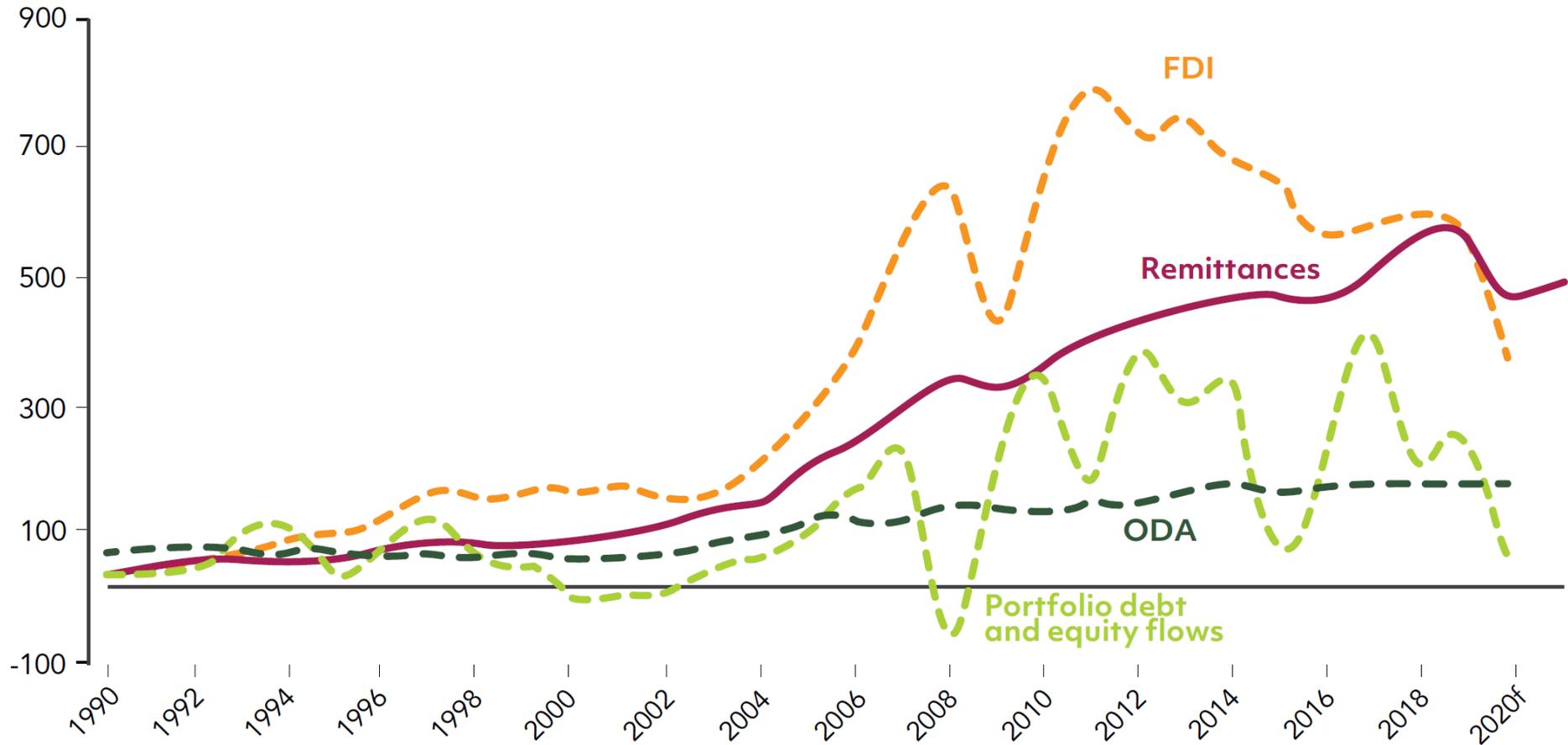


# **Abundance from Abroad: Migrant Income and Long-Run Economic Development**

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# International financial flows to developing countries

(\$ billion)



Sources: World Bank staff estimates, World Development Indicators, and IMF Balance of Payments statistics.

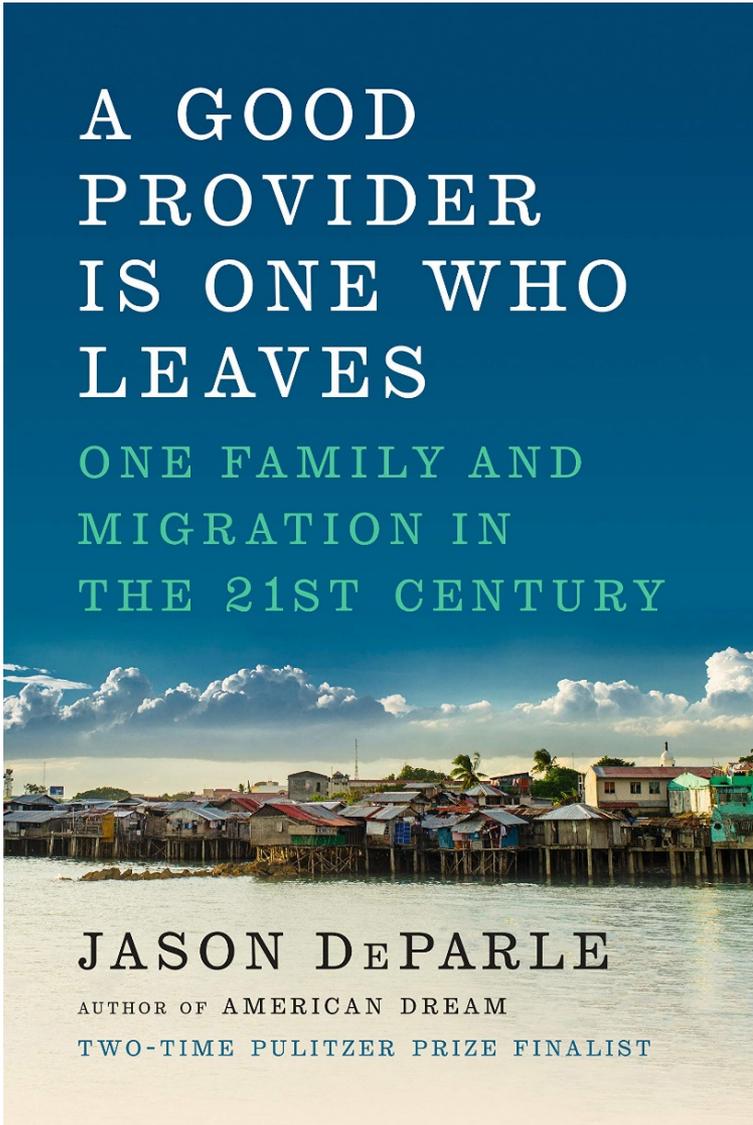
Note: See appendix A in World Bank (2017) for data and forecast methods. FDI = foreign direct investment; ODA = official development assistance.

# Key question

- How does international migrant income affect long-run economic development in home areas of migrants?
  - Consider effects on *global income*, and its components: migrant income and domestic income
- We examine how an initial positive shock to migrant income affects the long-run global income of migrant-origin provinces in the Philippines

# Migration and development: two realms

- Domestic
  - Investment in household enterprises
  - Gains for firms, e.g...
    - Better-educated workforce
    - Spillovers from migration, such as technology adoption; trade or FDI facilitation
- International
  - Participation and performance in international labor market
  - Skill upgrading, movement to skilled overseas occupations



- One Filipino family's expanding participation in international labor market over three decades
- Key themes:
  - Migrants' financial support extends widely in social network
  - Links across generations
    - A parent's migration funds children's education
    - Children migrate later in better, higher-paid jobs
- Migration as an intergenerational development strategy
- Pessimistic about domestic (origin-area) development impacts

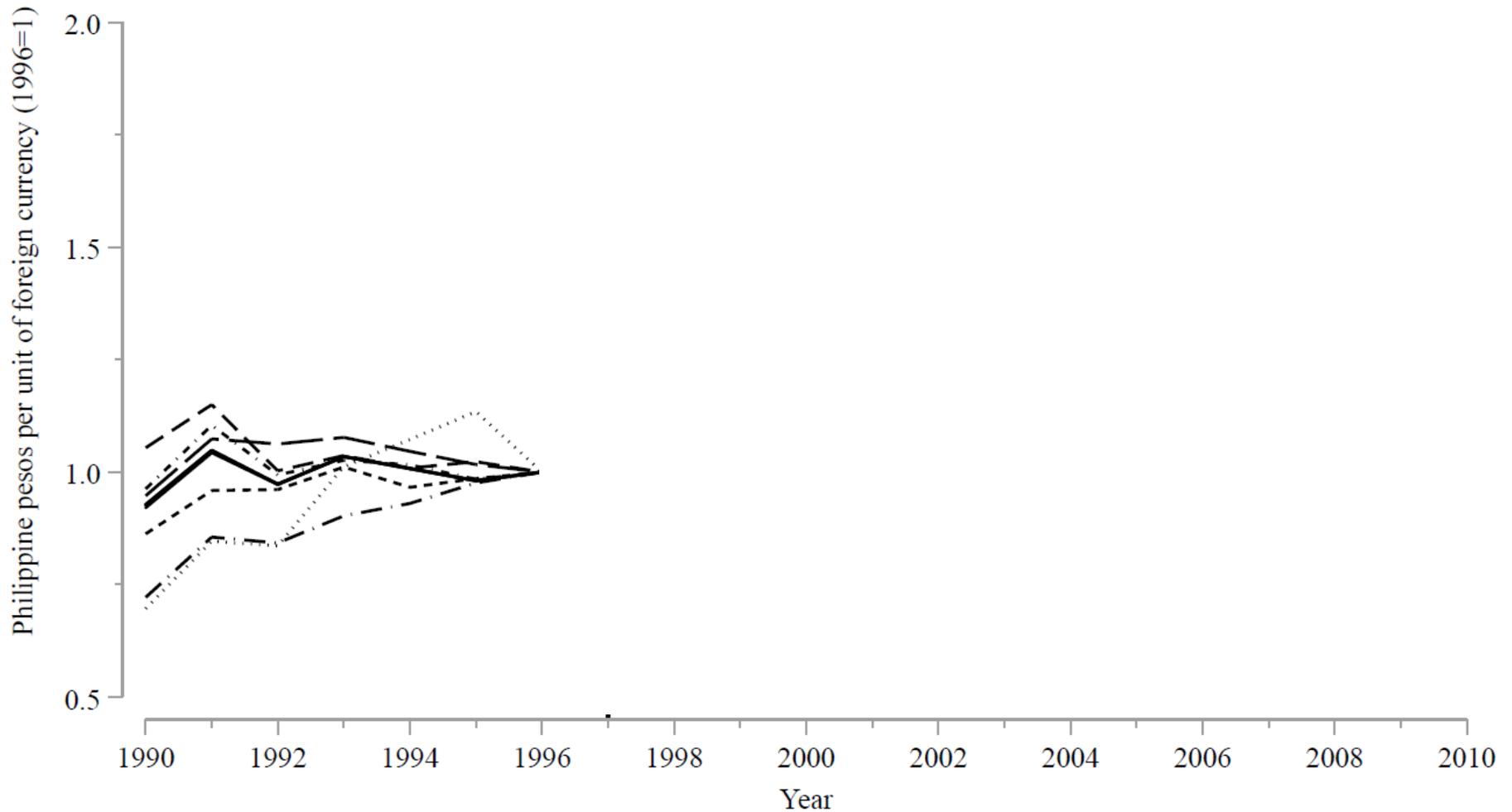
# International migration from the Philippines

- International migration affects a substantial share of the population
  - 1-2% of population (reported in Census) works overseas, and ~5% of households have a migrant
  - ~25% receive remittances from overseas
  - Migrant income is 13.6% of global income in the Philippines
- Largely temporary and legal labor migration through licensed recruitment agencies, for short (~2 year) contracts
- Very diverse country destinations, due to well-developed institutions for international labor migration
  - In mid-1990s, overseas Filipino workers (OFWs) were located in 171 countries
- Origin-destination patterns are highly persistent over time (Theoharides 2017)

# The Philippines and the 1997 Asian Financial Crisis

- Origin areas across the Philippines differ in their:
  - Migrant earnings per capita
    - Due to differences in migration rates and migrant wage rates
  - Overseas destinations (which are very persistent)
- In the 1997 Asian Financial Crisis:
  - Philippine peso depreciated substantially
  - Migration destination countries experienced large and heterogeneous exchange rate shocks as well
- Philippine provinces therefore experienced highly heterogeneous *shocks to migrant income per capita*
- We examine outcomes across 82 Philippine provinces over two decades

# Exchange rate shocks



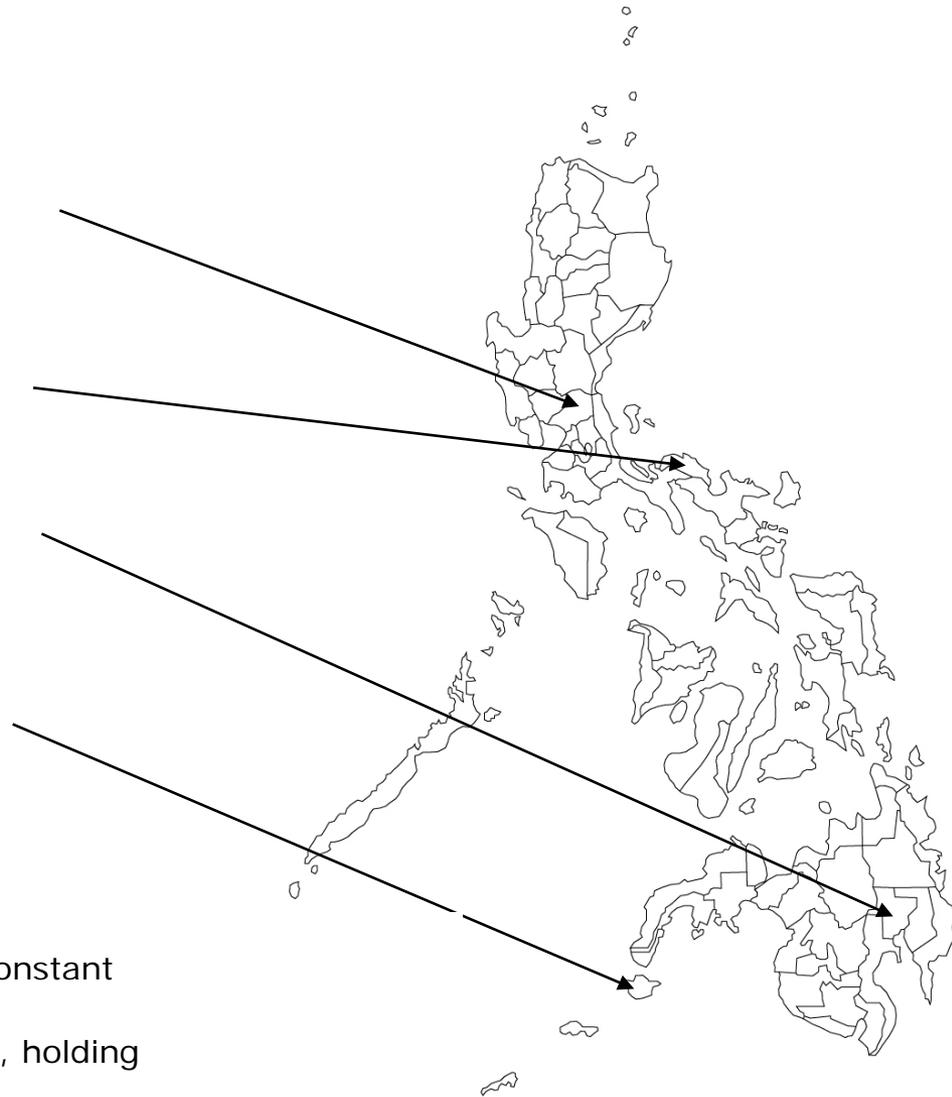
# Top 15 Destinations

Destination	% of Total	Average Annual Earnings (Thousands of Real 2010 Philippine Pesos)	Exchange Rate Shock (June 1997- Oct 1998)
Saudi Arabia	41.85	305.93	0.52
Japan	16.09	1457.57	0.32
Taiwan	8.45	426.99	0.26
Hong Kong	7.31	379.98	0.52
United Arab Emirates	5.66	246.97	0.52
Malaysia	3.70	216.19	-0.01
Singapore	2.28	243.72	0.29
Italy	1.96	497.01	0.38
Qatar	1.85	217.71	0.52
Brunei Darussalam	1.71	271.96	0.30
Kuwait	1.24	366.61	0.50
United States	1.20	1903.52	0.52
Bahrain	1.17	275.66	0.52
Northern Mariana Islands	1.11	298.79	0.52
Libya	1.09	527.83	0.57

- Administrative datasets from Philippine Overseas Employment Administration (POEA) and Overseas Workers Welfare Administration (OWWA)
  - Includes overseas destination, wage, and locality of origin of all contract labor migrants
  - Province-level migrant income in 1994, 2006, and 2009
- Family Income and Expenditure Survey (FIES), triennially from 1991-2009
  - Domestic income
- Philippine Census of Population (1990, 1995, 2000, 2010)
  - Assets, education

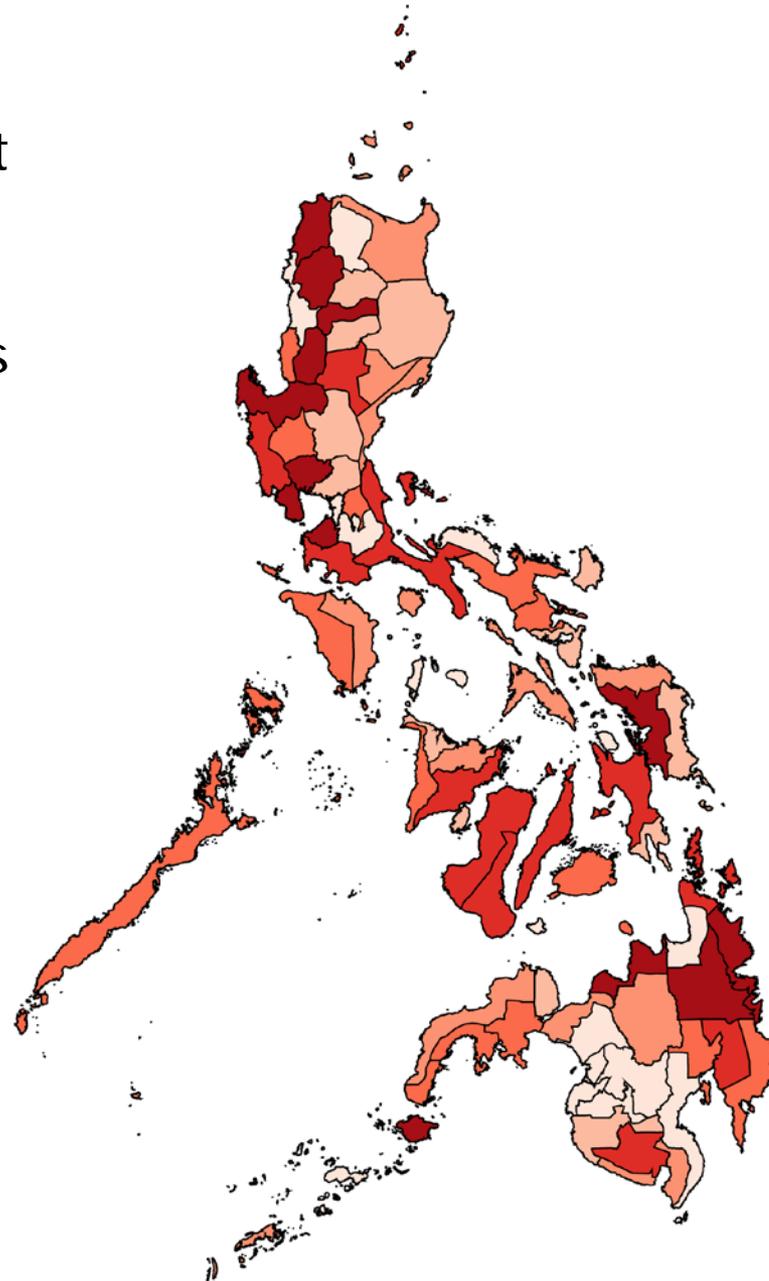
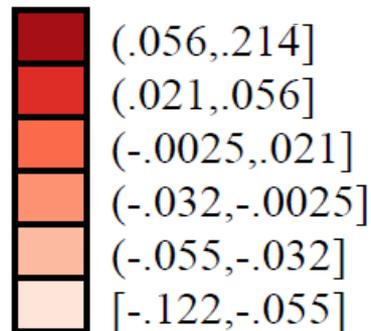
# The natural experiment: examples

- Bulacan
  - ER shock: 0.380
  - Migrant income p.c.: PhP 8,444
- Camarines Norte
  - ER shock: 0.370
  - Migrant income p.c.: PhP 3,593
- Davao del Norte
  - ER shock: 0.351
  - Migrant income p.c.: PhP 2,889
- Basilan
  - ER shock: 0.497
  - Migrant income p.c.: PhP 3,116
- Sources of identification:
  - Variation in ER shock, holding constant migrant income p.c.
  - Variation in migrant income p.c., holding constant ER shock



# Spatial distribution of shock

- Residual migrant income shock (after partialling-out all RHS controls)
- Substantial geographic variation across all regions of the country



# Regression specification

- Continuous difference-in-difference specification

$$Y_{pt} = \alpha + \beta \underbrace{R_{pt} * M_{p0}}_{\text{Shock to migrant income per capita}} * POST_t + \gamma R_{pt} * POST_t + \phi M_{p0} * POST_t$$

Shock to migrant income per capita

Destination-weighted exchange rate shock

Dummy for post-1997

Migrant income per capita, pre-shock (thousands of PhP)

$$+ \underbrace{X_{p0} \times TREND}_{\text{Baseline province characteristics * linear time trend}} + \delta_p + \psi_t + \varepsilon_{pt}$$

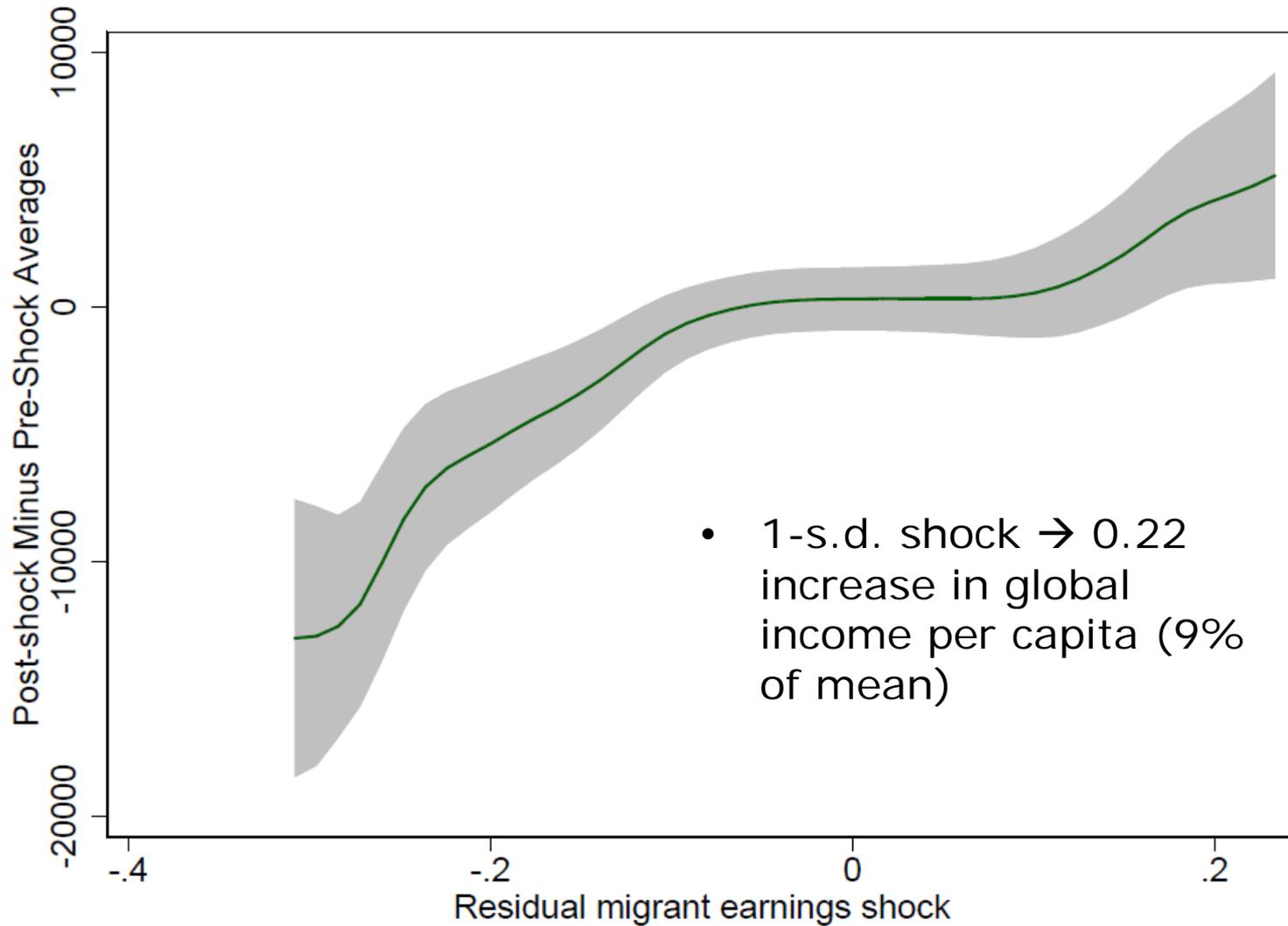
Baseline province characteristics \* linear time trend

Province fixed effects

Year fixed effects

- Standard errors clustered by province

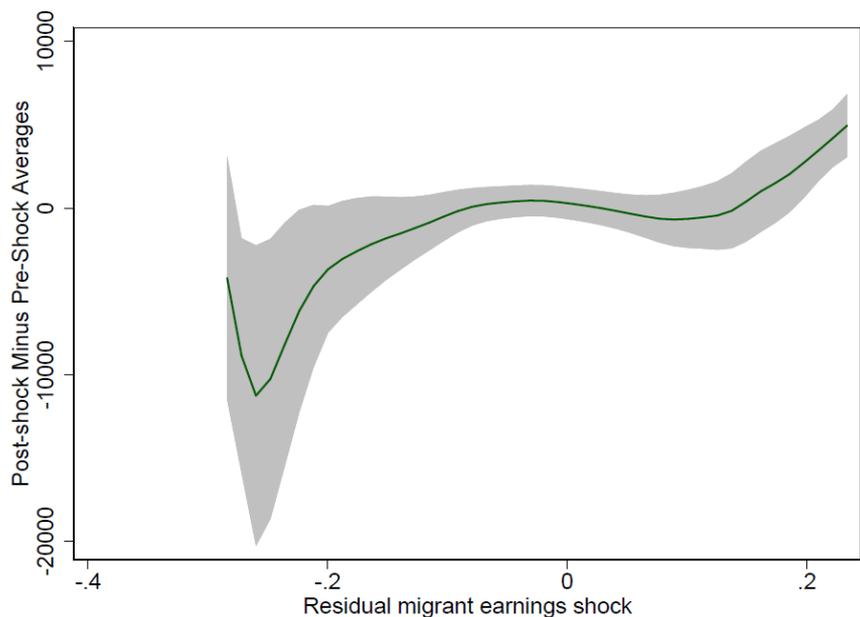
# Nonparametric regression: global income p.c.



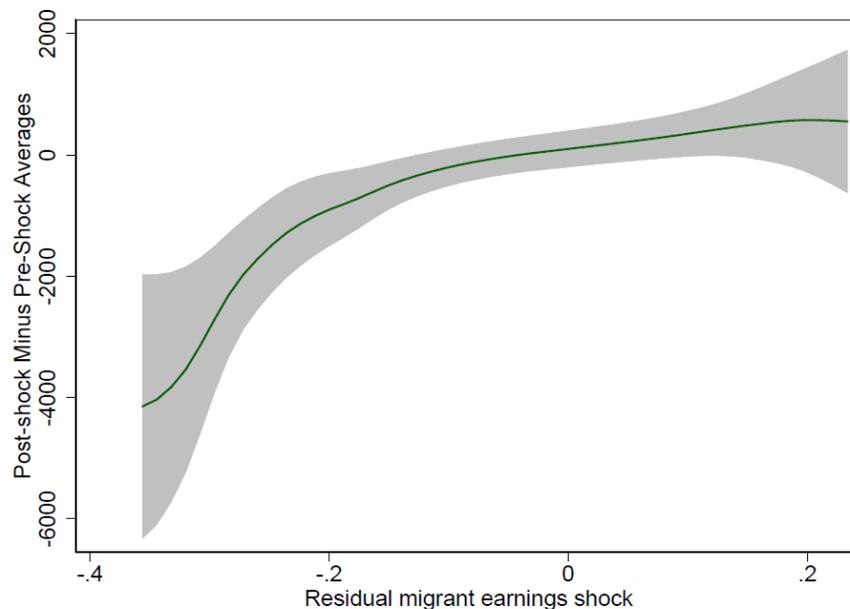
Notes: Nonparametric relationship between migrant income shock and change in outcome from pre- to post-shock periods. Outcome is average of post-shock years minus average of pre-shock years. Outcome and migrant earnings shock are both residualized in regression of variable on income-weighted exchange rate shock and baseline migrant earnings per capita. Solid line is nonparametric regression estimate. Gray area is 90 percent confidence interval. Outcome is change in global income per capita (average of 2006 and 2009 minus 1994).

# Nonparametrics: domestic and migrant income p.c.

Domestic income per capita

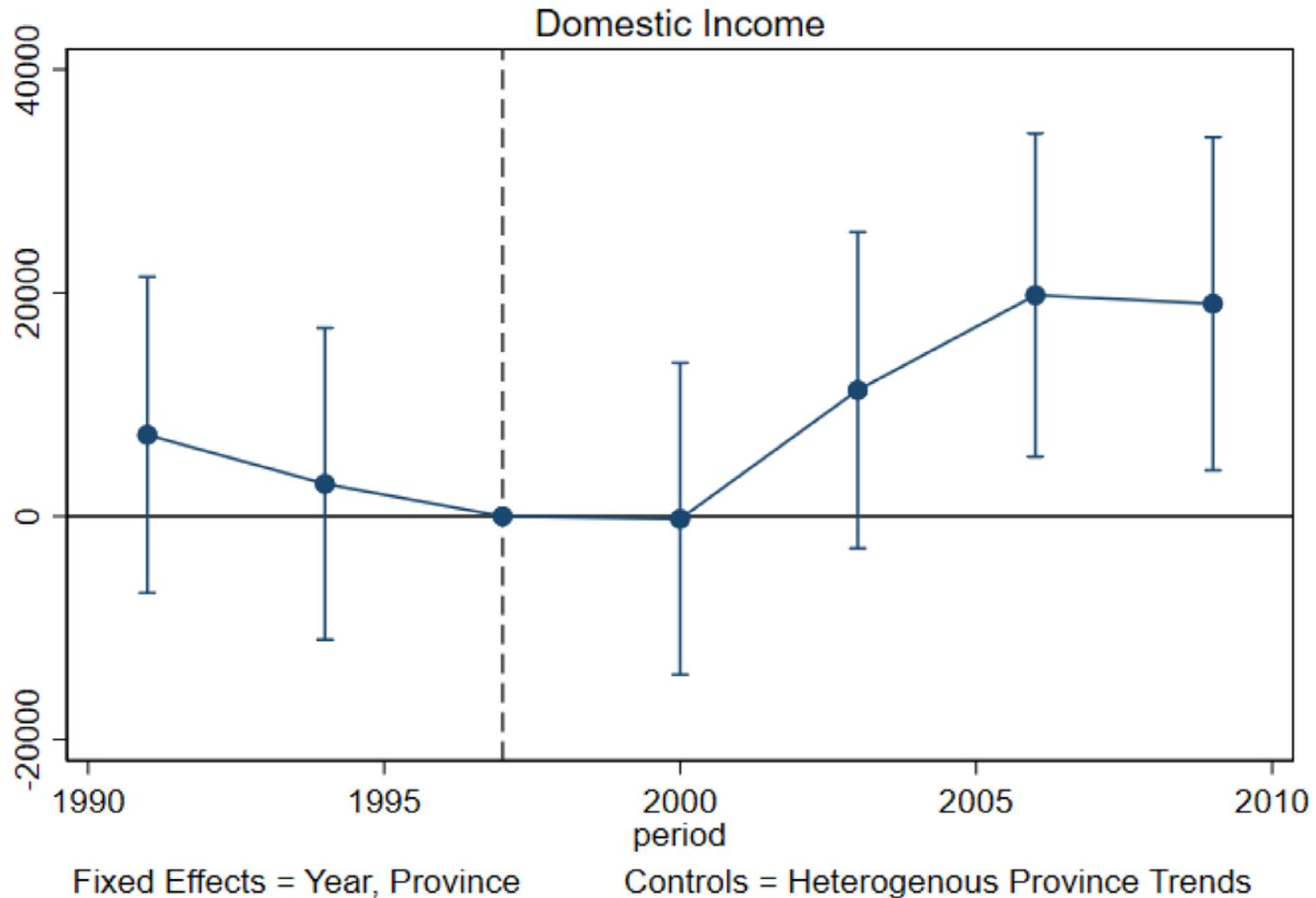


Migrant income per capita



Notes: Nonparametric relationship between migrant income shock and change in outcome from pre- to post-shock periods. Outcome is average of post-shock years minus average of pre-shock years. Outcome and migrant earnings shock are both residualized in regression of variable on income-weighted exchange rate shock and baseline migrant earnings per capita. Solid line is nonparametric regression estimate. Gray area is 90 percent confidence interval. Outcomes are average of 2006 and 2009, minus 1994.

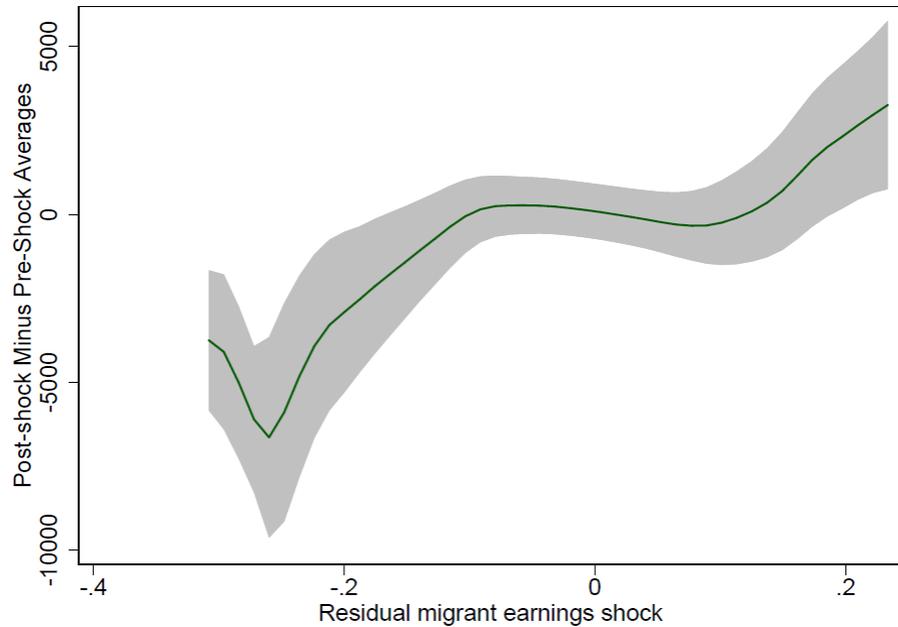
# Event study: domestic income per capita



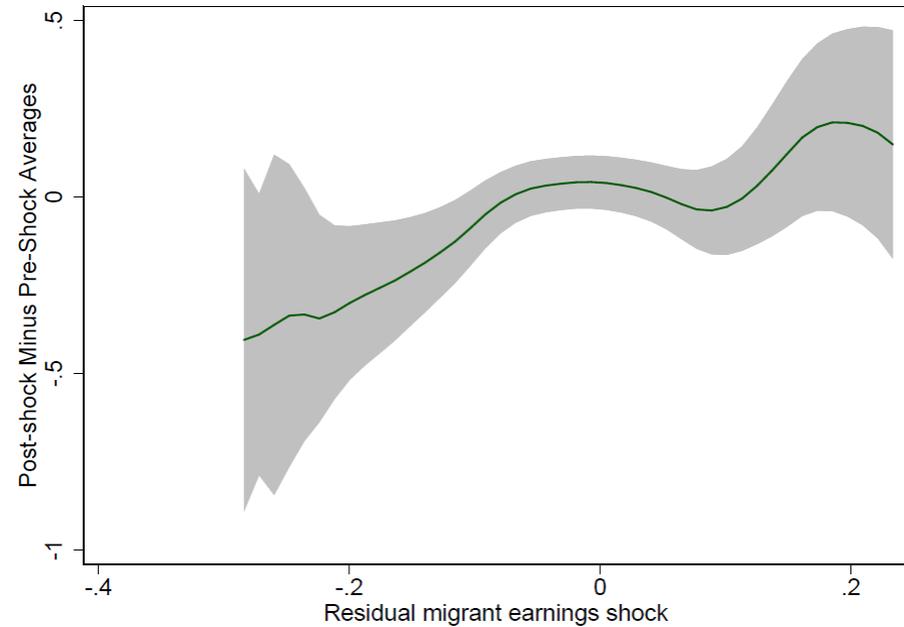
Notes: Figure A4 plots the coefficient estimates on migrant income shocks for all years with FIES data (1991, 1994, 1997, 2000, 2003, 2006, and 2009). Province fixed effects, year fixed effects, and heterogenous province trends are used as controls. Standard errors are clustered at the province level.

# Nonparametrics: consumption, assets

Consumption per capita



Asset index

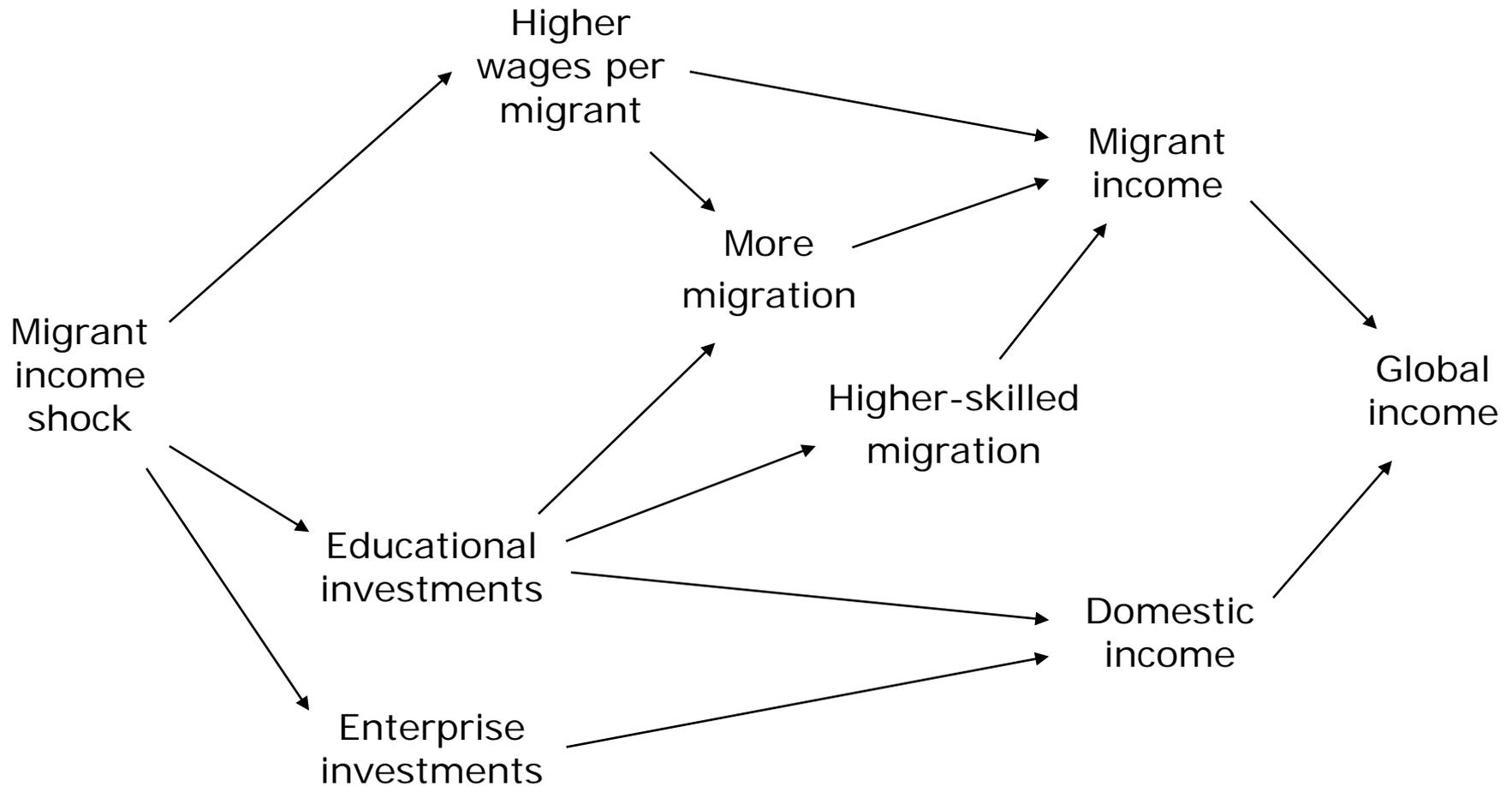


Notes: Nonparametric relationship between migrant income shock and change in outcome from pre- to post-shock periods. Outcome is average of post-shock years minus average of pre-shock years. Outcome and migrant earnings shock are both residualized in regression of variable on income-weighted exchange rate shock and baseline migrant earnings per capita. Solid line is nonparametric regression estimate. Gray area is 90 percent confidence interval. Outcomes are average of 2006 and 2009, minus 1994.

# Delving deeper...

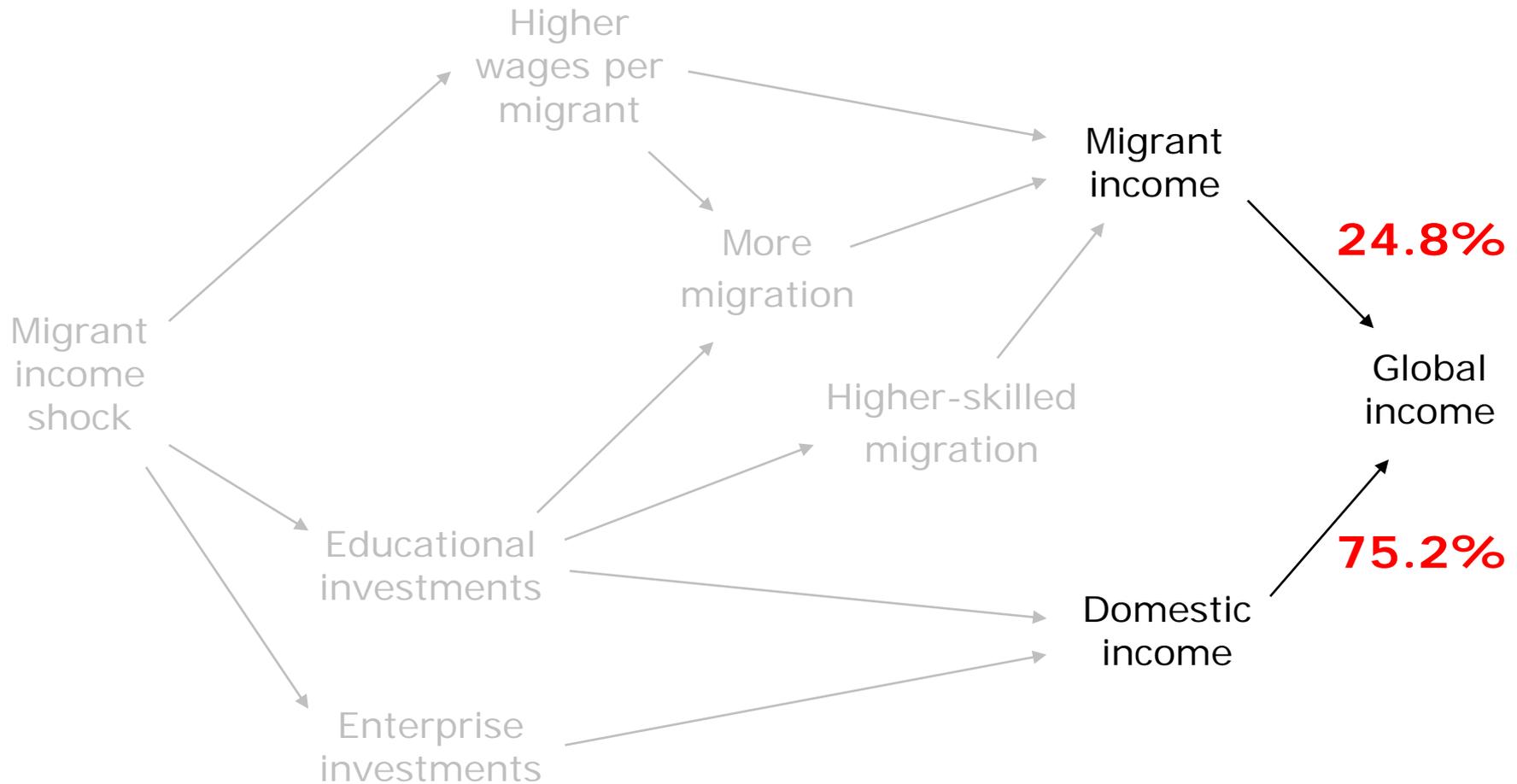
- What are the mechanisms behind the long-run effects on global income, and its migrant and domestic components?
- We write down a structural model, adapting Eaton and Kortum (2002) for migration (a la Hsieh et al 2019, Bryan and Morten 2019)
  - Incorporate education and enterprise investment in a gravity model of migration
  - Migrant income helps alleviate liquidity constraints on these investments
- Model quantifies the educational and enterprise investment mechanisms

# Channels of long-run impacts



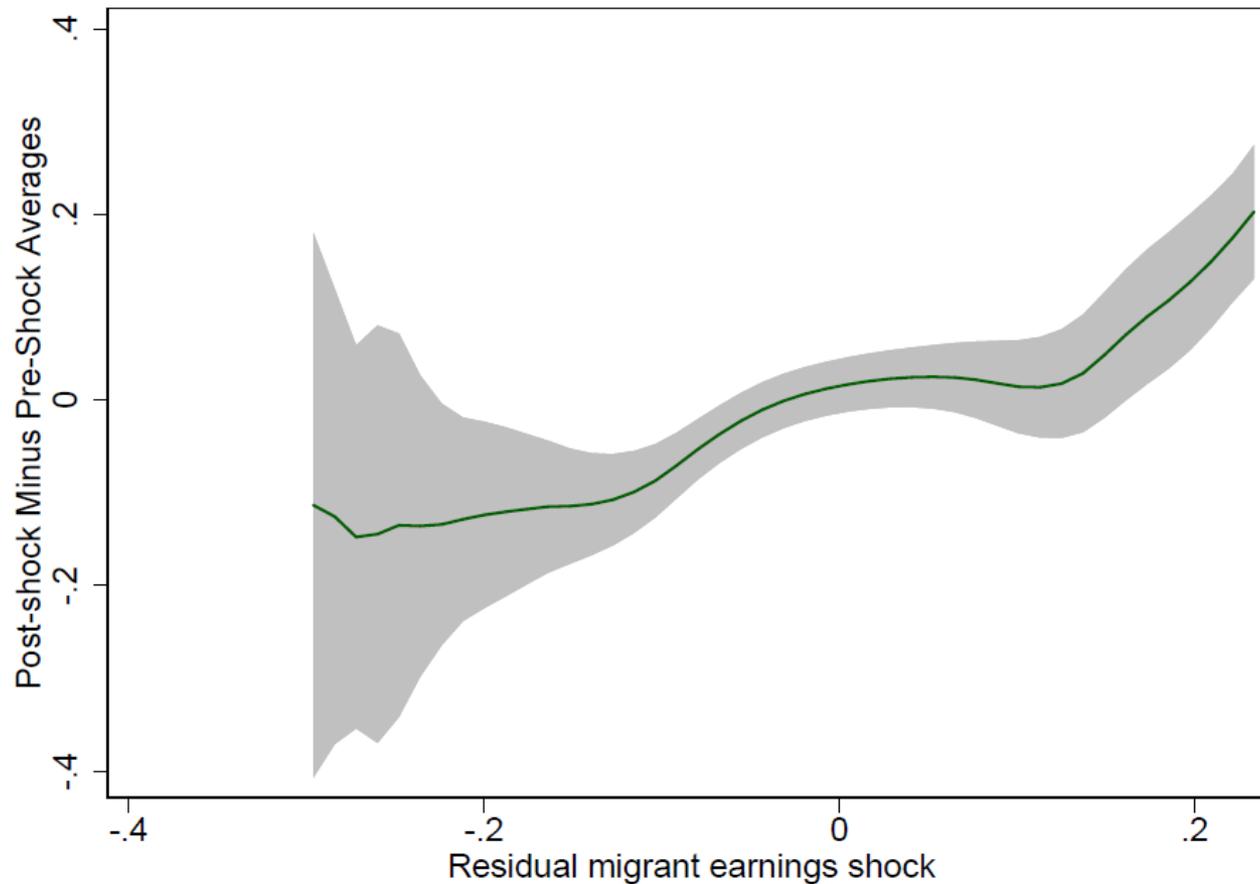
- The structural model allows us to estimate share of long-run impacts due to each channel

# Decomposition: migrant vs. domestic income



- Three-quarters of gains in global income are due to gains in domestic income

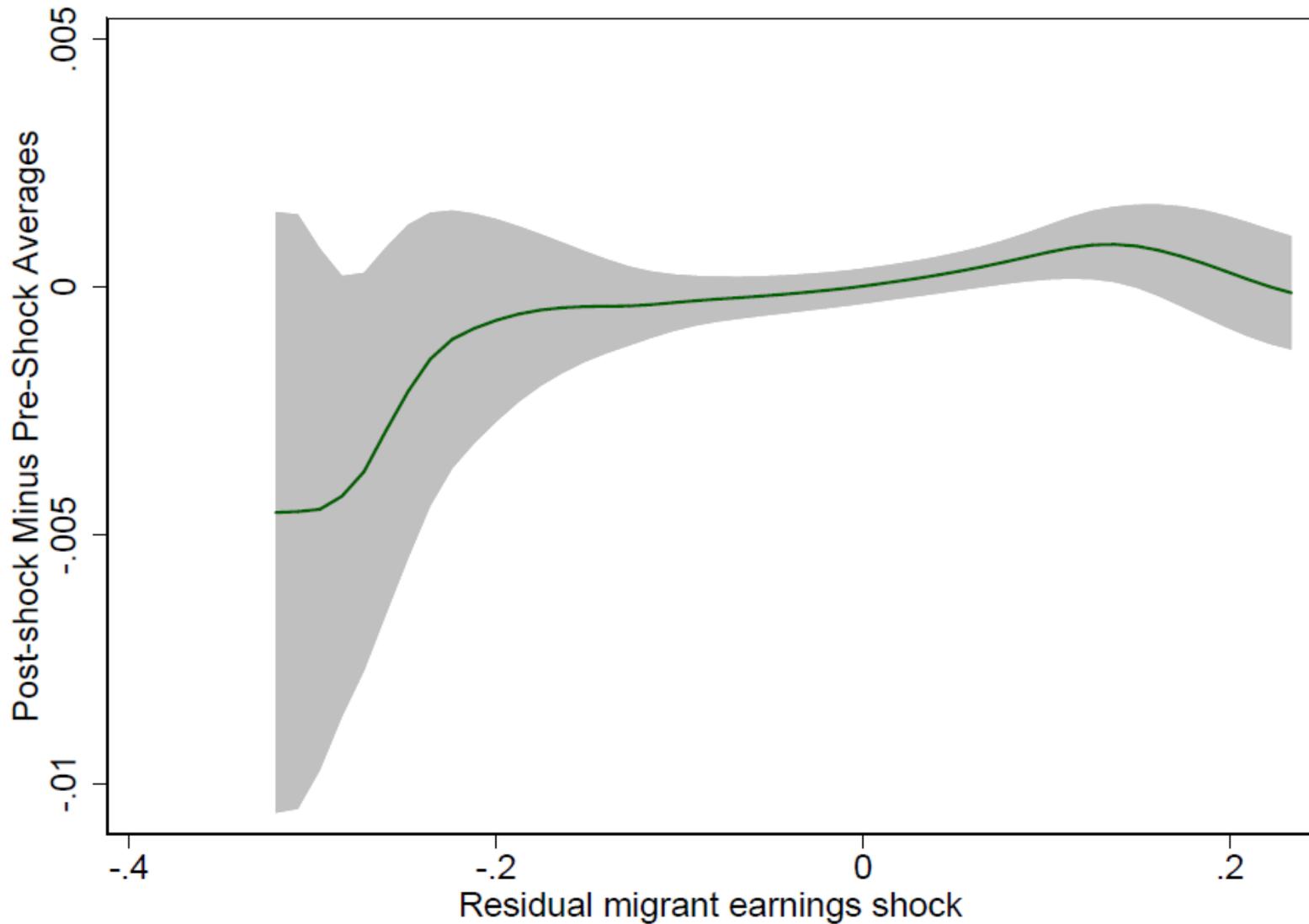
# Nonparametrics: years of education (7-18 y.o.)



- Positive impact on years of education
- Magnitude: 1-s.d. shock  $\rightarrow$  0.17 s.d. increase in years of education for 7-18 year olds

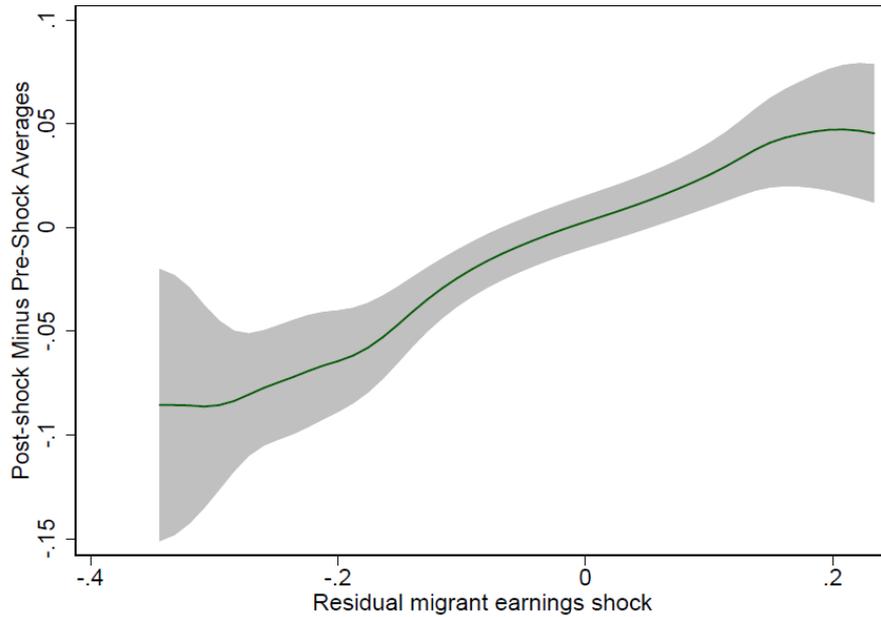
# Nonparametrics: new contracts

New Migrant Contracts per Capita

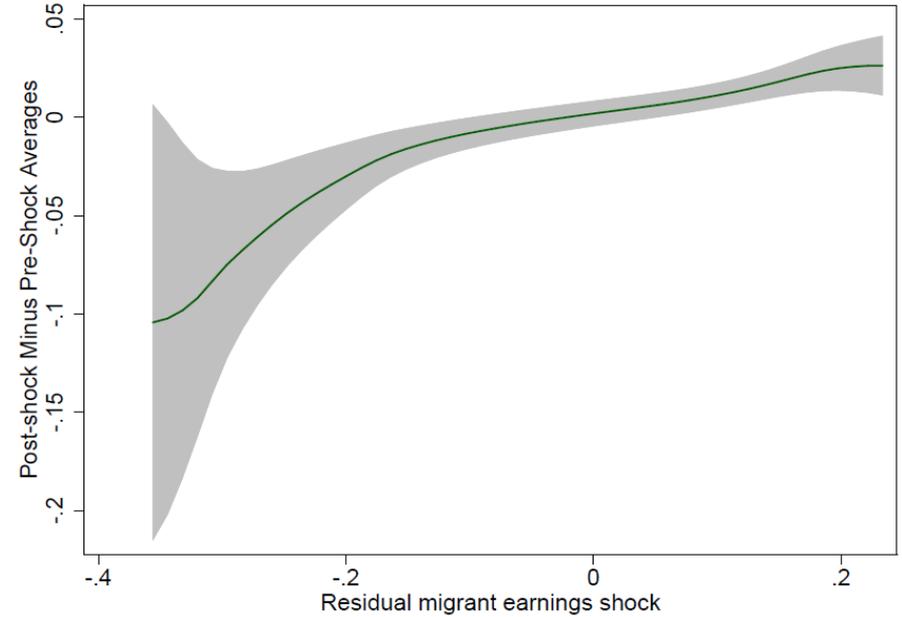


# Nonparametrics: Skilled migration

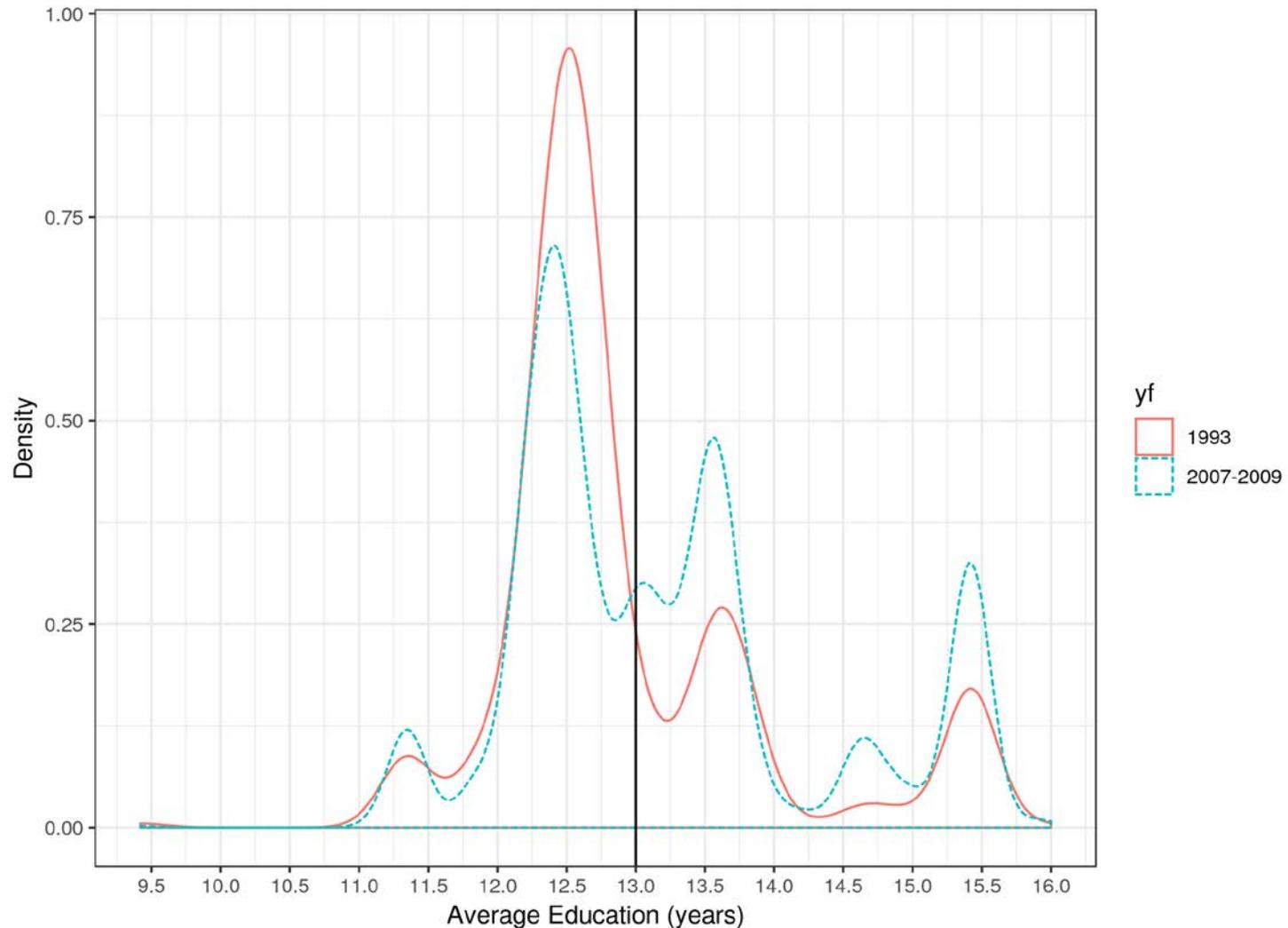
Skilled migrants (as share of total)



Migrants in professional jobs (as share of total)



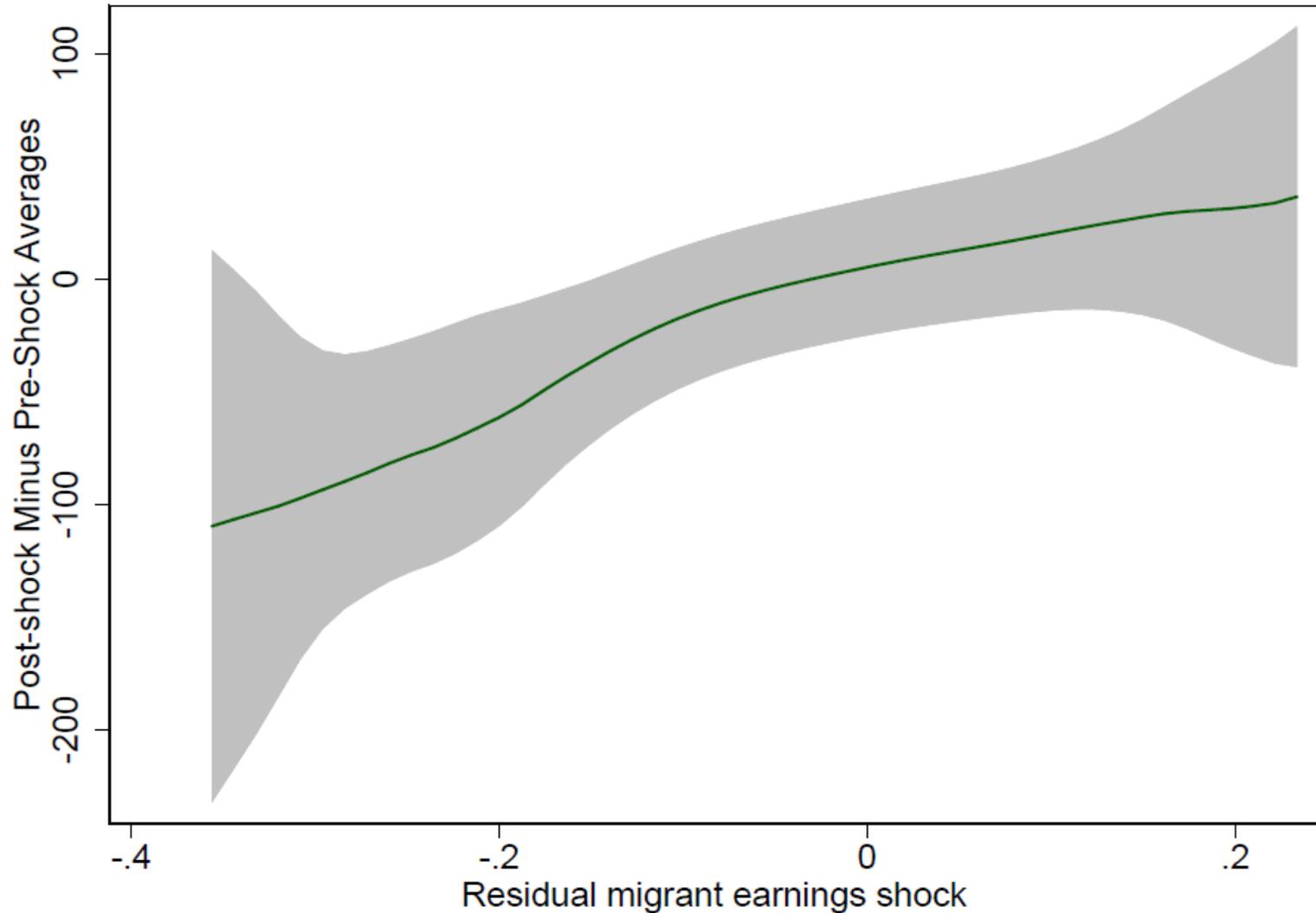
# Upward shift in migrant skill distribution



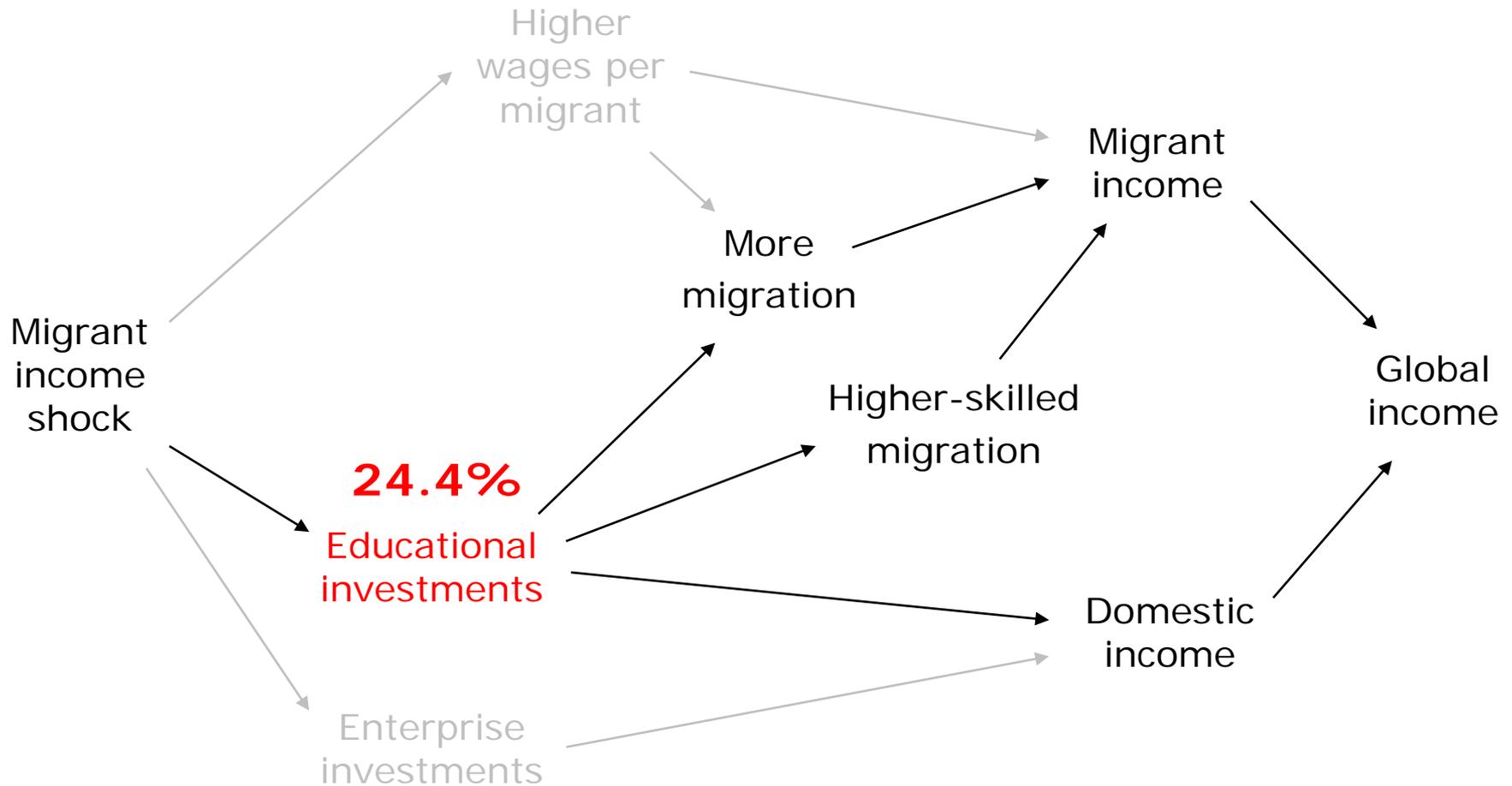
- Distribution of migrants in skilled jobs (those with  $>13$  years of education) shifts to right over time

# Nonparametrics: migrant income

Annual Income per Migrant

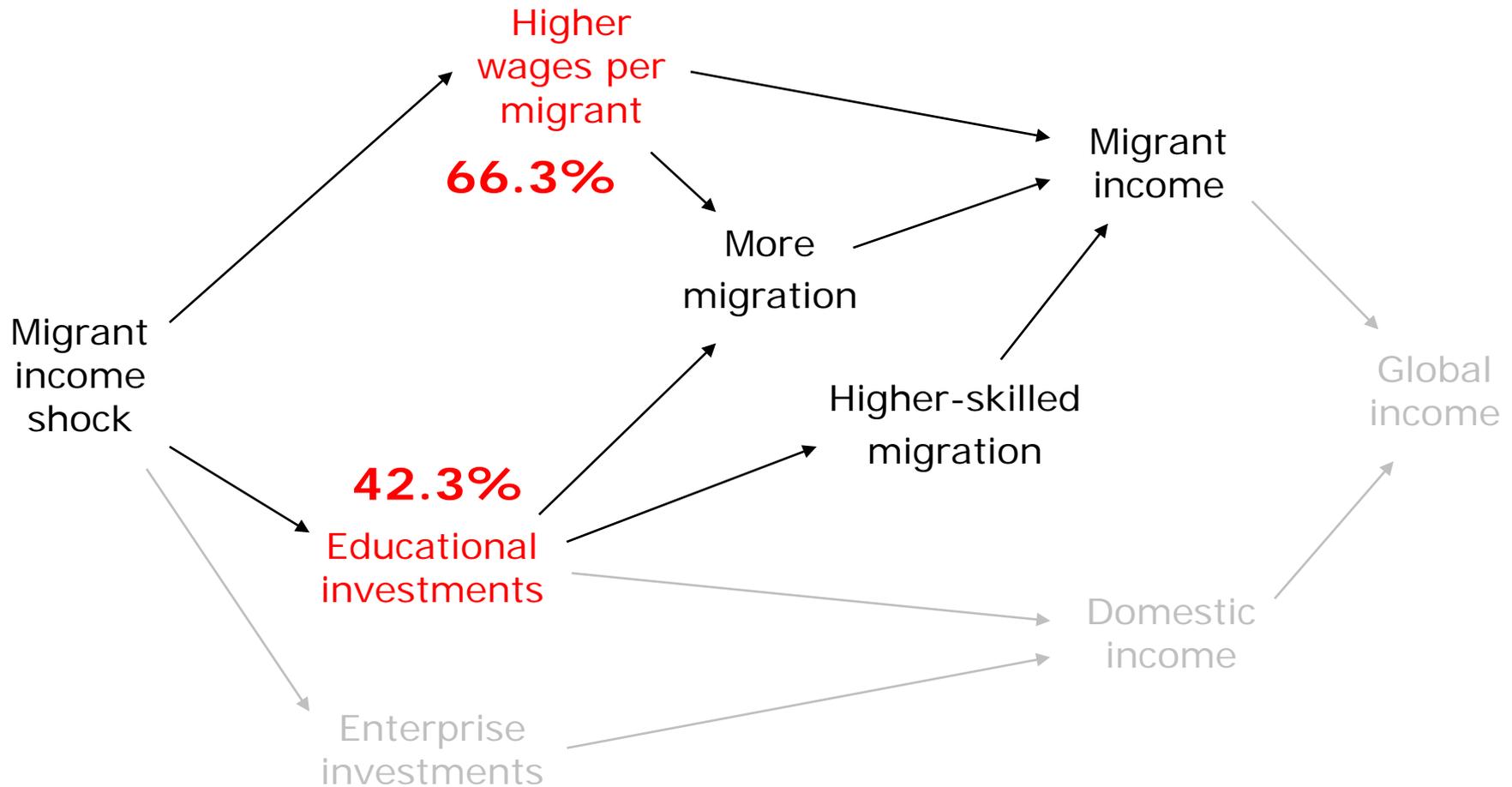


# Model estimates: shares by channel



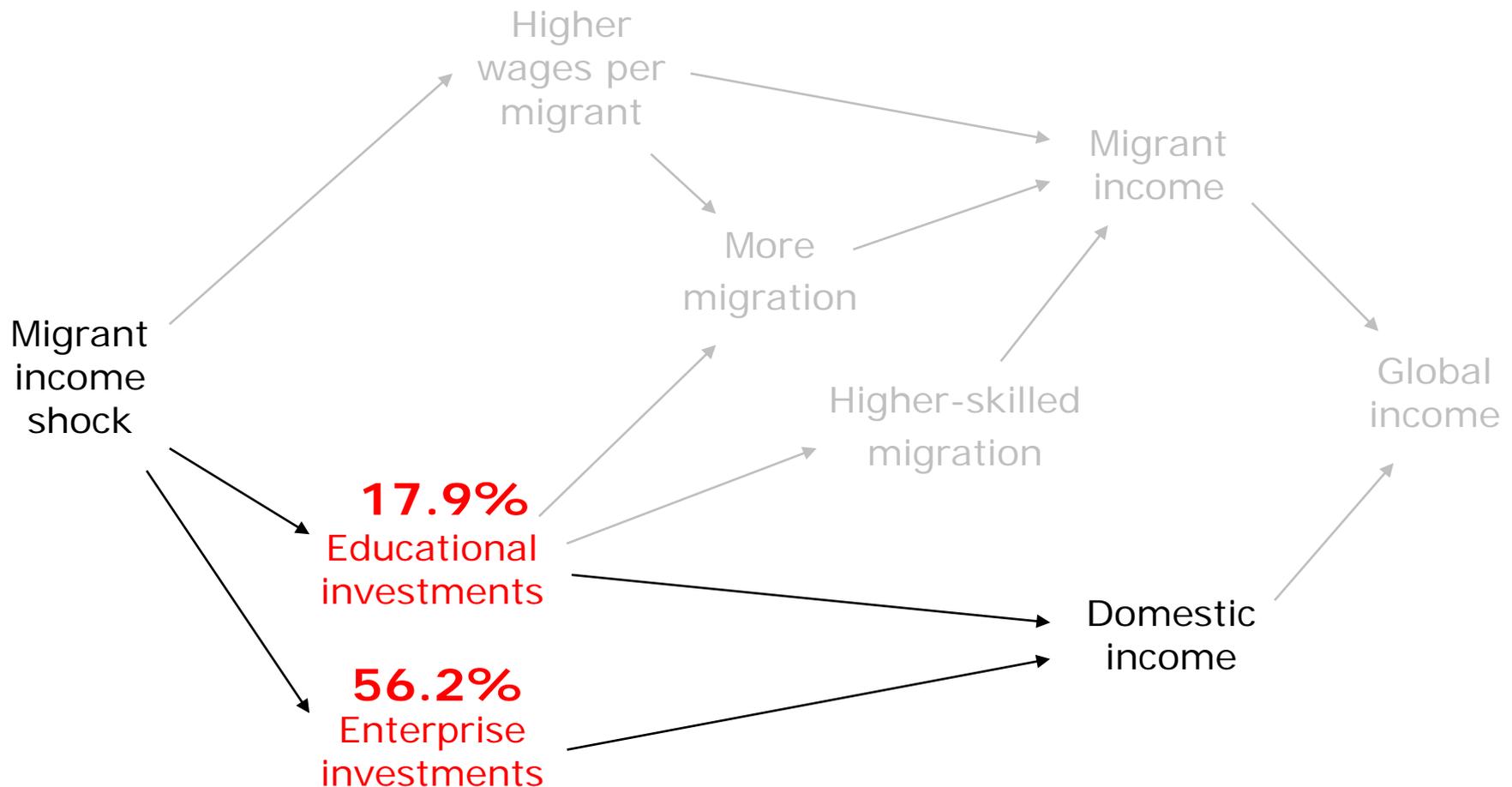
- 24.4% of increase in global income is due to the education channel

# Decomposing migrant income gains



- Education investments play a large role in explaining migrant income gains

# Decomposing domestic income gains



- In explaining domestic income gains, enterprise investments play a larger role than education investments

# Summary of decompositions

	Migrant Flows	Domestic Income	Migrant Income	Global Income
Mean	0.003	32.147	4.325	36.472
Std. Dev.	(0.003)	(12.708)	(3.360)	(14.946)
Impact of 1-std.-dev. shock	<b>0.001</b>	<b>2.509</b>	<b>0.828</b>	<b>3.337</b>
Increase as % of mean	38.7%	7.8%	19.1%	9.1%
Share of global income increase	-----	75.2%	24.8%	100.0%
<u>Model-based decomposition:</u>				
Education channel	48.5%	17.9%	42.3%	24.4%
Exchange rate channel	10.2%	-----	66.3%	17.0%
Direct wage channel	-----	56.2%	-----	42.5%
Explained by model	58.7%	74.1%	108.5%	84.0%

# In sum

- We study how improvements in income from international labor migration affect origin provinces in the Philippines
  - Novel administrative data combined with a large-scale natural experiment
  - Interpretation in context of a structural migration model
- Unusual insight into *global* income in home areas (income from both domestic and international migrant sources)
- An initial positive shock to migrant income initiates a virtuous cycle that magnifies gains in the long run
  - Migration rates rise, in higher-skilled, higher-wage jobs
  - Domestic incomes rise, mainly in household enterprises
  - Education investments underlie an important share of these long-run gains

- Author's observations while visiting the Portagana family compound

There were bunk beds, stereos, big TVs, and the newest status symbol, braces. Half the teenagers attended private school, and most were headed to college. But schooling had a circular logic: parents worked abroad to educate kids, who got educated to work abroad.

Migration had brought development, to a degree that no one had imagined. And development brought more migration.

# Extra slides

# Threats to identification

## Concern

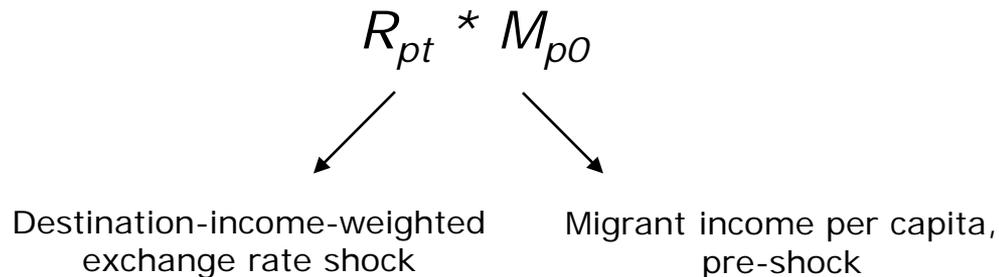
- Omitted variable bias: third factors correlated with shock and changes in key outcomes
- Other channels of effect (e.g., trade, FDI)
- Selection bias: change in composition of households
  - Internal migration
  - International migration

## Response

- Focus only on *interaction* between ER shock and baseline migrant earnings p.c.
- Controls for heterogeneous trends
- No corresponding results in pre-shock “placebo experiment”
- No positive impacts on employment, inconsistent with other channels
- No impact of shock on internal migration
- Include migrants in labor supply outcomes
- Permanent international migration very rare

# Identification strategy

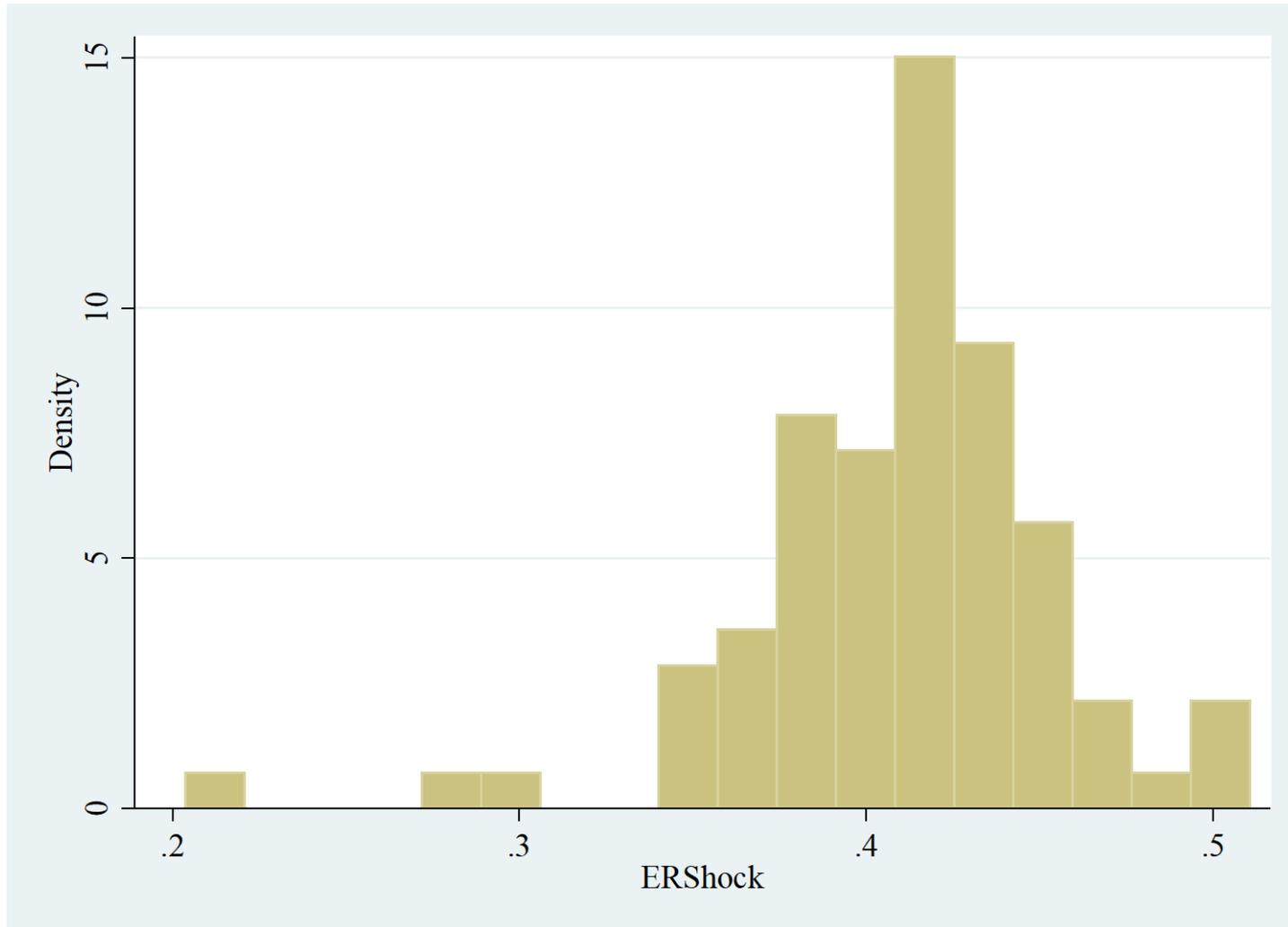
Take as exogenous the shock to migrant income per capita in province  $p$



Identification assumption: time-trends in outcomes uncorrelated with the shock, after controlling for:

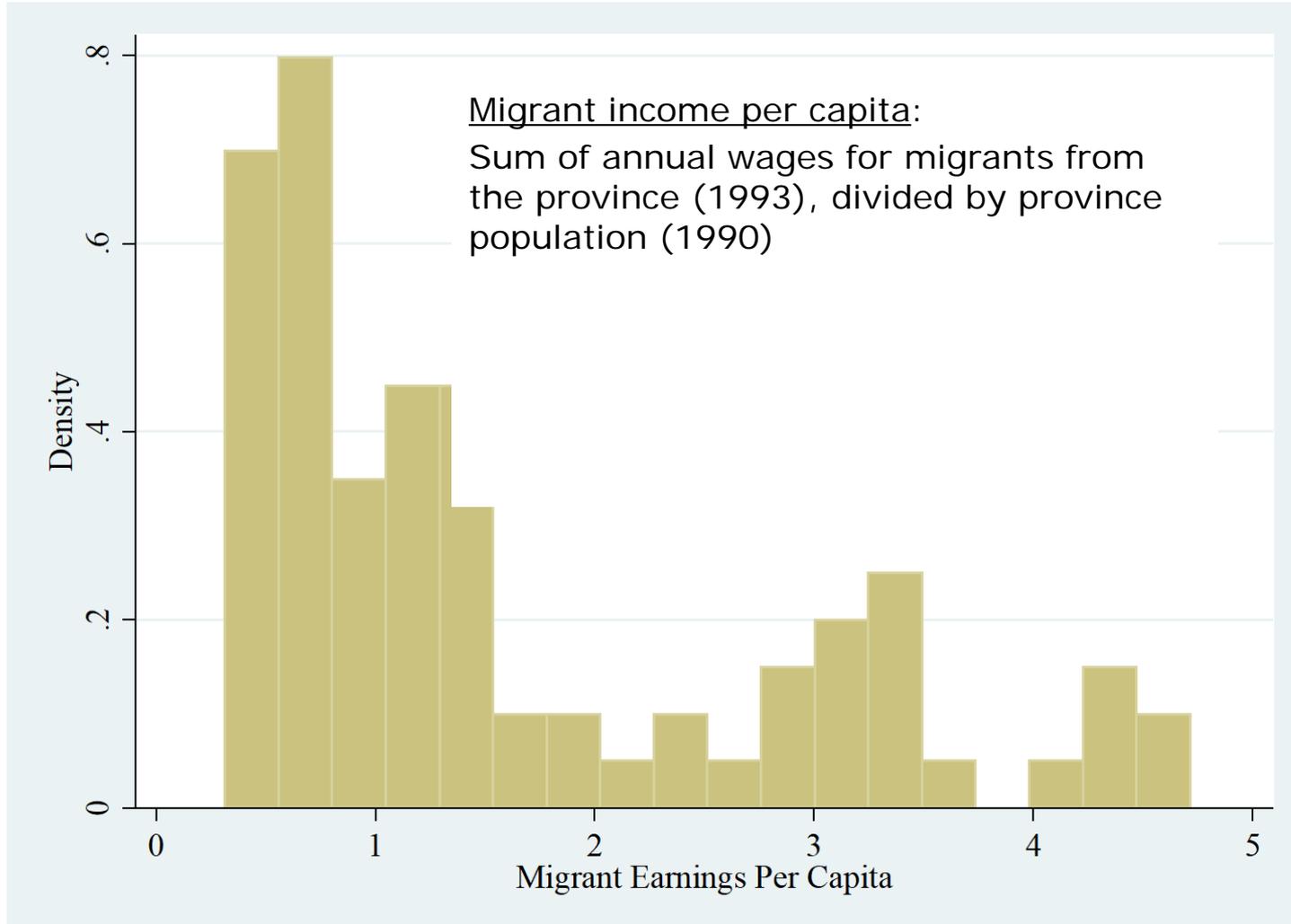
- $R_{pt} * \text{Post}$
- $M_{p0} * \text{Post}$
- province fixed effects
- year fixed effects
- baseline province characteristics \* time trend

# Distribution of exchange rate shocks



Median: 0.41, Mean: 0.41, Standard deviation: 0.05.

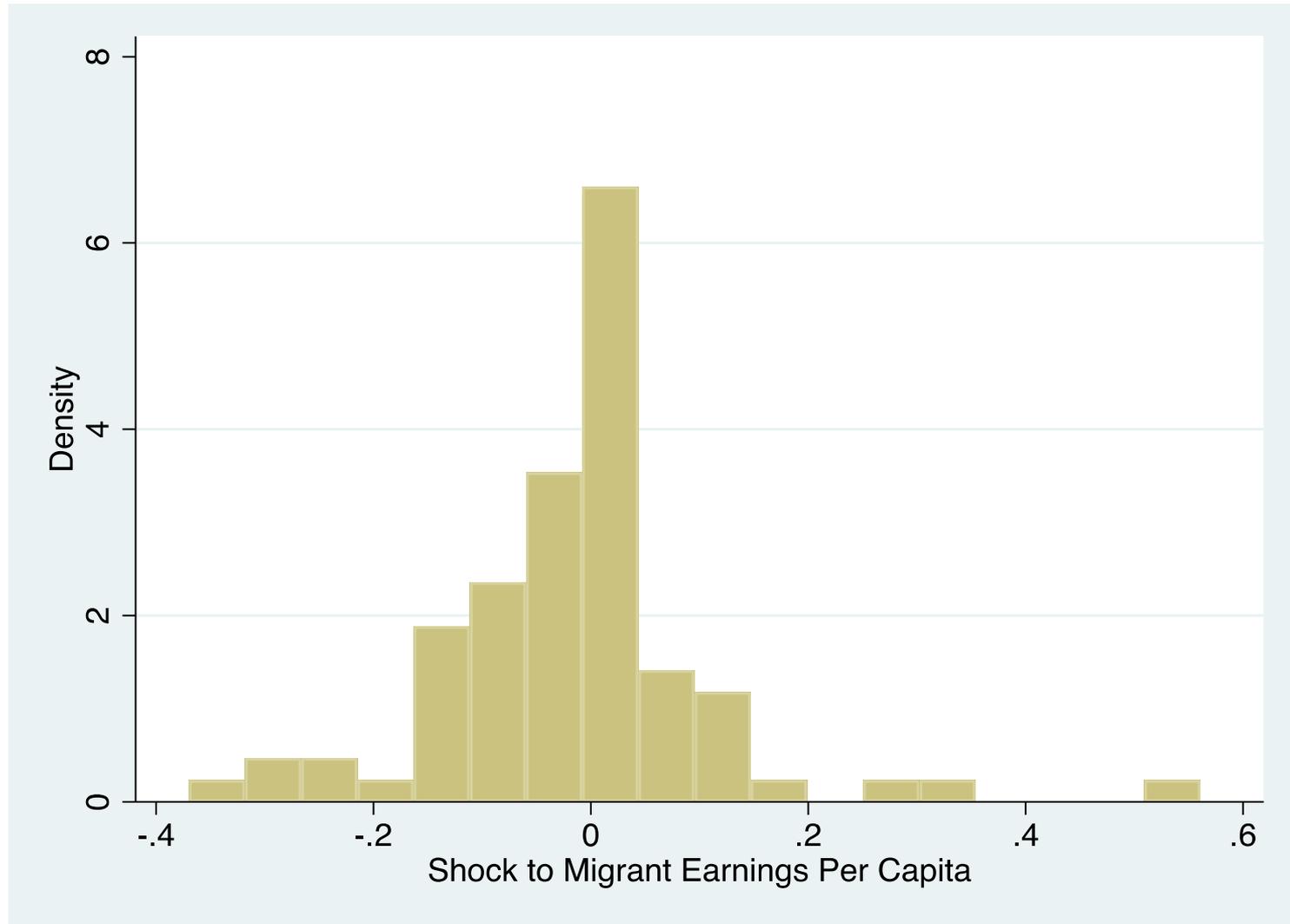
# Distribution of 1993 migrant earnings per capita



Median: 1.16, Mean: 1.59, Standard deviation: 1.22

Dependent variable in thousands of 2010 Philippine pesos (approx. PhP45/USD) based on 1993 wages.

# Distribution of shock to migrant income p.c.



Median: -0.002, Mean: -0.014, Standard deviation: 0.129

Dependent variable in thousands of 2010 Philippine pesos (approx. PhP45/USD) based on 1997 exchange rate shock, 1993 wages and 1995 migration rates.

# Regression estimates: global income and its components

	Mean (std. dev.) of dependent variable	Regressions		Number of obs.
		(1) No controls	(2) Controls for heterogeneous province trends	
<i>Dependent variable:</i>				
<i>(a) Global income and its components</i>				
Migrant income per capita	4.325 (3.360)	6.068** (2.405)	6.417** (3.120)	246
Domestic income per capita	32.147 (12.708)	18.899*** (5.644)	19.449*** (7.169)	246
Global income per capita	36.472 (14.946)	24.967*** (6.205)	25.866*** (7.606)	246

- Positive impact on per capita global income, migrant income, and domestic income
- 1-s.d. shock → 0.25 s.d. increase in migrant income, 0.20 s.d. increase in domestic income, 0.22 increase in global income
- **Impact on domestic income accounts for 75% of increase in global income**

# Regression estimates: years of education

<i>Dependent variable (periods included in regression)</i>	<i>Mean (std. dev.) of dependent variable</i>	<i>Regressions</i>		<i>Number of obs.</i>
		<i>(1) No controls</i>	<i>(2) Controls for heterogeneous province trends</i>	
<i>Years of Education (1990, 1995, 2000, 2010)</i>				
Children (aged 7-18)	4.880 (0.573)	0.680*** (0.187)	0.767*** (0.209)	328
Young adults (aged 19-24)	9.049 (1.109)	0.583** (0.239)	1.311*** (0.418)	328

- Positive impact on years of education
- Magnitude: 1-s.d. shock → 0.17 s.d. increase in years of education for children, 0.15 s.d. for young adults