Financial Deepening and Carbon Emissions Intensity: Evidence from a Global Sample of Countries

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Outline

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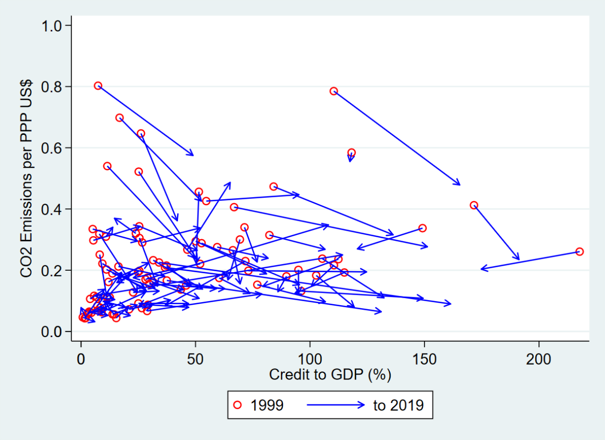
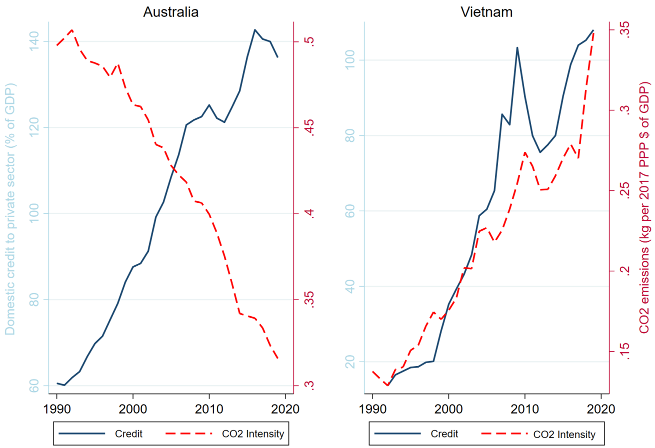
- Motivation
- Empirical Approach
- Results
- Conclusions

Credit and Carbon Around the World: *1990 vs. 2019*



Source: Data from the World Bank

Credit and Carbon: *Some Examples*



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- Policymakers: Financial deepening plays a key role in facilitating economic development, and could play a crucial role in green transition.
- Theory: No formal theoretical model. However, several channels linking financial deepening and CO2 emissions intensity have been proposed.
- ***But there is still little empirical evidence on the effect of financial deepening on CO2 emissions intensity.***

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- Banks might operate with a relatively short time horizon – loan maturity – leading them to ignore environmental risk (De Haas and Popov, 2023).
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- Expansion in bank lending alleviates firms' financial constraints – including constraints on polluting firms (Levine et al., 2018; Goetz, 2019).

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Better institutional environment, controlling for the level of economic development, could thus help to effectively manage the trade-off.

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Findings:

- Financial deepening increases the CO_2 intensity of the economy.
- However, more environmental regulations, a stronger rule of law, and a financial system that is relatively more market–based mitigate the positive effect of financial deepening on CO_2 emissions.

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- Financial deepening increases the CO_2 intensity of the economy.
- However, more environmental regulations, a stronger rule of law, and a financial system that is relatively more market–based mitigate the positive effect of financial deepening on CO_2 emissions.
- Hence, **banks tend to finance more traditional and carbon-intensive investments, but a better institutional environment seems to encourage banks to finance more innovative and greener investments.**

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- To sharpen the treatment identification, AIPW estimator of Jorda and Taylor (2016) is used in a robustness check.

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$$CO2_{i,t+h} - CO2_{i,t} = \alpha_i + \beta_1^h FD_{i,t} + \beta_{2j}^h \sum_{j=1}^{2} FD_{i,t-j} + \beta_{3h}^h \sum_{h=1}^{h} FD_{i,t+h}$$
$$+\delta_l^h \sum_{l=0}^{3} (CO2_{i,t-l} - CO2_{i,t-1-l}) + \gamma^{h'} X_{i,t} + \tau_t + \epsilon_{i,t+h}, \;\; for \;\; h = 1, ..., 5 \tag{1}$$

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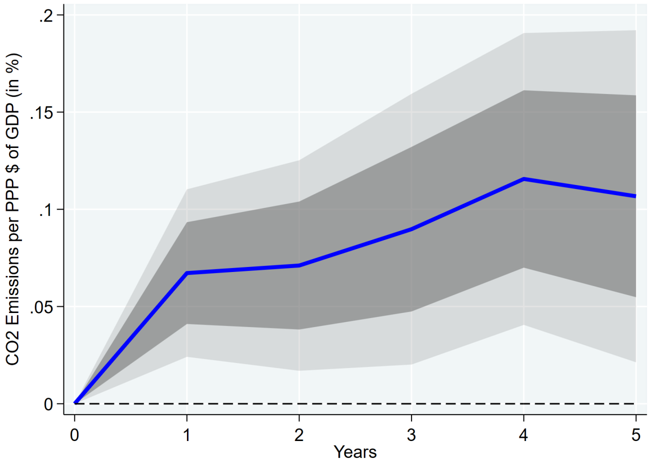
- We then **compare the estimated impulse responses** $\{\beta_{1a}^{h}\}_{h=0}^{H}$ and $\{\beta_{1b}^{h}\}_{h=0}^{H}$ to gauge the difference in the effect of financial deepening that occurs in countries **w/o better institutions**.

Effect of Financial Deepening



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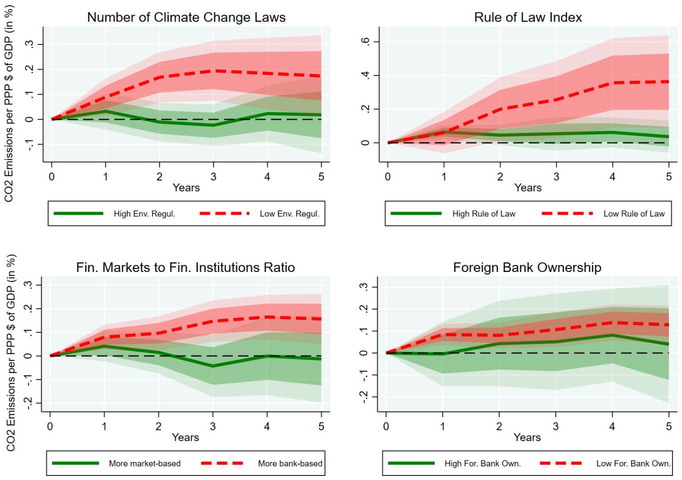
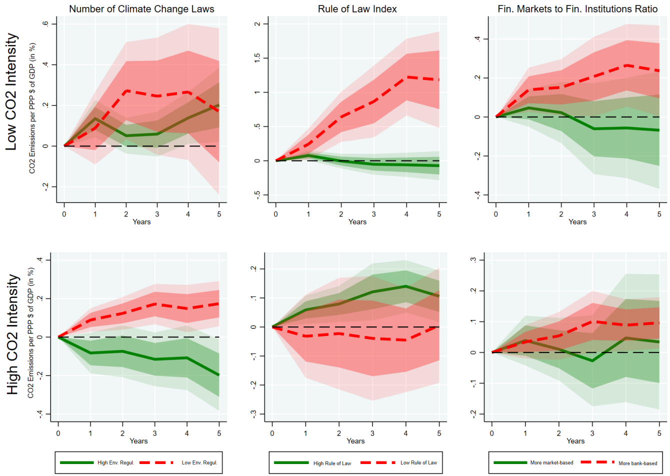
- Banking crises do not influence the CO_2 intensity of the economy.

Effect of Financial Deepening *w/o Better Institutions*



Effect of Financial Deepening *w/o Better Institutions*: High vs. Low CO2 Intensity



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- **In a better institutional environment, banks tends to finance investments in riskier and more innovative investments that are less carbon-intensive.**

Robustness Checks

- Financial Development Index of Svirydzenka (2016)
- Augmented Inverse Probability Weighted (AIPW) estimator
- Instrumental variables
- Nickell bias and cross-sectional dependence
- Panel Vector Autoregressive (PVAR) Model

Conclusions

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While there is a trade-off in the effect of financial deepening, this trade-off can be effectively managed.

Thank you for your attention!

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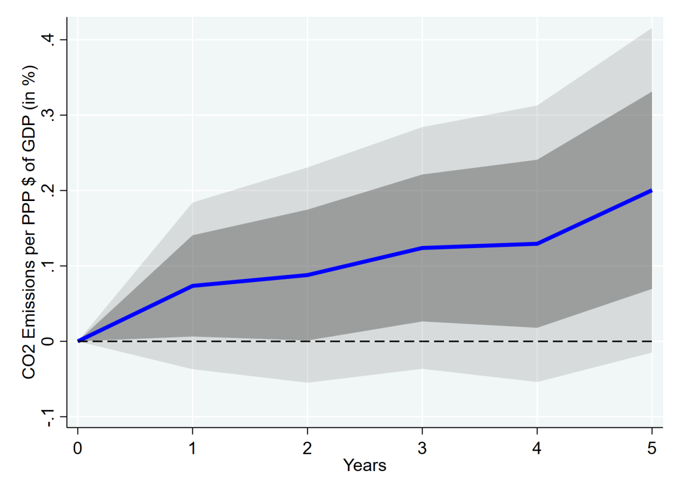
Ekonomický ústav SAV
Institute of Economic Research SAS

Financial Development Index of Svirydzenka (2016)



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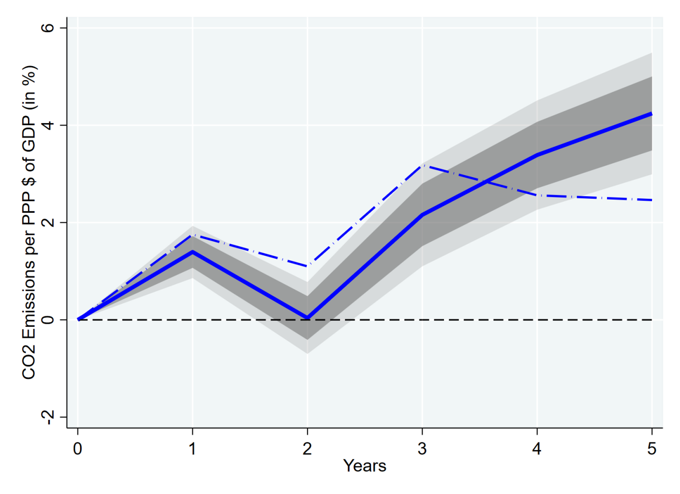
Augmented Inverse Probability Weighted (AIPW) Estimator



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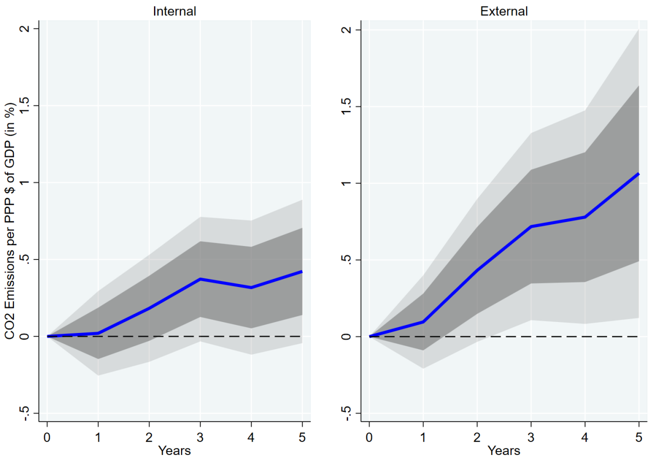
Instrumental Variables



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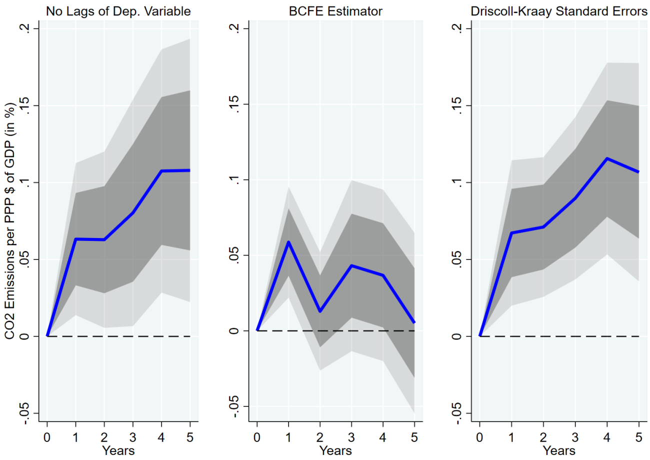
Nickell Bias and Cross-Sectional Dependence



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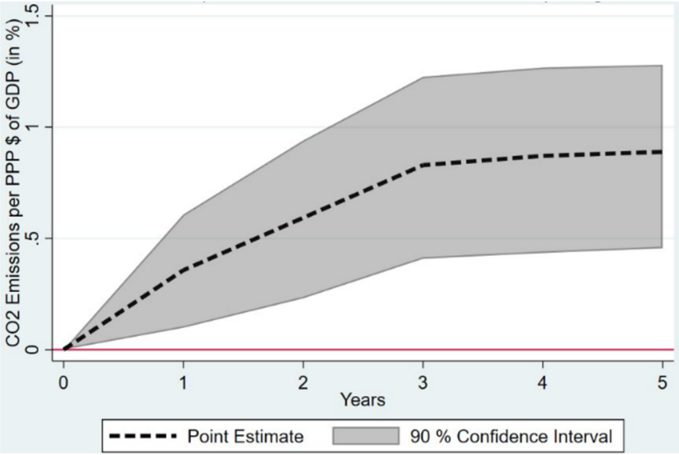
Panel Vector Autoregressive (PVAR) Model



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