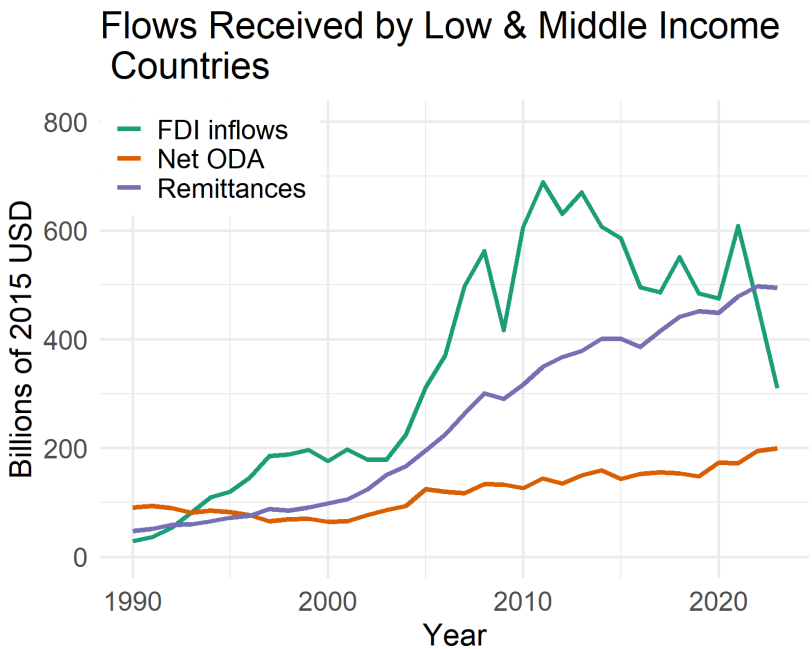
Remittances, Credit Constraints, and Growth: Cross-Country Evidence

Athiwat Thoopthong & Henry Young

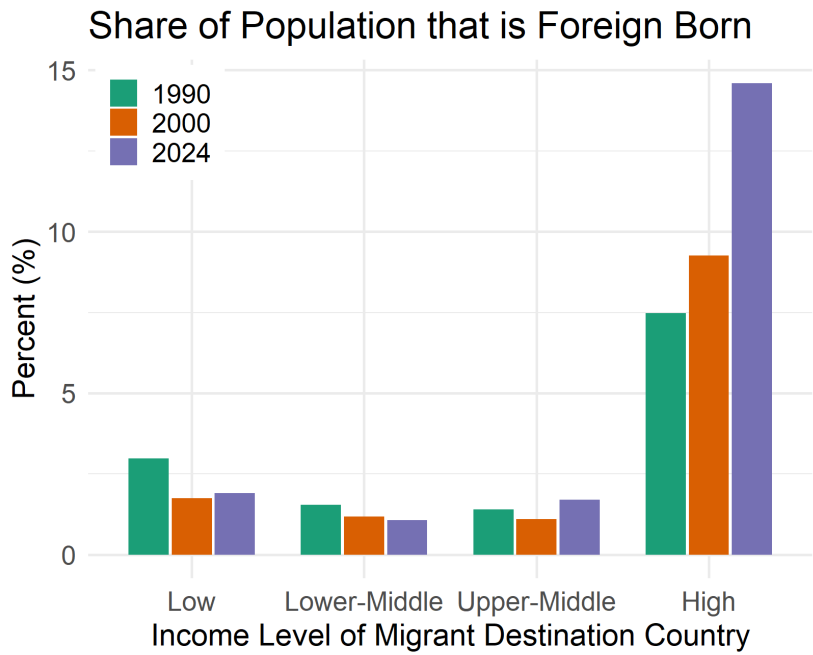
University of Michigan

June 26, 2026

Motivation



Source: World Bank. Data ends in 2023.



Source: UN DESA International Migrant Stock & Our World in Data.

- Remittances are now the largest source of external finance for developing countries
- Unlike FDI or aid, they flow **directly to households**
- Yet their aggregate effects, including spillovers across countries through trade networks, remain poorly understood

This paper

Research questions

1. How large are the real GDP gains from remittances in low- and middle-income countries, and what is the role of the investment financing channel?

2. How has globalization shaped these gains through changes in the global trade network?

Empirical strategy: Shift-share IV to estimate causal effects on macroeconomic and financial outcomes

Quantitative model: Dynamic, multi-country, multi-sector GE with a collateral-style investment financing constraint ϕ_n to quantify long-run welfare and cross-country spillovers

◂ Lit Review

What we find

Empirically

- 1% remittance shock $\Rightarrow$ GDP $+0.07\%$, consumption and investment $+0.19\% \Rightarrow$ multiplier of **1.5**
- Effects concentrated in LMICs; zero in high-income countries
- Imports rise, exports unchanged : no Dutch disease
- Private credit $+0.38\%$, largest where credit markets are least developed

Quantitatively

- (Mean) real GDP gain from 2000–2022 remittance boom is **2.6%**
- (Mean) real GDP gain would fall to **1.6%** if we assume LMICs are not financial constraint
- Deepening trade integration has offset the real GDP gain by **45%**, to 1.44%

Empirics

Data

Sample: 166 countries (55 high-income, 111 LMICs), 2000–2024

Key variables:

- **Remittances**: personal remittance inflows(BPM6: personal transfers + compensation of non-resident employees) — World Bank WDI
- **Macro outcomes**: GDP, consumption, investment, imports, exports — World Bank WDI
- **Financial outcomes**: private credit, liquid liabilities, bank assets, deposits — IMF Global Financial Development Database

	Low	Low-Mid	Upper-Mid	High
Annual inflow growth	12.6%	8.6%	5.6%	5.7%
Remittances / GDP	3.9%	6.7%	6.0%	1.9%
Remittances / investment	20.8%	43.2%	28.1%	4.7%
Remittances / private credit	46.9%	36.7%	19.5%	2.8%

Empirical strategy

Estimating equation:

$$\Delta \ln(y)_{o,t} = \beta_1 \Delta \ln(\text{Remit})_{o,t} + \beta_2 \Delta \ln(y)_{o,t-1} + \beta_3 \Delta \ln(\text{Remit})_{o,t-1} + \beta_4 \Delta \ln(\text{Pop})_{o,t} + \delta_t + \epsilon_{o,t}$$

The identification challenge:

- Remittances are countercyclical: migrants send more when the origin economy deteriorates, inducing a negative correlation between $\Delta \ln(\text{Remit})_{o,t}$ and $\epsilon_{o,t}$

$\Rightarrow$ OLS estimates of β_1 are biased toward zero

◂ Data

Shift-share instrument

$$\text{IV}_{o,t} = \sum_{d \neq o} \lambda_{od,1980} \; \Delta \ln(\text{Remit Outflows})_{d,t}$$

- **Shares** $\lambda_{od,1980}$: bilateral migrant stocks in 1980
- **Shifts**: remittance outflow growth from destination d, exogenous to origin-country conditions
- **Trimming**: drop corridors with $\lambda_{od,1980} > 0.1$ (e.g. Mexico–US); control for sum of retained shares

---

Relevance: the instrument is significantly correlated with $\Delta \ln(\text{Remit})_{o,t}$
Exclusion restriction: the 1980 emigrant distribution is uncorrelated with subsequent origin-country shocks, conditional on controls and year fixed effects

Fact 1: Remittances Raise GDP, Consumption, and Investment

Table 1: Impact of Remittances on Macroeconomic Outcomes

	(1) $\Delta \ln(\text{GDP})$	(2) $\Delta \ln(\text{Priv. Cons.})$	(3) $\Delta \ln(\text{Invest.})$	(4) $\Delta \ln(\text{Imports})$	(5) $\Delta \ln(\text{Exports})$
$\Delta \ln(\widehat{\text{Remit}})_{o,t}$	0.070^{***}	0.192^{***}	0.194^{*}	0.136	0.002
	(0.024)	(0.062)	(0.117)	(0.091)	(0.072)

- 1% remittance shock $\Rightarrow$ GDP $+0.070\%$, consumption $+0.192\%$, investment $+0.194\%$; implied multiplier $\approx$ **1.5** ▸ How?
- Comparable to open-economy fiscal multiplier estimates in Nakamura and Steinsson [2014]
- Imports rise, exports unchanged; no Dutch disease; remittances raise spending that leaks abroad through imports

Effects concentrated in LMICs; statistically zero in high-income countries

Table 2: Low and Middle Income Countries Only

	(1) $\Delta \ln(\text{GDP})$	(2) $\Delta \ln(\text{Priv. Cons.})$	(3) $\Delta \ln(\text{Invest.})$	(4) $\Delta \ln(\text{Imports})$	(5) $\Delta \ln(\text{Exports})$
$\Delta \ln\widehat{(\text{Remit})}_{o,t}$	0.079**	0.253**	0.191	0.120	−0.089
	(0.033)	(0.117)	(0.223)	(0.141)	(0.118)

Table 3: High Income Countries Only

	(1) $\Delta \ln(\text{GDP})$	(2) $\Delta \ln(\text{Priv. Cons.})$	(3) $\Delta \ln(\text{Invest.})$	(4) $\Delta \ln(\text{Imports})$	(5) $\Delta \ln(\text{Exports})$
$\Delta \ln\widehat{(\text{Remit})}_{o,t}$	0.014	0.086	0.113	0.187	0.079
	(0.032)	(0.091)	(0.175)	(0.133)	(0.100)

- Remittance-GDP multiplier in low-income, low-middle, upper-middle, and high, respectively, are: 2.03, 1.18, 1.32, and 0.74

Fact 2: Remittances Deepen Financial Markets

Table 4: Impact of Remittances on Financial Outcomes

	(1) $\Delta \ln$ (Priv. Credit)	(2) $\Delta \ln$ (Liq. Liab.)	(3) $\Delta \ln$ (Bank Assets/GDP)	(4) $\Delta \ln$ (Deposits)	(5) Δ (Credit/Dep.)
$\Delta \ln \widehat{(\text{Remit})}_{o,t}$	0.384^{***}	0.470^{***}	0.248^{**}	0.257^{***}	0.221^{**}
	(0.108)	(0.134)	(0.103)	(0.087)	(0.096)

- Credit rises more than deposits: remittances are intermediated into new lending, amplifying investment beyond the pure income effect

Response is largest where credit markets are least developed

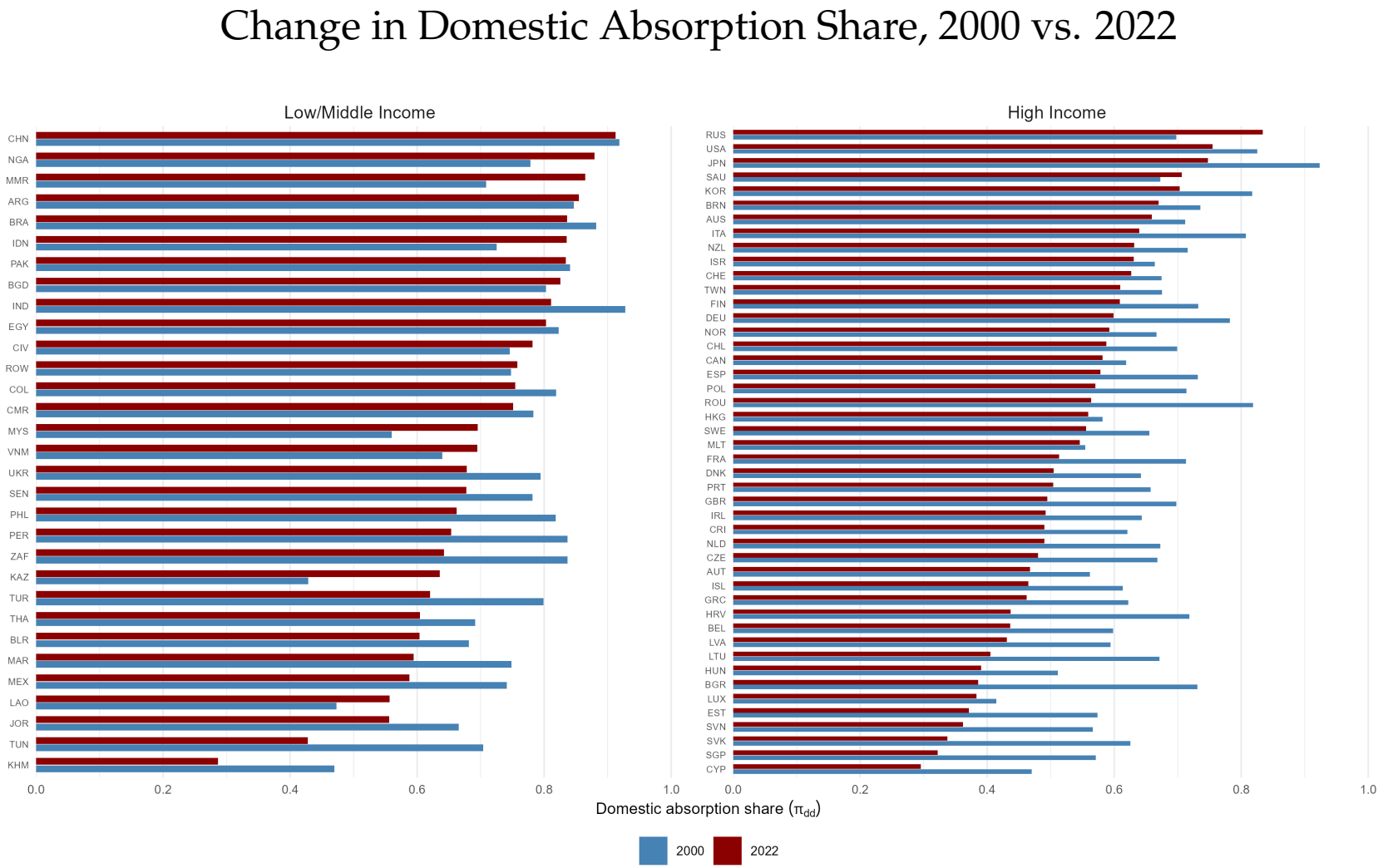
Table 5: Impact of Remittances on Financial Outcomes: Interaction with Private Credit

	(1) $\Delta \ln$ (Priv. Credit)	(2) $\Delta \ln$ (Liquid Liabilities)	(3) $\Delta \ln$ (Bank Assets/GDP)	(4) $\Delta \ln$ (Deposits)	(5) $\Delta \ln$ (Credit/ Deposits)
$\Delta \ln(\widehat{\text{Remit}})_{o,t}$	0.696^{***}	0.791^{***}	0.490^{***}	0.504^{***}	0.402^{***}
	(0.191)	(0.189)	(0.166)	(0.141)	(0.144)
$\Delta \ln(\widehat{\text{Remit}})_{o,t} \times \ln(\text{Credit})_{o,2000}$	-0.089^{*}	-0.050	-0.054	-0.080^{**}	-0.053
	(0.052)	(0.065)	(0.051)	(0.038)	(0.039)

- Interaction **negative in every column**: pass-through is lower where initial credit markets are deeper
- 75th $\rightarrow$ 25th pct of initial credit ($\sim$48% $\rightarrow$ $\sim$10% of GDP): private credit 0.35 $\rightarrow$ 0.49 (+40%); deposits 0.19 $\rightarrow$ 0.32 (+65%)

▸ Robustness

Fact 3: Trade Openness Has Risen, Dampening Remittance Pass-Through



Taking Stock

Three facts from the data

- Remittances raise GDP and investment in LMICs (multiplier >1); insignificant in high-income countries
- No Dutch disease: imports rise, exports unchanged
- Effects largest where financial markets are least developed; trade openness may dampen pass-through

What reduced-form IV cannot tell us

- How large are aggregate gains from the 2000–2022 boom across countries?
- How much is amplified by the financing constraint?
- How does the trade network shape cross-country spillovers?

We build a quantitative GE model to trace aggregate impacts and cross-country spillovers through the global trade network.

Model

Model Setup

- Dynamic multi-country, multi-sector general equilibrium
  - 76 countries + ROW; 4 sectors ◂ Diagram
  - Countries trade final goods and intermediate inputs across sectors. A shock in one country propagates through the global supply chain

- **Households** earn labor and capital income, and receive net remittances ◂ household problem
  - Choose consumption and investment each period; accumulate capital over time
  - Remittance flows are **exogenous**. They are taken directly from data, not determined by migrant stocks or economic conditions
  - Investment capped at fraction ϕ_n of total income for LMICs ◂ Fact 2
    Remittances relax the ceiling and amplify the investment response :
    $P_{n,t}I_{n,t} \leq \phi_n \left[W_{n,t}L_{n,t} + R_{n,t}K_{n,t} + T_{n,t} \right]$ ◂ More ◂ Alternative

Model Setup II

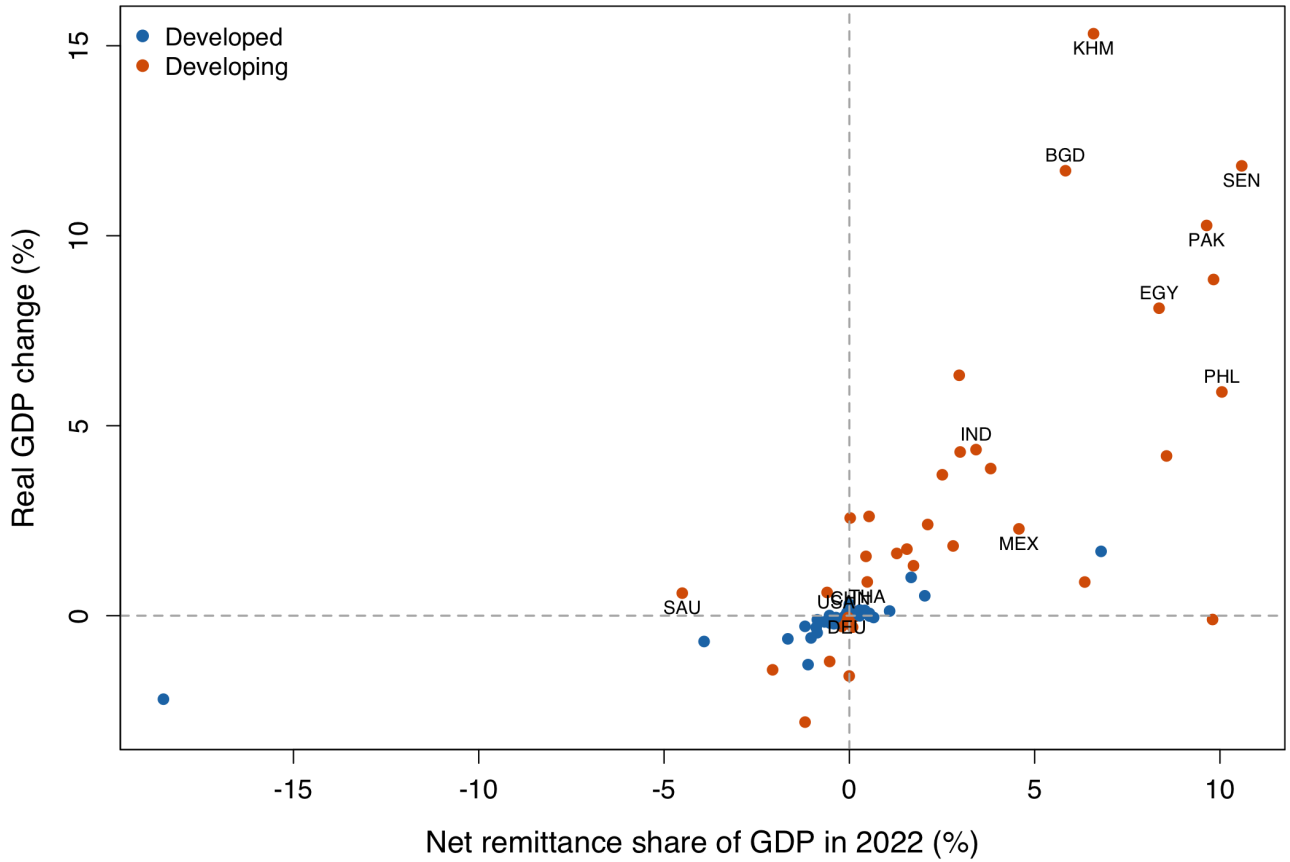
- **Representative firm** in each sector produce using labor, capital, and intermediate inputs
  - Inputs sourced from domestic and foreign suppliers; competitive price-taking
  - Demand shocks propagate upstream through input-output linkages across all countries
- **Trade** links households and firms across all 77 countries
  - Bilateral shares follow a gravity structure with iceberg costs and substitution elasticities ε, ρ
  - The domestic absorption share π_{nn} governs how much remittance-financed demand stays home vs. leaks abroad
- **Solution and counterfactuals**
  - Solved from steady-state to steady-state via hat algebra, anchored directly to observed data ◂ Data
  - Counterfactuals compare shocked vs. no-shock equilibria within the same calibrated economy ◂ Hat Algebra

Counterfactuals

In each counterfactual, we calibrate the world economy to 2000 and:

1. **Quantify the remittance boom** by shocking each country's change in net remittances between 2000 and 2022
2. **Isolate the financing channel** by re-running the same exercise but turn the investment-financing constraint on and off
3. **Isolate the role of globalization** by re-running the same exercise but replacing the 2000 trade matrix with its 2022 counterpart

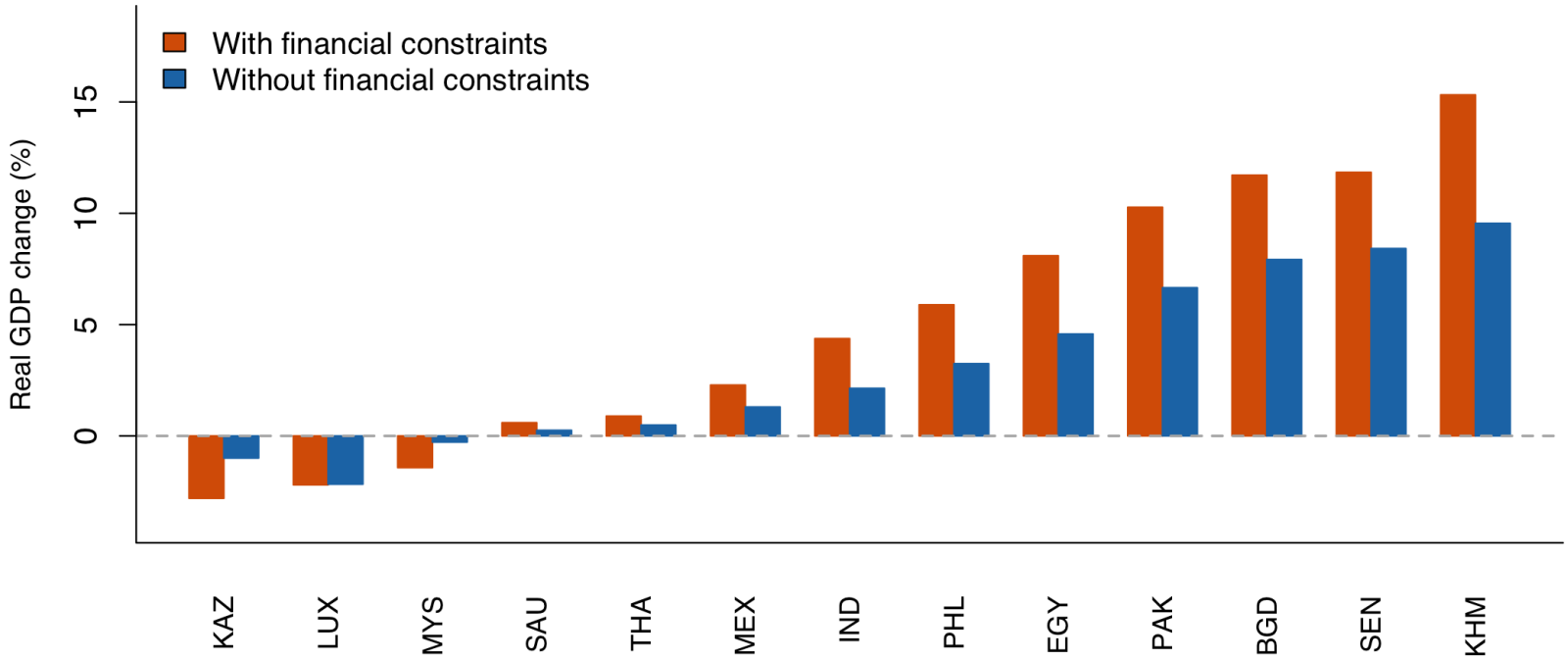
1. Quantifying the Remittance Boom 2000-2022



- Remittance boom expands real GDP in LMICs (mean +2.6%) with negligible effects on high-income countries (mean -0.2%)
- Thailand real GDP gain: +0.89%

◂ Welfare

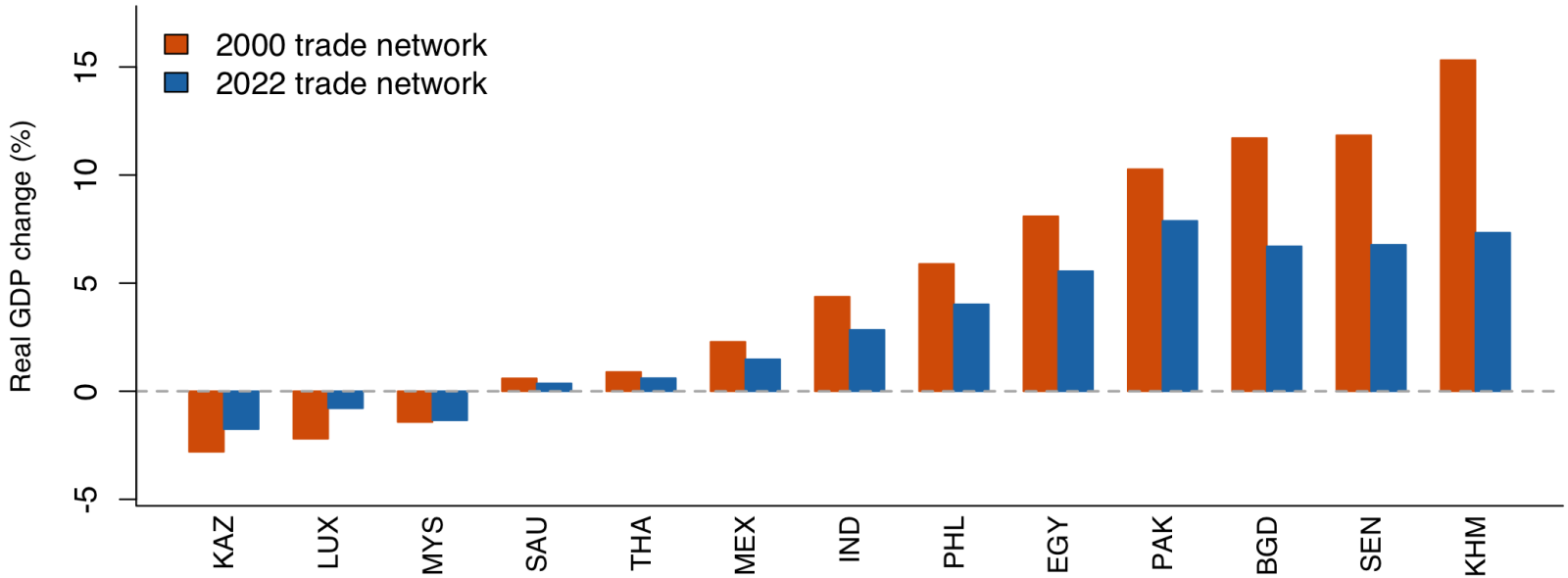
2. Remittances have a Larger Impact on Financially Constrained Countries



- Ignoring financial constraints understates the remittance boom's impact: mean real GDP gain falls from 2.6% to 1.6%
- LMICs are precisely where financial constraints are most likely to bind. Omitting them misses **38%** of the total gain
- Thailand real GDP gain: +0.49%

◂ Welfare

3. Trade Integration Dampens Impact of Remittances



- The remittance boom raises mean real GDP by +2.6% under the 2000 trade network. The 2022 network still delivers +1.44%, despite deeper global integration
- Trade expansion spreads remittance-financed demand across more exporters, attenuating ∼45% of the gain
- Thailand: real GDP gain of +0.6% (2022 trade network) vs 0.89% (2020 trade network)

◂ Welfare change

Conclusion

Two questions: What are the the cross-country impact of remittances? How has globalization shaped cross-country spillovers from remittances?

- **Remittances are macroeconomically significant in LMICs:** a 1% increase in remittance inflows raises GDP 0.07%, consumption and investment $\sim$0.19% (multiplier $\approx$ 1.5)
- **Remittances have a Larger Impact on Financially Constrained Countries:** remittances relax a binding investment constraint and deepen credit markets (private credit +0.38%), with the largest effects where credit is least developed
- **Real GDP gains are attenuated by globalization:** the 2000–2022 boom raised mean LMIC real GDP by 2.6%; the financing constraint accounts for $\sim$38% of this gain, while deeper trade integration offsets $\sim$45% of it (to 1.44%)

Next Steps

- **Endogenize remittance flows**
  - Currently treat remittances as exogenous
  - Allow flows to depend on migrant stocks and origin/destination outcomes

- **Dynamic transition path**
  - Hat-algebra delivers long-run steady-state comparisons
  - Solve full transition path via dynamic hat algebra to capture adjustment dynamics
  - Change constraint from a income-based to an asset-based collateral constraint

Thank You!

Please email any questions/comments to athiwat@umich.edu and hlryoung@umich.edu

Related literature

Macroeconomic effects of remittances

Acosta et al. [2009], Lartey et al. [2012], Frankel [2009], Bettin et al. [2017], Combes and Ebeke [2011], Chami et al. [2005], Giuliano and Ruiz-Arranz [2009], Aggarwal et al. [2011], Bahadir et al. [2018], Durdu and Sayan [2010]

$\Rightarrow$ We provide **cross-country causal estimates** and embed the credit channel in a multi-country GE model

Causal evidence on remittances and household welfare

Yang [2008], Yang and Choi [2007], Cox Edwards and Ureta [2003], Woodruff and Zenteno [2007], Khanna et al. [2025], Caballero et al. [2023], Bonadio et al. [2024]

$\Rightarrow$ We scale from household transfers to aggregate welfare, capturing trade-network spillovers that single-country studies cannot identify

Quantitative models of trade, capital flows, and remittances

Huo et al. [2025], Caliendo et al. [2019], Dekle et al. [2007], Di Giovanni et al. [2015], Albert and Monras [2022], Pan and Sun [2024]

$\Rightarrow$ We introduce **cross-country income transfers** and a **binding investment financing constraint** ϕ_n, and show how trade-network evolution attenuates the welfare pass-through of remittance shocks

Back

Computing the remittance multiplier

$\hat{\beta}_1 = 0.070$ is an **elasticity**:

$$\hat{\beta}_1 = \frac{\%\Delta \text{GDP}}{\%\Delta \text{Remit}} = \frac{\Delta \text{GDP}/\text{GDP}}{\Delta \text{Remit}/\text{Remit}}$$

Rearranging gives the dollar-for-dollar multiplier:

$$\text{Multiplier} = \frac{\Delta \text{GDP}}{\Delta \text{Remit}} = \hat{\beta}_1 \times \frac{\text{GDP}}{\text{Remit}} = 0.070 \times \frac{1}{0.047} \approx \mathbf{1.5}$$

- 0.047 is the sample average remittance-to-GDP ratio (from Table 1)
- Interpretation: one additional dollar of remittances raises GDP by \$1.50
- Comparable to open-economy fiscal multiplier estimates in Nakamura and Steinsson [2014]

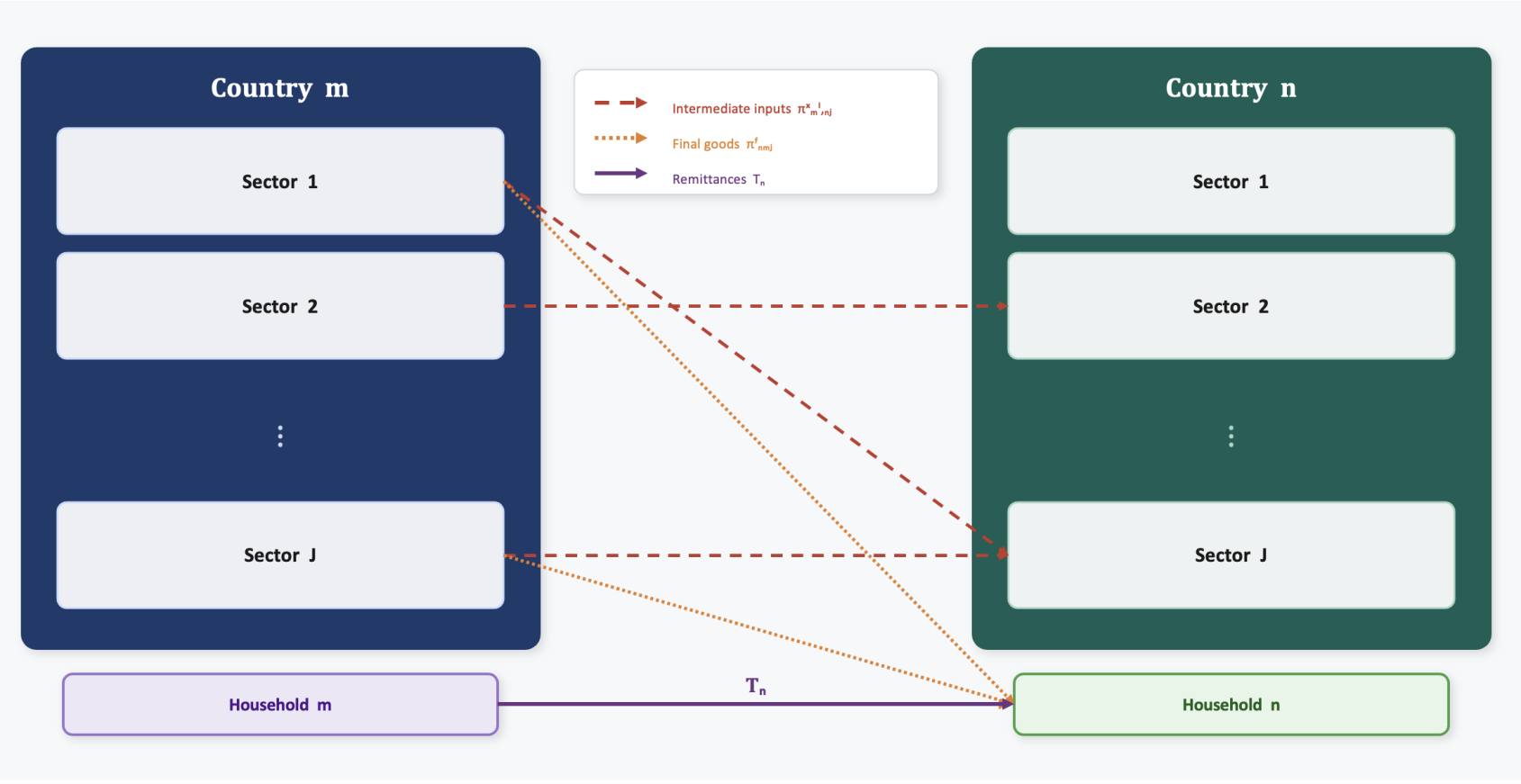
Back

Robustness Check

Results are robust across the following exercises

- **Alternative share base years**: 1960 and 2000 migrant-share weights; GDP and credit elasticities remain positive and significant
- **Alternative trimming thresholds**: tighter 0.05 cutoff and no trimming; estimates barely move, confirming results are not driven by dominant corridors
- **Shift-share controls**: add instruments using destination export and FDI outflow growth as shifts; financial-sector elasticities unchanged
- **Sample restrictions**: drop small countries (below 25th population percentile) and highly remittance-dependent economies (above 90th remittance-to-GDP percentile)
- **Winsorization**: tighter 1%–99% threshold and no winsorization; macro results hold cleanly; financial results noisier without winsorization but private credit and deposits remain positive

All exercises replicated for both macroeconomic (Fact 1) and financial sector (Fact 2) outcomes. Back


Country m
Sector 1
Sector 2
Sector J
Household m
Intermediate inputs $\pi^{x}_{m,nj}$
Final goods π^{f}_{nmj}
Remittances T_n
T_n
Country n
Sector 1
Sector 2
Sector J
Household n

Back

Household problem

- Preferences (GHH)

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \ln\left(C_{n,t} - \chi_n \frac{L_{n,t}^{1+1/\psi}}{1+1/\psi} \right)$$

- Labor supply depends only on the real wage (no wealth effect)

$$\chi_n L_{n,t}^{1/\psi} = \frac{W_{n,t}}{P_{n,t}}$$

- Budget constraint

$$P_{n,t}(C_{n,t} + I_{n,t}) = W_{n,t}L_{n,t} + R_{n,t}K_{n,t} + T_{n,t}$$

where $T_{n,t} \equiv T_{n,t}^{\text{in}} - T_{n,t}^{\text{out}}$ is net remittance income

- Law of motion of capital $K_{n,t+1} = (1-\delta_n)K_{n,t} + I_{n,t}$

Back

Welfare Measure

Lifetime utility with GHH preferences:

$$\max_{\{C_{n,t},I_{n,t},L_{n,t}\}} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \log\left(C_{n,t} - \chi_n \frac{L_{n,t}^{1+1/\psi}}{1+1/\psi}\right)$$

Welfare is the log change in the GHH consumption composite $\tilde{C}_{n,t} \equiv C_{n,t} - \chi_n \frac{L_{n,t}^{1+1/\psi}}{1+1/\psi}$ between steady states

$$\Delta \mathcal{W}_n = \ln \frac{\tilde{C}_n'}{\tilde{C}_n}$$

- **Computation:** Using the labor FOC $\chi_n L_{n,t}^{1/\psi} = W_{n,t}/P_{n,t}$:

$$P_{n,t}\tilde{C}_{n,t} = P_{n,t}C_{n,t} - \frac{1}{1+1/\psi} W_{n,t}L_{n,t}$$

so $\Delta \mathcal{W}_n = \ln \frac{(P_n \tilde{C}_n)'}{P_n \tilde{C}_n} - \ln \hat{P}_n$, which we can recover from hat-algebra approach

Back

Computing Real GDP Change

Real sectoral value added is gross output minus intermediate inputs at base prices:

$$V'_{nj} = P_{nj} Y'_{nj} - P^X_{nj} X'_{nj}$$

Its log change decomposes as:

$$\ln V_{nj} = \frac{1}{\eta_j} \ln Z_{nj} + (1 - \alpha_j) \ln H_{nj}$$

where η_j is the value-added share, Z_{nj} is TFP, and H_{nj} is the labor-capital bundle.

Real GDP is the value-added-share-weighted sum across sectors:

$$\ln V_n = \sum_j \frac{V_{nj}}{V_n} \ln V_{nj}$$

- Real GDP change is a weighted average of sectoral value added changes
- Each sector's value added responds to the remittance shock through factor demand H_{nj}, delivered directly by the hat-algebra solution

Back

Investment Financing Constraint

- Households face a collateral-like cap on investment:

$$P_{n,t} I_{n,t} \leq \phi_n \left[W_{n,t} L_{n,t} + R_{n,t} K_{n,t} + T_{n,t} \right]$$

- $\phi_n = 1$: constraint slack; $\phi_n < 1$: binds
- Remittances $T_{n,t}$ enter the RHS $\Rightarrow$ positive shock relaxes the ceiling

Calibration

- Developed: $\phi_n = 1$; Developing: constraint binds $\Rightarrow$ recover from 2000 data:

$$\phi_n = \frac{P_n I_n}{W_n L_n + R_n K_n + T_n}$$

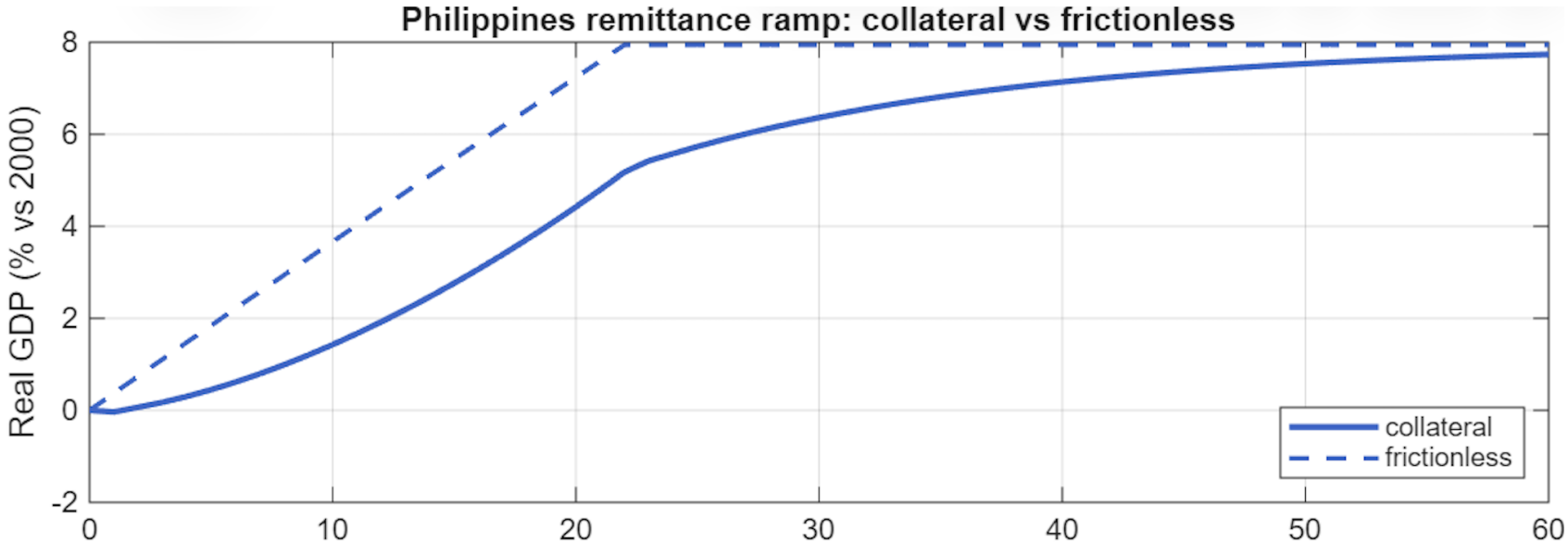
- Frictionless benchmark: investment-to-income ratio in high-income countries $s^* \approx 0.224$; developing economies avg. $\approx 0.15 < s^*$, confirming the constraint binds

Back

Alternative approach: Asset-based collateral constraint

Setup. Country borrows $D_{n,t} \leq \theta_n P^F_{n,t} K_{n,t+1}$ at world rate r^*; *impatience* $\beta(1+r^*) < 1$ makes it bind every period (θ_n sets the wedge $(1-\theta_n)(\rho-r^*)$, not whether it binds). Remittances T_n enter only the budget, so they self-finance capital by raising net worth over time.

Experiment. Difference a counterfactual (remittance boom) path against a baseline path, solved forward from observed data. Welfare effect from financing-constraint is PDV gap between θ_n-from-data and $\theta_n=1$ — the genuine self-financing dynamic absent in steady state.



Back

Quantification and Calibration

Coverage: 77 countries (76 + ROW), 4 sectors, year 2000

OECD ICIO

- Final use trade shares π^{f}_{mnj}
- Intermediate use trade shares $\pi^{x}_{mi,nj}$
- Sectoral expenditure shares υ_{nj}
- Value-added shares η_j
- Capital shares α_j

World Bank WDI

- Labor income $W_n L_n$
- Capital income $R_n K_n$
- Nominal investment $P_n I_n$
- Net remittances T_n

Calibrated parameters

- ϕ_n: investment financing constraint, recovered from observed investment data
- $\psi = 0.72$: Frisch elasticity of labor supply
- $\varepsilon = 0.89$, $\rho = 1.43$: trade elasticities from Huo et al. [2025]

Back

Equilibrium

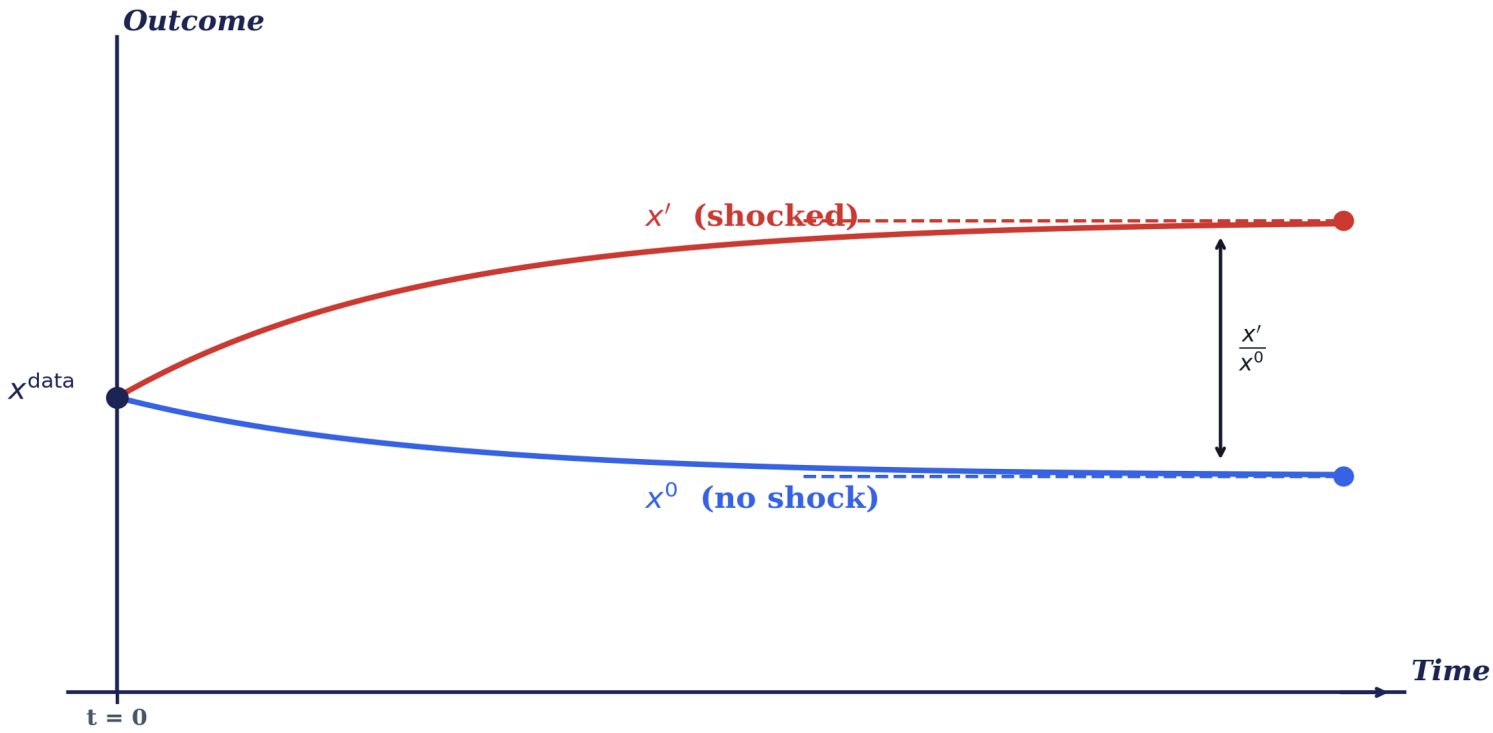
Given $\{T_{n,t}\}$ and $\{Z_{nj,t}\}$, an equilibrium consists of prices $\{P_{nj,t}, W_{n,t}, R_{n,t}\}$, factor allocations $\{K_{nj,t}, L_{nj,t}\}$, goods allocations $\{Y_{nj,t}, \mathcal{F}_{mnj,t}, X_{mi,nj,t}\}$, and household choices $\{C_{n,t}, I_{n,t}, L_{n,t}\}$ such that:

- **Household optimization:** households maximize utility subject to the budget constraint, capital accumulation, and the investment financing constraint $P_n I_n \leq \phi_n(W_n L_n + R_n K_n + T_n)$
- **Firm optimization:** competitive firms minimize costs taking prices as given
- **Goods market clearing:**

$$P_{nj}Y_{nj} = \sum_m P_m F_m \pi^f_{nmj} + \sum_m \sum_i (1 - \eta_{mi}) P_{mi} Y_{mi} \pi^x_{nj,mi}$$

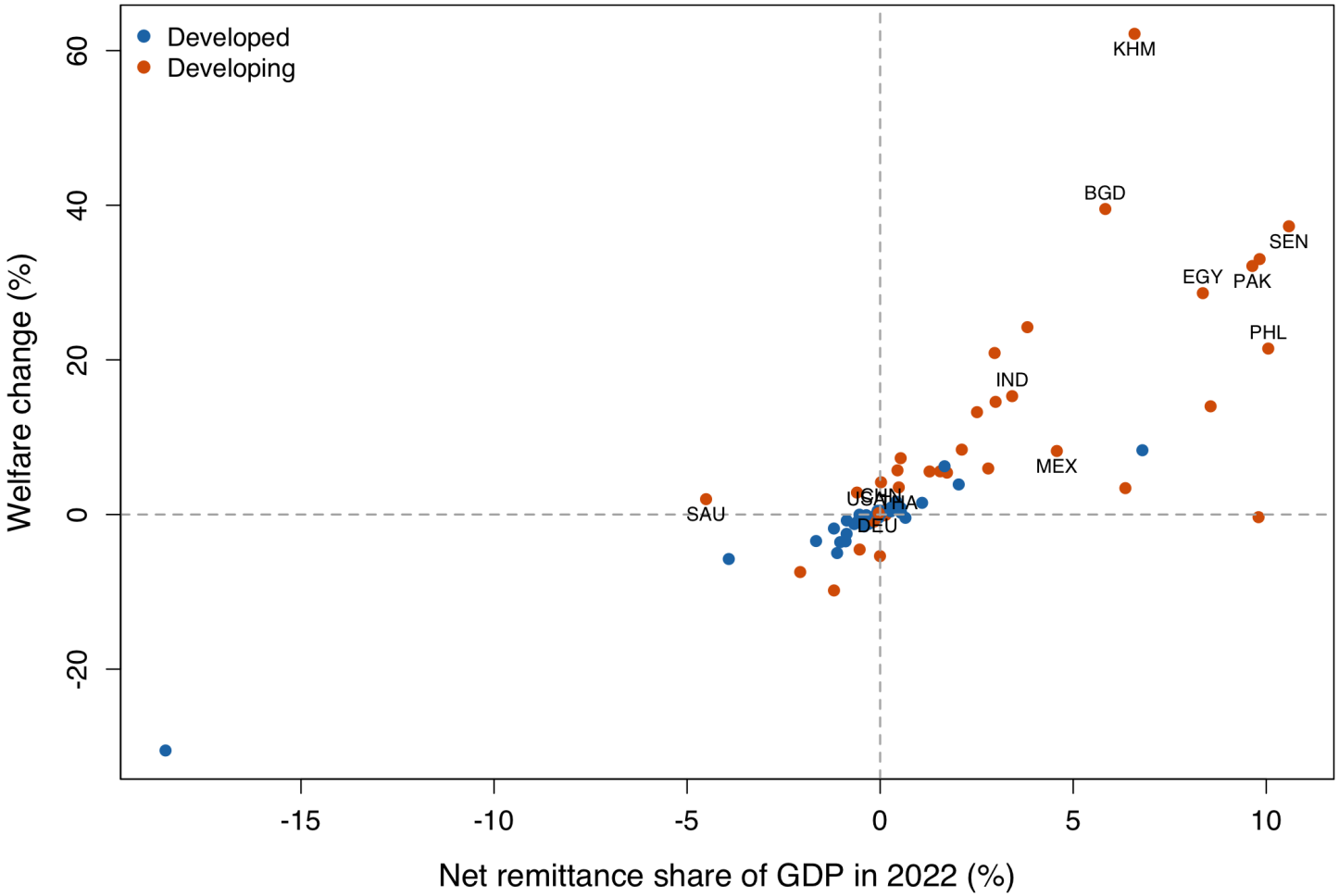
- **Labor market clearing:** $W_n L_n = \sum_j \alpha_{nj} \eta_{nj} P_{nj} Y_{nj}$
- **Capital market clearing:** $R_n K_n = \sum_j (1 - \alpha_{nj}) \eta_{nj} P_{nj} Y_{nj}$

Dynamic Hat-Algebra



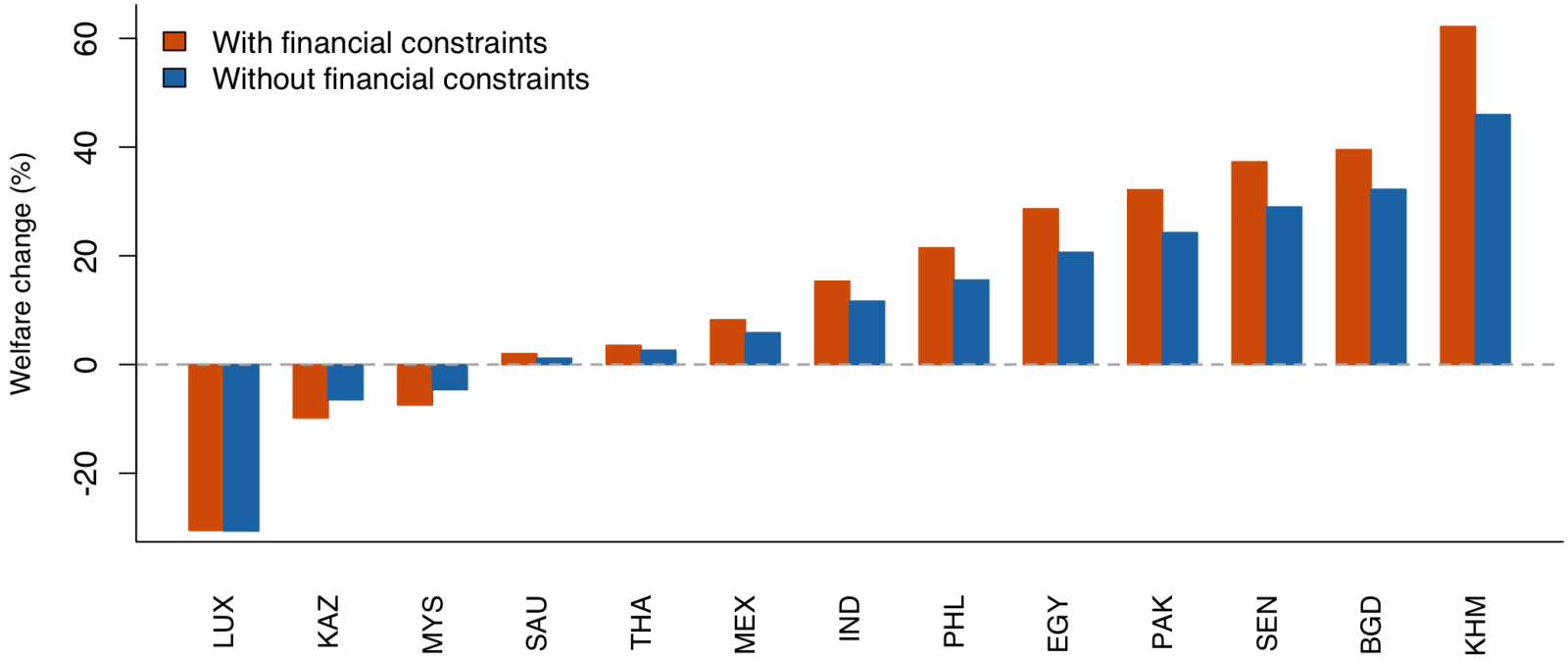
- $\hat{x} \equiv x'/x^{\text{data}}$: solve equilibrium in changes relative to observed data — no price-level data required
- Two solves anchored to the same x^{data}: no-shock ($\hat{x}^0$) and shocked ($\hat{x}'$)
- Outcome of interest: $x'/x^0 = \hat{x}'/\hat{x}^0$: differences out model misspecification common to both solves

Back



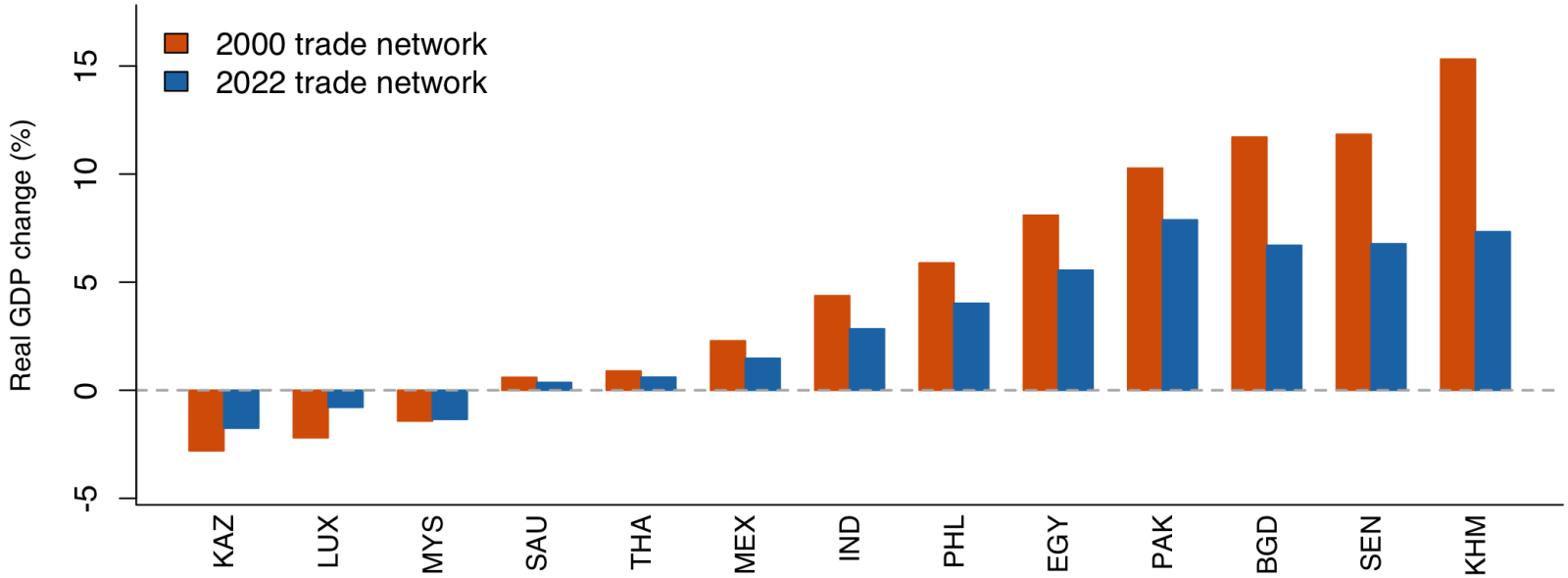
- Remittance boom raises welfare for LMICs (median +5.64%) but generates marginal losses for high-income countries (median -0.1%)
- Thailand welfare gain: +3.5%

◂ Back ◂ Welfare calculation



- Ignoring financial constraints understates the remittance boom's impact: median welfare gain falls from 5.6% to 4.1%
- LMICs are precisely where financial constraints are most likely to bind — omitting them misses ∼**27%** of the total welfare gain
- Thailand welfare gain: +2.6%

Back



- The 2022 trade network reduces median welfare gains for LMICs from +5.6% (2000 network) to +4.5% (2022 network)
- Deeper trade integration spreads remittance-financed demand across more exporters, weakening the domestic multiplier and offsetting 17% of the potential welfare gain
- Thailand: welfare gain falls from +3.5% (2000 network) to +3.0% (2022 network)

Back

References I

Pablo A. Acosta, Emmanuel K. K. Lartey, and Federico S. Mandelman. Remittances and the Dutch disease. *Journal of International Economics*, 79(1):102–116, 2009. doi: 10.1016/j.jinteco.2009.06.007.

Reena Aggarwal, Asli Demirgüç-Kunt, and Maria Soledad Martínez Pería. Do remittances promote financial development? *Journal of Development Economics*, 96(2): 255–264, 2011. doi: 10.1016/j.jdeveco.2010.10.005.

Christoph Albert and Joan Monras. Immigration and spatial equilibrium: The role of expenditures in the country of origin. *American Economic Review*, 112(11):3763–3802, November 2022. doi: 10.1257/aer.20211241.

Berrak Bahadir, Santanu Chatterjee, and Thomas Lebesmuehlbacher. The macroeconomic consequences of remittances. *Journal of International Economics*, 111: 214–232, 2018. ISSN 0022-1996. doi: https://doi.org/10.1016/j.jinteco.2018.01.010.

Giulia Bettin, Andrea F. Presbitero, and Nikola L. Spatafora. Remittances and vulnerability in developing countries. *The World Bank Economic Review*, 31(1):1–23, 2017. doi: 10.1093/wber/lhv053.

Barthélémy Bonadio, Andrei A. Levchenko, Dominic Rohner, and Mathias Thoenig. Feeding the tigers: Remittances and conflict in Sri Lanka. NBER Working Paper 33062, National Bureau of Economic Research, 2024.

María Esther Caballero, Brian C. Cadena, and Brian K. Kovak. The international transmission of local economic shocks through migrant networks. *Journal of International Economics*, 145:103832, 2023. doi: 10.1016/j.jinteco.2023.103832.

References II

Lorenzo Caliendo, Maximiliano Dvorkin, and Fernando Parro. Trade and labor market dynamics: General equilibrium analysis of the china trade shock. *Econometrica*, 87 (3):741–835, 2019. doi: 10.3982/ECTA13755.

Ralph Chami, Connel Fullenkamp, and Samir Jahjah. Are immigrant remittance flows a source of capital for development? *IMF Staff Papers*, 52(1):55–81, 2005. doi: 10.2307/30035948.

Jean-Louis Combes and Christian Ebeke. Remittances and household consumption instability in developing countries. *World Development*, 39(7):1076–1089, 2011. doi: 10.1016/j.worlddev.2010.10.006.

Alejandra Cox Edwards and Manuelita Ureta. International migration, remittances, and schooling: Evidence from El Salvador. *Journal of Development Economics*, 72(2): 429–461, 2003. doi: 10.1016/S0304-3878(03)00115-9.

Robert Dekle, Jonathan Eaton, and Samuel Kortum. Unbalanced trade. *American Economic Review*, 97(2):351–355, May 2007. doi: 10.1257/aer.97.2.351.

Julian Di Giovanni, Andrei A. Levchenko, and Francesc Ortega. A global view of cross-border migration. *Journal of the European Economic Association*, 13(1):168–202, 2015. doi: 10.1111/jeea.12110.

C. Bora Durdu and Serdar Sayan. Emerging market business cycles with remittance fluctuations. *IMF Economic Review*, 57(2):303–325, 2010. doi: 10.1057/imfsp.2009.3.

Jeffrey A. Frankel. Are bilateral remittances countercyclical?, 2009.

References III

Paola Giuliano and Marta Ruiz-Arranz. Remittances, financial development, and growth. *Journal of Development Economics*, 90(1):144–152, 2009. ISSN 0304-3878. doi: https://doi.org/10.1016/j.jdeveco.2008.10.005.

Zhen Huo, Andrei A. Levchenko, and Nitya Pandalai-Nayar. International comovement in the global production network. *The Review of Economic Studies*, 92(1): 365–403, 01 2025. doi: 10.1093/restud/rdae033.

Gaurav Khanna, Emir Murathanoglu, Caroline B. Theoharides, and Dean Yang. Abundance from abroad: Migrant income and long-run economic development. Working Paper 29862, National Bureau of Economic Research, March 2025. NBER Working Paper No. 29862, revised October 2022.

Emmanuel K. K. Lartey, Federico S. Mandelman, and Pablo A. Acosta. Remittances, exchange rate regimes and the Dutch disease: A panel data analysis. *Review of International Economics*, 20(2):377–395, 2012. doi: 10.1111/j.1467-9396.2012.01028.x.

Emi Nakamura and Jón Steinsson. Fiscal stimulus in a monetary union: Evidence from U.S. regions. *American Economic Review*, 104(3):753–792, 2014. doi: 10.1257/aer.104.3.753.

Xiameng Pan and Chang Sun. Internal migration, remittances and economic development. *Journal of International Economics*, 147:103845, 2024. ISSN 0022-1996. doi: https://doi.org/10.1016/j.jinteco.2023.103845.

Christopher Woodruff and Rene Zenteno. Migration networks and microenterprises in Mexico. *Journal of Development Economics*, 82(2):509–528, 2007. doi: 10.1016/j.jdeveco.2006.03.006.

References IV

Dean Yang. International migration, remittances and household investment: Evidence from philippine migrants' exchange rate shocks. *The Economic Journal*, 118(528): 591–630, 2008. doi: https://doi.org/10.1111/j.1468-0297.2008.02134.x.

Dean Yang and HwaJung Choi. Are remittances insurance? evidence from rainfall shocks in the philippines. *The World Bank Economic Review*, 21(2):219–248, 05 2007. ISSN 0258-6770. doi: 10.1093/wber/lhm003.