Discussion of

"How Good is International Risk Sharing? Stepping Outside the Shadow of the Welfare Theorems"

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Motivation

- **Perfect** risk sharing benchmark (w/ CRRA pref, $\omega = 1$)

$$\underbrace{\left(\frac{C^*}{C}\right)^{-\sigma}}_{\text{MRS}} = \underbrace{-\frac{\partial C}{\partial C^*}}_{\text{MRT:}\tilde{Q}}$$

+ welfare theorems hold $\rightarrow$ $\tilde{Q} = Q \equiv \frac{\mathcal{E}P^*}{P}$ $\rightarrow$ $\text{corr}\left(\Delta(c - c^*), \Delta q\right) = 1$

- In the data (Backus and Smith, 1993)

$$\text{corr}\left(\Delta(c - c^*), \Delta q\right) \leq 0$$

suggests **very poor** international risk sharing, but assumes $Q = \tilde{Q}$

Key Result of the Paper

- Main result: using their measure of $\tilde{q}$ they find (at annual Δ)

$$\text{corr}\left(\Delta(c - c^*), \Delta\tilde{q}\right) \approx 0.56$$

suggesting **much better** international risk sharing ▸ Country-level

  - MRT $\tilde{q}$ measured using $\{C, C^*, Y, Y^*\}$ ▸ Planner ▸ E. Box & CPF ▸ Algorithm
  - LOP deviations (μ) imply $q = \mu + \tilde{q}$ (Prop. 4)
  - gains from improving private risk sharing (BS wedge ψ) offset by μ:

$$\psi \downarrow \to \mathcal{E} \uparrow \to \mu \uparrow \implies \Delta\tilde{q} = \Delta(q - \mu) \approx 0 \qquad \text{(Prop. 5)}$$

- Additional results (H- vs. L-frequency, welfare, decentralization) ▸ Details

Discussion

1. **Dynamic Wedges and PIH**

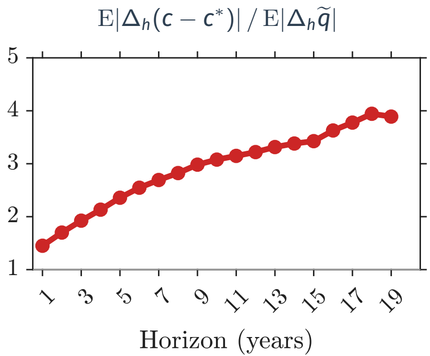
2. **Assumptions**

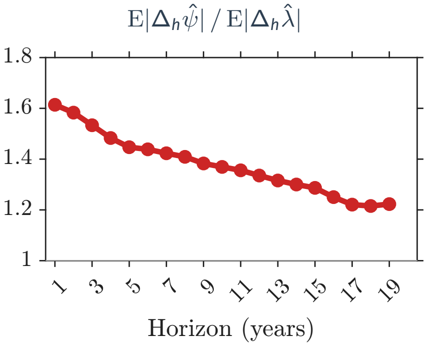
Dynamic Wedges and PIH

- **H**: dynamic wedge driven by uninsured **persistent** TFP shocks
- Is this consistent with MRS and MRT behavior?
    1. high- vs. low-frequency
    2. emerging vs. developed
    3. crises

High- vs. Low-Frequency

- long-run $\Delta(c - c^*)$ is much **larger** than $\Delta\tilde{q}$
  - this is shown in Table 1 and Figure 3 in the paper

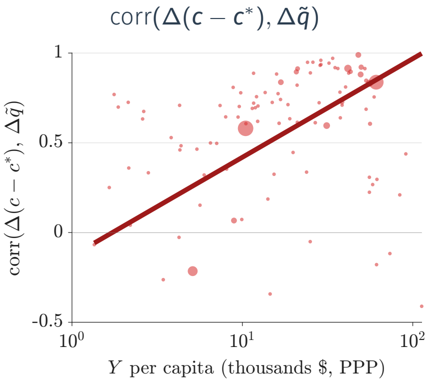




note: pooled across countries (2000–2019 sample); multi-horizon log differences.

Advanced vs. Emerging

- high-frequency $\text{corr}\left(\Delta(c-c^*), \Delta\tilde{q}\right)$ is **increasing** with income per capita
  - consistent with Aguiar and Gopinath (2007)



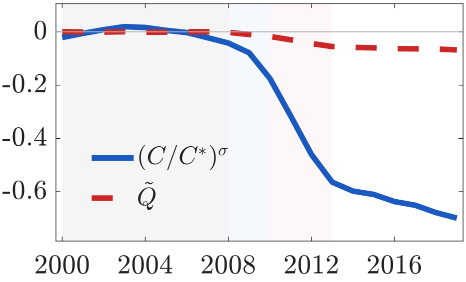
note: country-level, bubble size proportional to GDP; fitted lines GDP-weighted.

Regression on observables | BS corr

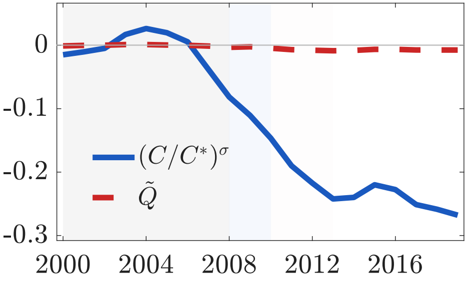
Crisis Dynamics

- C/C^* **drops significantly and persistently**, while $\tilde{Q}$ remains flat
  - consistent with Guntin, Ottonello, and Perez (2023)

Euro Crisis
(avg. GRC, ITA, ESP)



Great Recession
(U.S.)



note: logs relative to pre-crisis trend.

Dynamic Wedges and PIH

- **H**: dynamic wedge driven by uninsured **persistent** TFP shocks
- Is this consistent with MRS and MRT behavior?
    1. in high- vs. low-frequency ✓
    2. across emerging vs. developed ✓
    3. during crises ✓
- Shocks vs risk sharing capacity? ▸ Speculative approach

Assumptions

1. More general setup:
   - T and NT (low frequency and cross section; T-NT + nonH)
   - N-countries (RoW aggregation)

   under what conditions is it ok to abstract from these?

2. Trade costs and home-bias constant

   reasonable, but constrains application to post-2000s period

3. C is non-durable, but measured including durable expenditure

   likely inflates the BS wedge ψ (challenge: limited data on non-durable C)

4. Elasticity $\theta = 4$

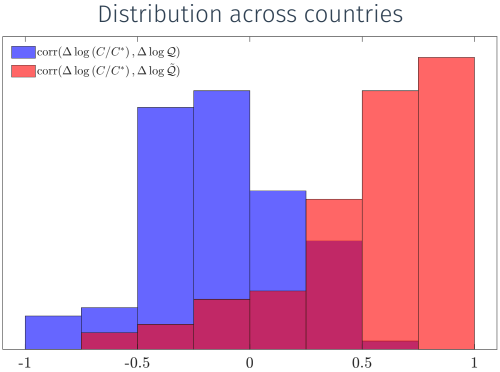
   how sensitive are results to this? ▸ Sensitivity

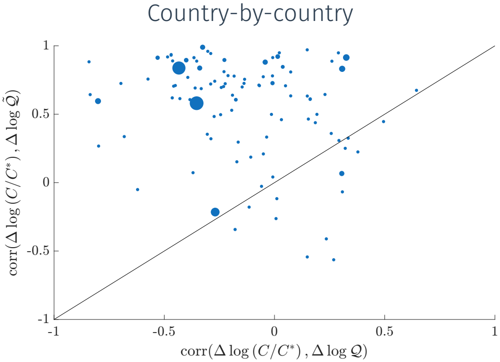
Final Remarks

- Excellent paper with a clear and novel methodological contribution
- **Key contribution**: develops a methodology to measure MRT w/o welfare theorems
- **Key result**: suggests international risk sharing is better than we thought
- A new moment to target and more to learn about these wedges

Additional slides

Distribution Across Countries





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Other Results

- Long-run risk sharing still poor (close to BS wedges)
- Welfare costs of static and dynamic wedges are orthogonal; welfare gains from improving risk sharing still large (1.1% of $\bar{c}$) due to poor long-run sharing
- Decentralization: asset trade frictions + PtM

  depreciation ($\psi \downarrow$, $q \uparrow$) increases cross-border markup ($\mu \uparrow$) $\rightarrow$ smoothing MRT ($\tilde{q}$)

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Optimality and Wedges

Planner's problem: solve for $\{C, C^*, C_H, C_H^*, C_F, C_F^*\}$:

$$\max\ \omega \sum_t \beta^t \frac{C_t^{1-\sigma}}{1-\sigma} + \sum_t \beta^t \frac{C_t^{*1-\sigma}}{1-\sigma}$$

subject to CES aggregators and resource constraints (omit t):

$$C = \left[(1-\gamma)^{1/\theta} C_H^{\frac{\theta-1}{\theta}} + \gamma^{1/\theta} C_F^{\frac{\theta-1}{\theta}}\right]^{\frac{\theta}{\theta-1}}, \qquad C_H + C_H^* = Y$$

$$C^* = \left[(1-\gamma^*)^{1/\theta} C_F^{*\frac{\theta-1}{\theta}} + \gamma^{*1/\theta} C_H^{*\frac{\theta-1}{\theta}}\right]^{\frac{\theta}{\theta-1}}, \quad C_F + C_F^* = Y^*$$

Static optimality (wedge δ):

$$\frac{C_H}{C_F} = (1+\delta)^\theta \left(\frac{1-\gamma}{\gamma}\right)\left(\frac{1-\gamma^*}{\gamma^*}\right)\frac{C_H^*}{C_F^*}$$

Dynamic optimality (wedge λ):

$$\omega\, C^{-\sigma}(1+\lambda)\frac{\partial C}{\partial C^*} + C^{*-\sigma} = 0$$

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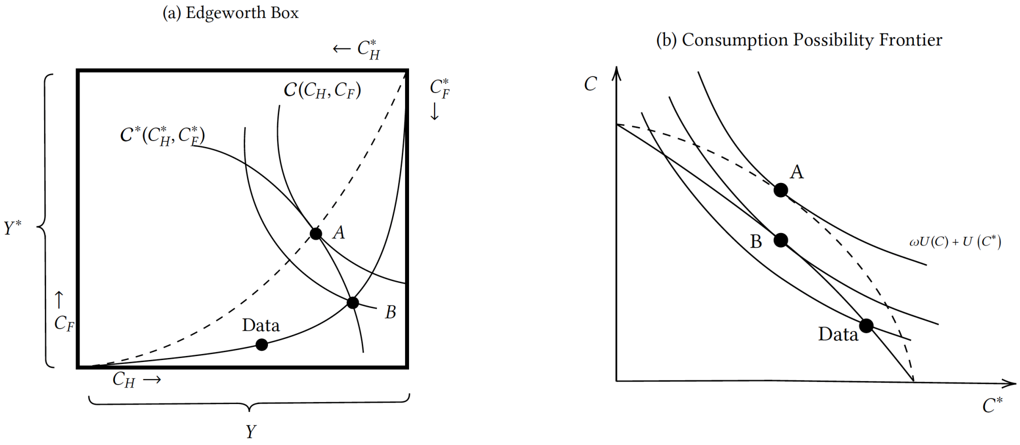
Edgeworth Box & Consumption Possibility Frontier

- A: efficient. B: constrained ($\delta \neq 0$) efficient. C: static + dynamic wedge



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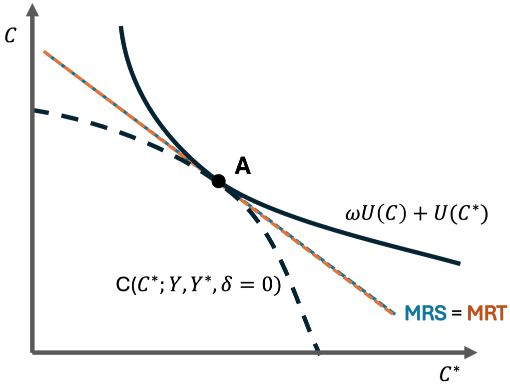
Consumption Possibility Frontier and Wedges

First-best

$(\delta = 0, \lambda = 0)$



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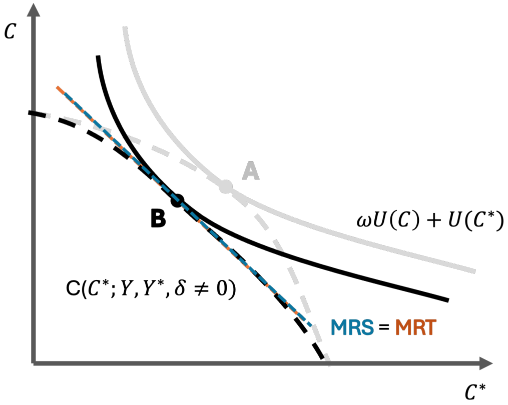
Consumption Possibility Frontier and Wedges

Static distortion

$(\delta \neq 0, \lambda = 0)$



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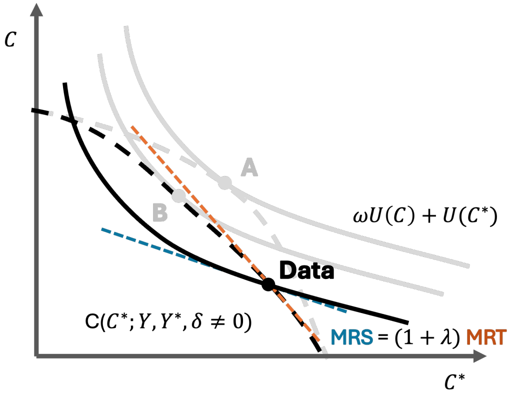
Consumption Possibility Frontier and Wedges

Static + Dynamic Distortion
$(\delta \neq 0, \ \lambda \neq 0)$



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Algorithm: Recovering Wedges from Data

Data: $\{\hat{Y}, \hat{Y}^*, \hat{A}, \hat{A}^*, \hat{C}, \hat{C}^*, \hat{Q}\}_{it}$ from WDI, all indexed to base year 2019.

Parameters: $\sigma = 2$, $\theta = 4$; base-year shares $\gamma_i, \alpha_i, \alpha_i^c$.

1. **Bilateral allocations.** Solve 4×4 nonlinear system (market clearing + CES) for $\hat{A}_{HH}, \hat{A}_{FH}, \hat{A}_{HF}, \hat{A}_{FF}$ per country-year. Convert to consumption: $\hat{C}_{ij} = \hat{A}_{ij} \cdot \hat{C}/\hat{A}$.
2. **Static wedge.** $\hat{\delta}_t = \left(\dfrac{\hat{C}_{HH}\,\hat{C}_{FF}}{\hat{C}_{FH}\,\hat{C}_{HF}} \right)^{1/\theta}$
3. **Planner's multipliers.** Solve linear system from FOCs of planner's problem $\rightarrow$ $(\lambda, \nu, \nu^*, \eta)_{it}$
4. **Wedge decomposition.** BS wedge $\hat{\Psi} \equiv \widehat{MRS}/\hat{Q}$ splits into:
   dynamic wedge $\hat{\Lambda} = \widehat{MRS}/\widehat{MRT}$ $\times$ static wedge $\widehat{MRT}/\hat{Q}$ (driven by δ).

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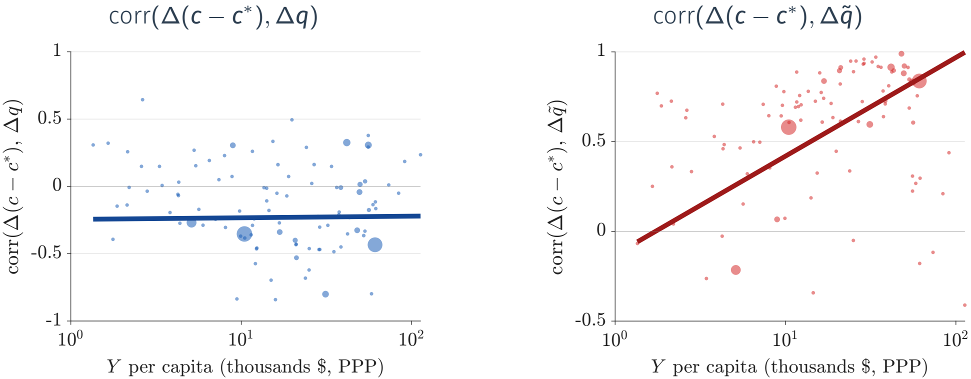
Advanced vs. Emerging: BS vs. Planner Correlation

- $\operatorname{corr}(\Delta(c - c^*), \Delta q)$ unrelated to Y p.c.



note: country-level, bubble size proportional to GDP; fitted lines GDP-weighted.

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Unpacking the Dynamic Wedge

- Approximate consumption growth (Blundell et al., 2008) as

$$\Delta c_t \approx \eta\, \xi_t + \phi\, \varepsilon_t + \epsilon_t + \Delta\Omega_t(\mathbf{S})$$

where ξ: permanent shocks, ε: transitory shocks, ϵ: noise, $\Omega(\mathbf{S})$: GE effects

- Relative consumption growth:

$$\Delta(c_t - c_t^*) = \eta\underbrace{(\xi_t - \xi_t^*)}_{\text{permanent}} + \phi\underbrace{(\varepsilon_t - \varepsilon_t^*)}_{\text{transitory}} + \underbrace{\epsilon_t - \epsilon_t^*}_{\text{noise}} + \underbrace{\Delta\Omega_t - \Delta\Omega_t^*}_{\approx \sigma^{-1}\Delta\tilde{q}}$$

- Identifying GE effects with the MRT: $\Delta\Omega - \Delta\Omega^* \approx \sigma^{-1}\Delta\tilde{q}$

$\Rightarrow$ Dynamic wedge growth is:

$$\Delta\lambda \equiv \Delta(c - c^*) - \sigma^{-1}\Delta\tilde{q} \approx \underbrace{\eta(\xi - \xi^*) + \phi(\varepsilon - \varepsilon^*) + \epsilon - \epsilon^*}_{\text{dynamic wedge}}$$

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Insurance Capacity vs Shock Structure

- Deviations from perfect risk-sharing (Blundell et al., 2008) as

$$\Delta\lambda \equiv \Delta(c - c^*) \;-\; \frac{1}{\sigma}\underbrace{\Delta(q-\mu)}_{\Delta\tilde{q}} = \underbrace{\eta\,(\varepsilon - \varepsilon^*)}_{\text{transitory}} + \underbrace{\phi\,(\xi - \xi^*)}_{\text{persistent}} + \underbrace{\epsilon - \epsilon^*}_{\text{noise}}$$

  where ϕ, η are partial insurance coefficients for permanent ξ and transitory ε

  (i) $\eta = \phi = 0$: full insurance (ii) $\eta = \phi = 1$: no insurance (iii) $\eta \approx 0$, $\phi \approx 1$: PIH

- Dynamic wedge conflates **shock structure** and **insurance capacity**
- **Potential approach**: use panel moments $\{y, y^*, c, c^*, \tilde{q}\}$ to identify $\{\eta, \phi\}$ and unpack the intertemporal wedge λ

  $\{\eta, \phi\}$ pin down what fraction of λ reflects insurance capacity vs. shock composition

▸ uncorrelated mrt ▸ correlated mrt ▸ derivation ◂ back

Income Shocks and MRT (i)

Using the $\Delta(c - c^*)$ expression from before, if shocks are **uncorrelated** with MRT:

$$\operatorname{corr}(\Delta(c - c^*),\, \Delta\tilde{q}) = \frac{\frac{1}{\sigma}\sigma_{\tilde{q}}}{\sqrt{\eta^2\sigma_\varepsilon^2 + \phi^2\sigma_\xi^2 + \frac{1}{\sigma^2}\sigma_{\tilde{q}}^2}}$$

Corr $\to 1$ as $\sigma_{\tilde{q}} \to \infty$ (risk sharing looks perfect when MRT moves a lot); corr $\to 0$ as $\eta, \phi \to \infty$ (uninsured shocks dominate).

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Income Shocks and MRT (ii)

If shocks are **correlated** with MRT (elasticities $\rho_\varepsilon, \rho_\xi$):

$$\operatorname{corr}(\Delta(c - c^*),\ \Delta\tilde{q}) = \frac{\eta\, \rho_\varepsilon \sigma_\varepsilon + \phi\, \rho_\xi \sigma_\xi + \frac{1}{\sigma}\, \sigma_{\tilde{q}}}{\sqrt{\left(\eta\sigma_\varepsilon + \frac{\rho_\varepsilon}{\sigma}\sigma_{\tilde{q}}\right)^2 + \left(\phi\sigma_\xi + \frac{\rho_\xi}{\sigma}\sigma_{\tilde{q}}\right)^2 + \frac{1 - \rho_\varepsilon^2 - \rho_\xi^2}{\sigma^2}\, \sigma_{\tilde{q}}^2}}$$

If persistent shocks drive MRT ($\rho_\xi > 0$, $\phi \approx 1$): corr can be high even with poor insurance.

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Advanced vs. Emerging: Cross-country OLS

	corr($\Delta c, \Delta q$)	corr($\Delta c, \Delta \tilde{q}$)
$\log(Y_{pc})$	-0.058^{*}	0.092^{**}
	(0.031)	(0.036)
log(Pop)	-0.013	-0.002
	(0.022)	(0.026)
log(Trade open.)	0.074	0.030
	(0.095)	(0.111)
GDP vol.	-2.396	-3.508
	(2.096)	(2.438)
R^2	0.051	0.091
N	102	102

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

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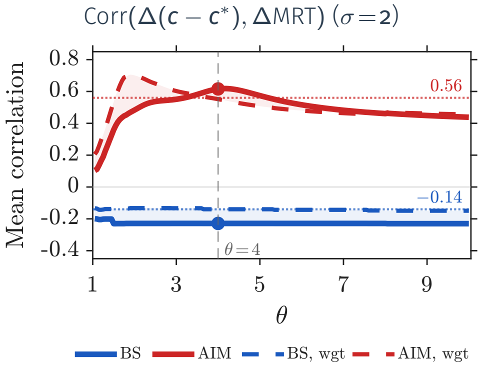
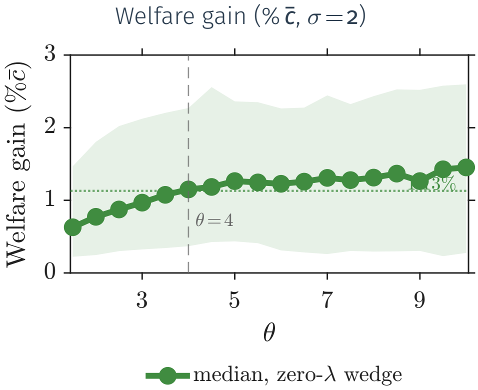
Sensitivity: Armington Elasticity θ





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