economy:** objective function is

$$\mathcal{E}(t_i; \alpha_i) := \underbrace{\mu(t_i; t_j)}_{\text{expected number of banks in country } i} \cdot \underbrace{W(t_i; \alpha_i)}_{\text{net benefit per bank}}.$$

Number of banks attracted, $\mu(\cdot)$, is an endogenous variable.

- **Regulator i chooses t_i to maximise $\mathcal{E}(t_i; \alpha_i)$.**

Two Pure Strategy Equilibria

Proposition

Non-compete: Each regulator sets the closed-economy optimal level of regulatory stringency, $t^*(\alpha_i)$ $i \in \{1, 2\}$

Race-to-the-bottom: Each regulator sets the low level of regulatory stringency, $\underline{t}_B$, preferred by private sector banks.

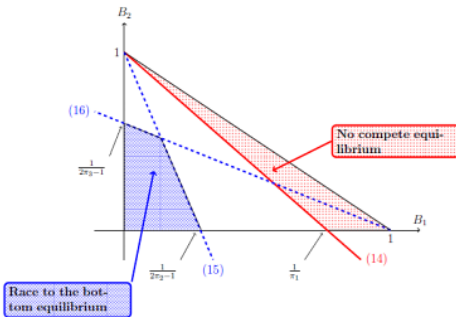
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Figure: No Overlap of Pure Strategy Equilibria



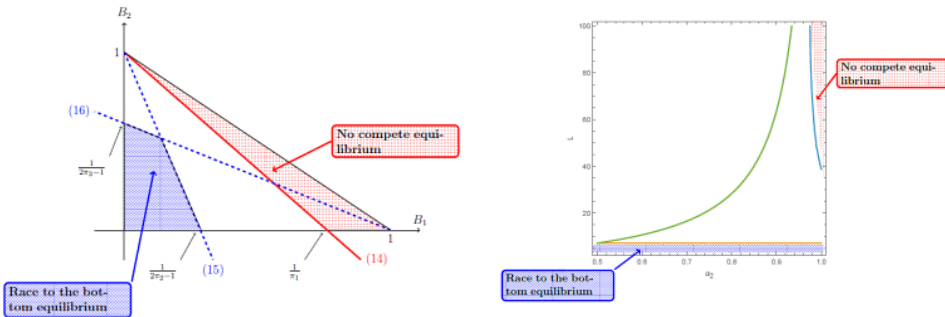
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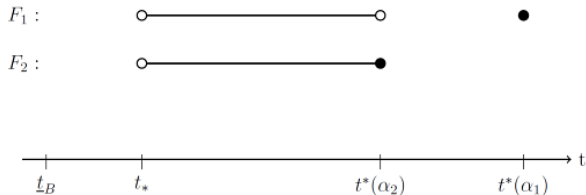
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Mixed Strategy Equilibrium

Theorem

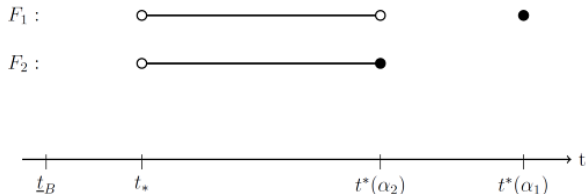
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Mixed Strategy Equilibrium

Theorem

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Intuition:

Both regulators set the regulatory stringency **below** their closed-economy optima with some probability.

- Competitive deregulation could occur (up to a lower bound t_*).
 - But no race all the way to the bottom ($t_* > \underline{t}_B$) if externality L large enough.
- If $B_1 \approx B_2$ then stability-focused regulator 1 determines how low regulatory stringency will go.
- Cost of competition is borne by regulator 2, which has lower objective function as forced to reduce regulatory stringency to retain mobile banks.

Proposition: Growth-focused regulator 2 becomes even more growth-focused (α_2 increases)

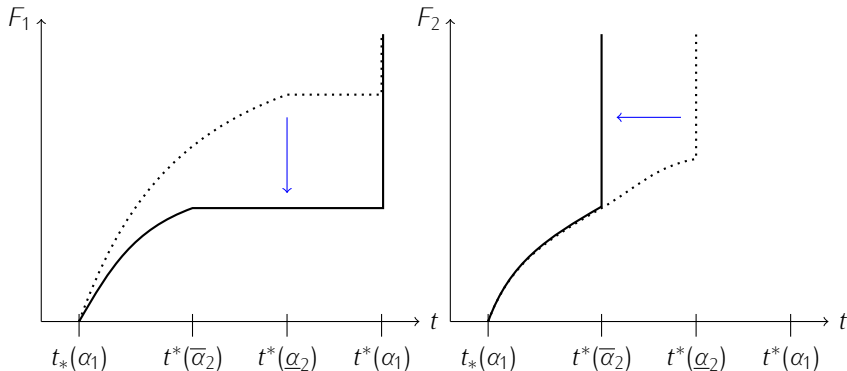
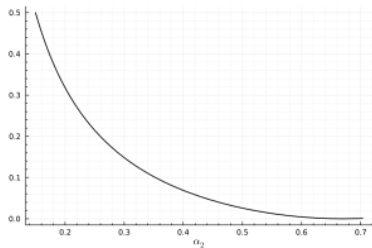


Figure: Notes: The dotted line represents the distribution under $\underline{\alpha}_2$ while the solid line represents the distribution under $\bar{\alpha}_2$ when regulator 2 becomes more growth focused.

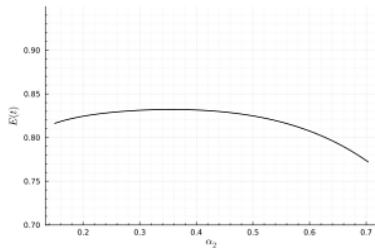
Intuition and policy implications

Simulation: Growth-focused regulator 2 becomes even more growth-focused (α_2 increases)

Regulator 1's probability winning



Expected stringency for internationally mobile banks



- As α_2 increases regulator 2 is more likely to win.
- Regulator 1 is less aggressive explaining increasing stringency initially.

Proposition: Stability-focused regulator 1 becomes more growth focused (α_1 increases)

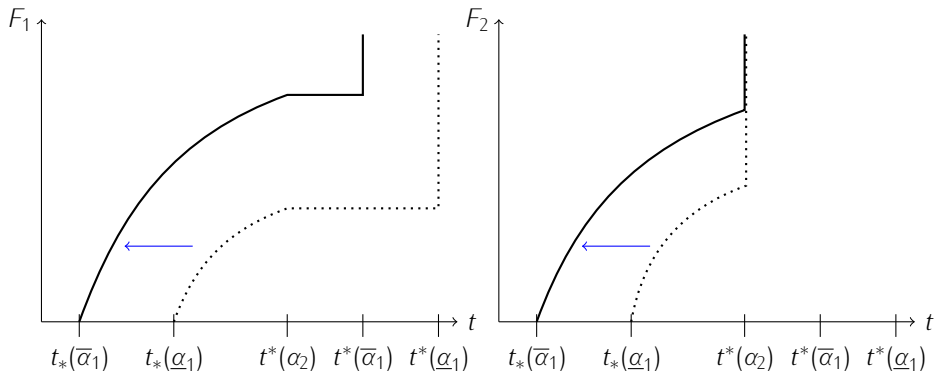
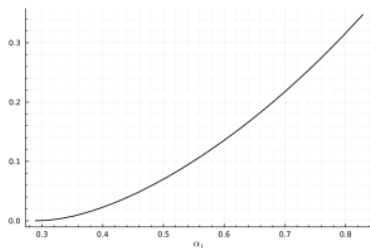


Figure: The dotted line represents the distribution under $\underline{\alpha}_1$ while the solid line represents the distribution under $\bar{\alpha}_1$ when regulator 1 is more growth focused. That lower levels of regulatory stringency are delivered is evident.

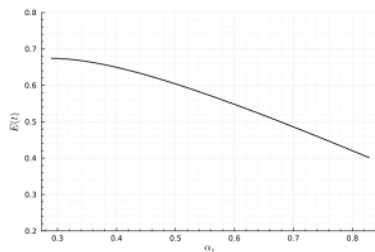
Intuition & policy

Simulation: Stability-focused regulator 1 becomes more growth focused (α_1 increases)

Regulator 1's probability winning



Expected stringency for internationally mobile banks



As α_1 increases, in this simulation, Regulator 1 increases its probability of winning – not a general result.

Results on proportion of tied banks

Results and Policy Implications

- ① Impact of PRA SCGO on regulatory stringency depends on the objectives of other regulators.
 - Implications specific to bank-country pairs. E.g. EU/London competition vs HK/London competition.

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 - Non-regulatory policies (tax, labour laws etc) which would make the UK more attractive to banks will reduce the need for PRA to lower stringency to attract banks.
- ④ Collapse of *race-to-the-bottom* possible in sectors with low externality of an institution failure and few tied to one country.
- ⑤ Operationalising SCGO in ways to limit competitive deregulation could be done by setting a minimum level of bank failure which PRA must meet (i.e. quantify the primary objective).

Links

Regulatory stringency as a competitive tool for financial centres

Bank of England Staff Working Paper No. 1,098
December 2024



SSRN
Most recent



Thank you

Literature

Theoretical work on financial regulation when regulators are in some form of competition with each other.

- Dell'Ariccia and Marquez, 2006; Bahaj and Malherbe, 2024

Theoretical work on competition between regulators who differ:

- Morrison and White, 2009

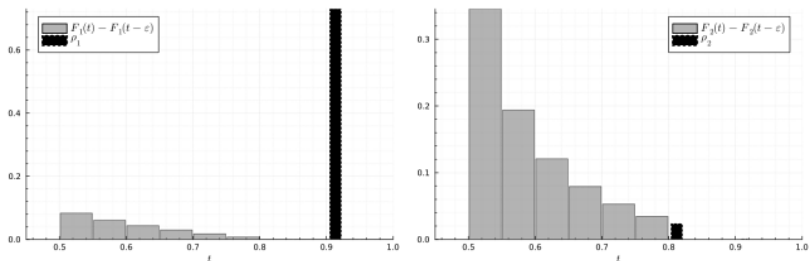
Theoretical work on optimal financial regulation with multiple jurisdictions

- Colliard, 2019 ; Calzolari, Colliard, and Loranth, 2018 ; Korinek, 2016 ; Buck and Schliephake, 2013 ; Gersbach, Haller, and Papageorgiou, 2020, Fahri and Tirole, 2025.

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Mixed Strategy Equilibrium: simulation

Figure: Mixing Equilibrium



Note: The graphs show a histogram of the probability density functions of the two regulators. Each column gives the value of $F_i(t + \varepsilon) - F_i(t)$ with columns of width $\varepsilon = 0.05$. To perform the numerical simulations we assume that the regulatory technology $g(t) = c \left[1 - \sqrt{1 - (1 - t/\bar{t})^2} \right]$ for $t \in [0, \bar{t}]$ and $c = 0.9$. Both figures use parameters $\bar{t} = 1, R = 3, L = 1.5 + R + (1/c), \alpha_1 = 0.3, \alpha_2 = 0.6, B_1 = B_2 = 0.45$. For these parameters, $(t^*(\alpha_1), t^*(\alpha_2)) = (0.84, 0.93)$.

Summary

If growth-focused regulator 2 becomes even more growth-focused ($\uparrow \alpha_2$):

- No competitive deregulation.
- Internationally mobile banks see a reduction in the variance of regulation that they are offered.

If stability-focused regulator 1 becomes more growth focused ($\uparrow \alpha_1$)

- Competitive deregulation with both countries pushing regulatory stringency down.
- Regulation dispersion pulled towards a lower bound (t_*).
- But not a race all the way to the bottom ($t_* > \underline{t}_B$) if negative externality in sector (L) is large enough.

If more banks become internationally mobile (B_1 or $B_2 \downarrow$)

- Growth-focused regulator 2 becomes more likely to reduce regulatory stringency.
- The lower bound which both regulators could set (t_*) declines.

Growth-focused regulator 2 becomes even more growth-focused (α_2 increases)

Intuition

- Change to regulator 2 doesn't alter how low regulator 1 willing to go.
- Regulator 1 anticipates a more aggressive response from 2, and so reluctant to compete.
- In effect regulator 1 gives up a little:
 - Regulator 2 wins more international banks.

Policy Implications

- Regulator 2 closed-economy optimal regulation declines.
- Competitive deregulation *less* likely as more weight on setting closed-economy optimal.
- **No race-towards-the-bottom.**
- Less variation in regulation across the industry.

Stability-focused regulator 1 becomes more growth focused (α_1 increases)

Intuition

- Stability-focused regulator 1 lowers the regulatory stringency it offers in FOSD manner.
 - Regulator more focused on growth so more determined to win international banks.
- Lower bound of stringency declines
 - Stability-focused regulator sets this and it is more aggressive.
- Growth-focused regulator 2 lowers the regulatory stringency it offers in FOSD manner.
 - Regulator 2 matches rival's aggressiveness with a similar response.
- Global expected regulatory stringency for internationally mobile banks declines.
- Which regulator wins more internationally mobile banks is ambiguous.

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- Which regulator wins more internationally mobile banks is ambiguous.

Policy Implications

- Competitive deregulation intensifies.
- But not a race-to-the-bottom if externality (L) sufficiently large.
- Expected reduction in regulation for all banks.

More banks become internationally mobile

Proposition

If more banks become internationally mobile (either $(B_1 \searrow)$ or $(B_2 \searrow)$), then:

- ① *The (common) lower bound of regulatory stringency, t_* , falls.*
 - ② *Regulator 2 reduces regulatory stringency in a FOSD manner.*
 - ③ *Regulator 1's response is ambiguous.*
- Regulator 2, growth-focused, sees more value in competing and so becomes more aggressive.
 - Regulator 1 is willing to go lower if it will secure all the international banks.
 - But regulator 1 faces more aggressive regulator 2, though with larger prize if it wins; outcome on behaviour ambiguous.

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Textual Analysis to reveal growth focus

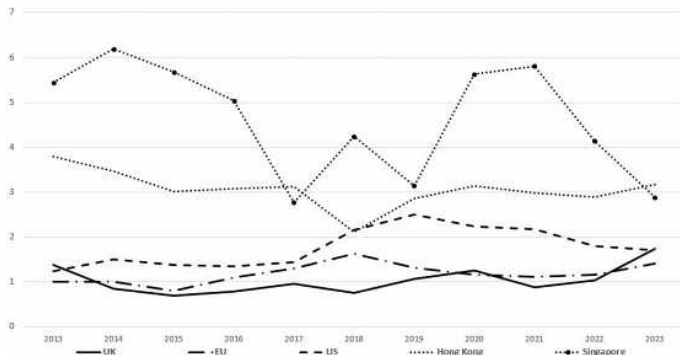
Summary of model results

- We parse 10 years of annual reports from key regulators for:
 - Top 1000 most repeated words. And of these count:
 - Growth focused words; growth, competitiveness, employment ...
 - Stability focused words; risk, resilience, soundness, crisis ...
 - Excluding monetary policy and statistical tables sections.
- Proxy α by ratio frequency growth words / frequency safety words.

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Textual Analysis to reveal growth focus

α proxy:
growth to
stability word
count ratio,
indexed to EU
measure in
2013



Growth Preference – Cross Country Comparison, 2013–2023

Note: This figure presents a proxy for α which we construct as the ratio between the frequency of growth-related words and the frequency of stability-related words found in the annual reports of the European Union, United Kingdom, United States, Singapore and Hong Kong. The figure presents the word count ratio relative to that of the EU in 2013 .