



# Productivity Gap, International Trade & Structural Change

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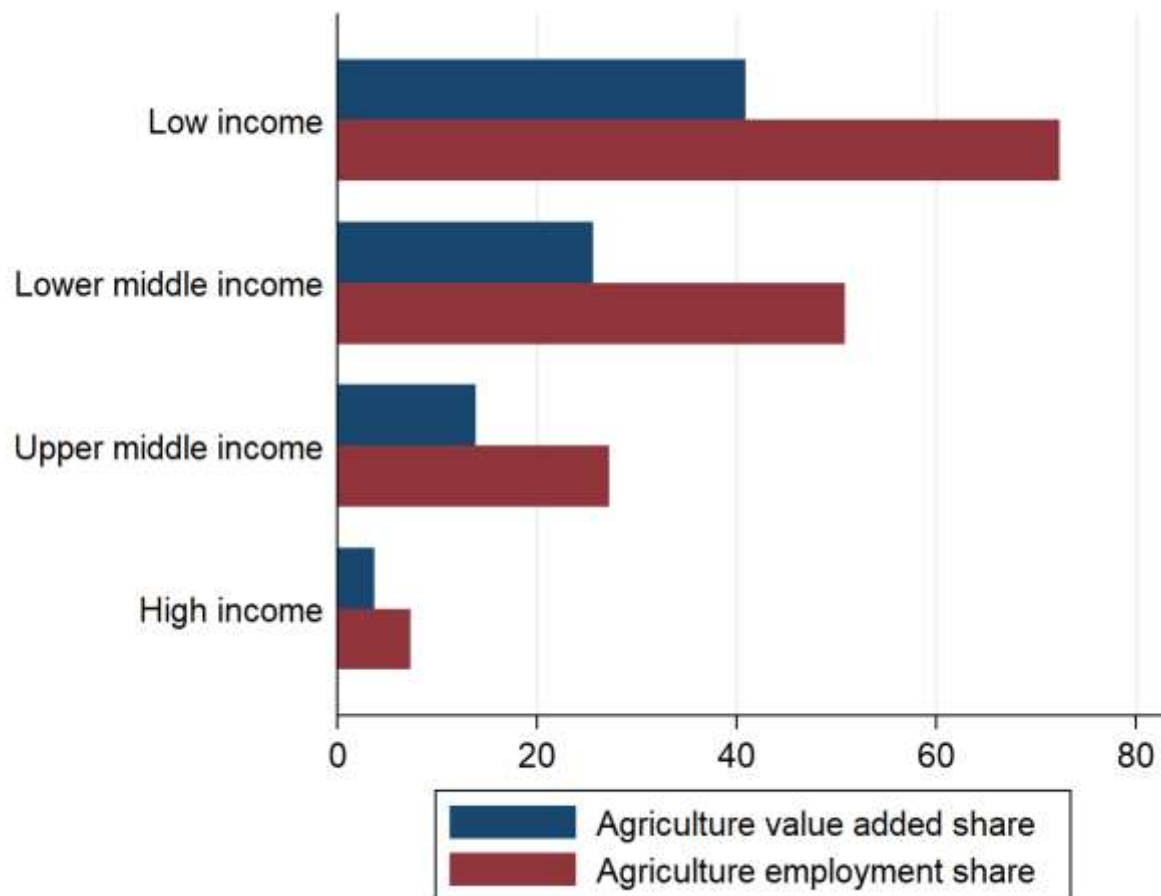
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# Roadmap

- **Trends in Agriculture Development**
  - Employment
  - Productivity
- **Productivity Gaps within Countries and Regions**
- **Moving Labor Out of the Agriculture Sector**
  - Productivity increase
  - Other impacts
- **Impacts of Trade on Structural Change**
  - Overall impacts
  - Composition of trade matters

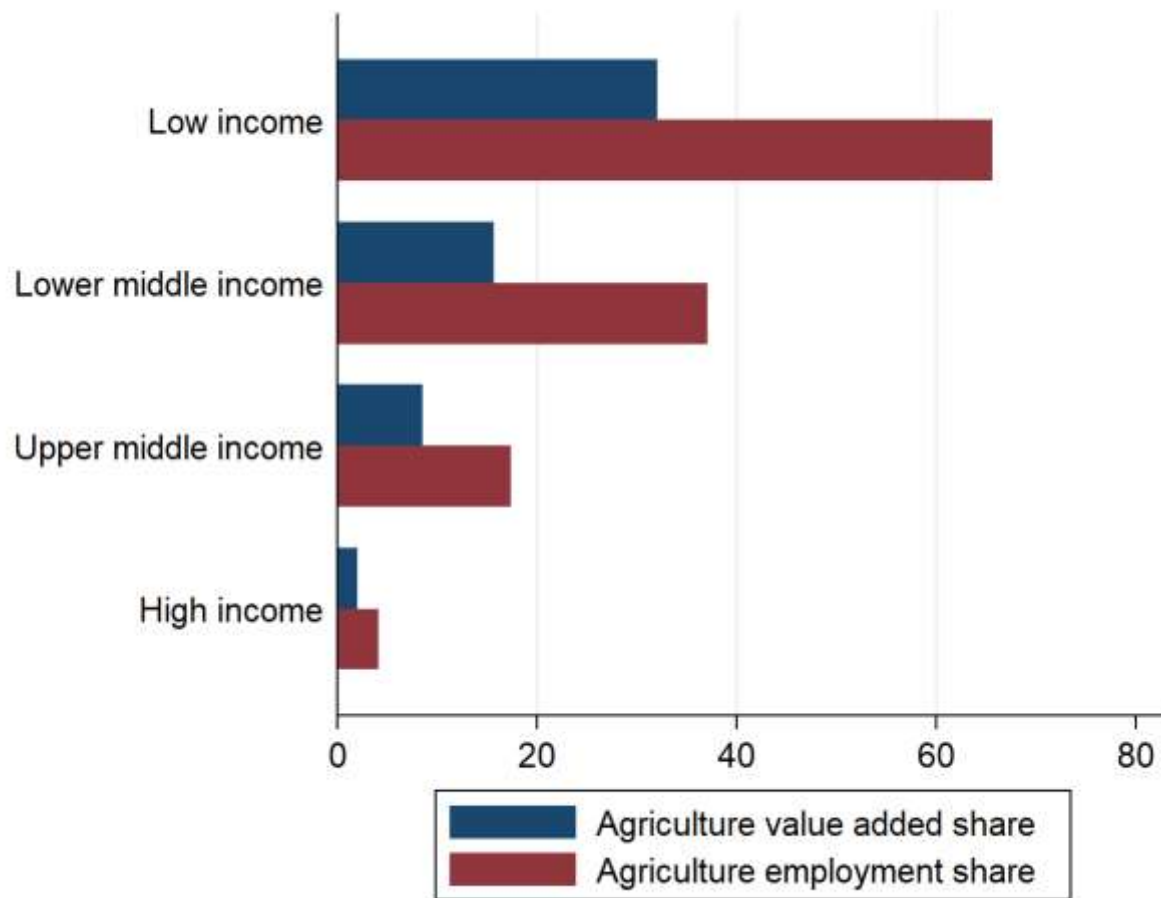
# Trends in Agriculture Development: Employment & Productivity

- By income groups
- Employment share and value added in agriculture in 1996



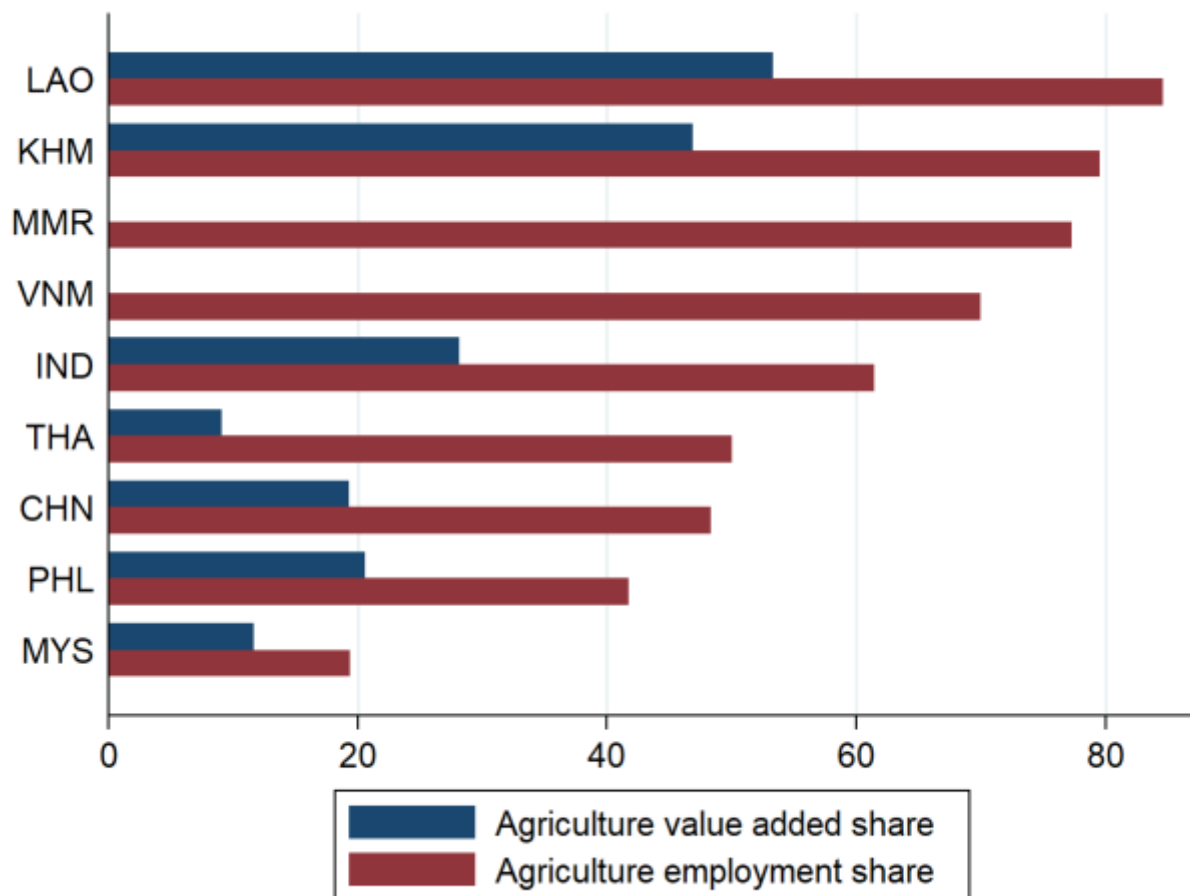
# Trends in Agriculture Development: Employment & Productivity

- By income groups
- Employment share and value added in agriculture in 2016



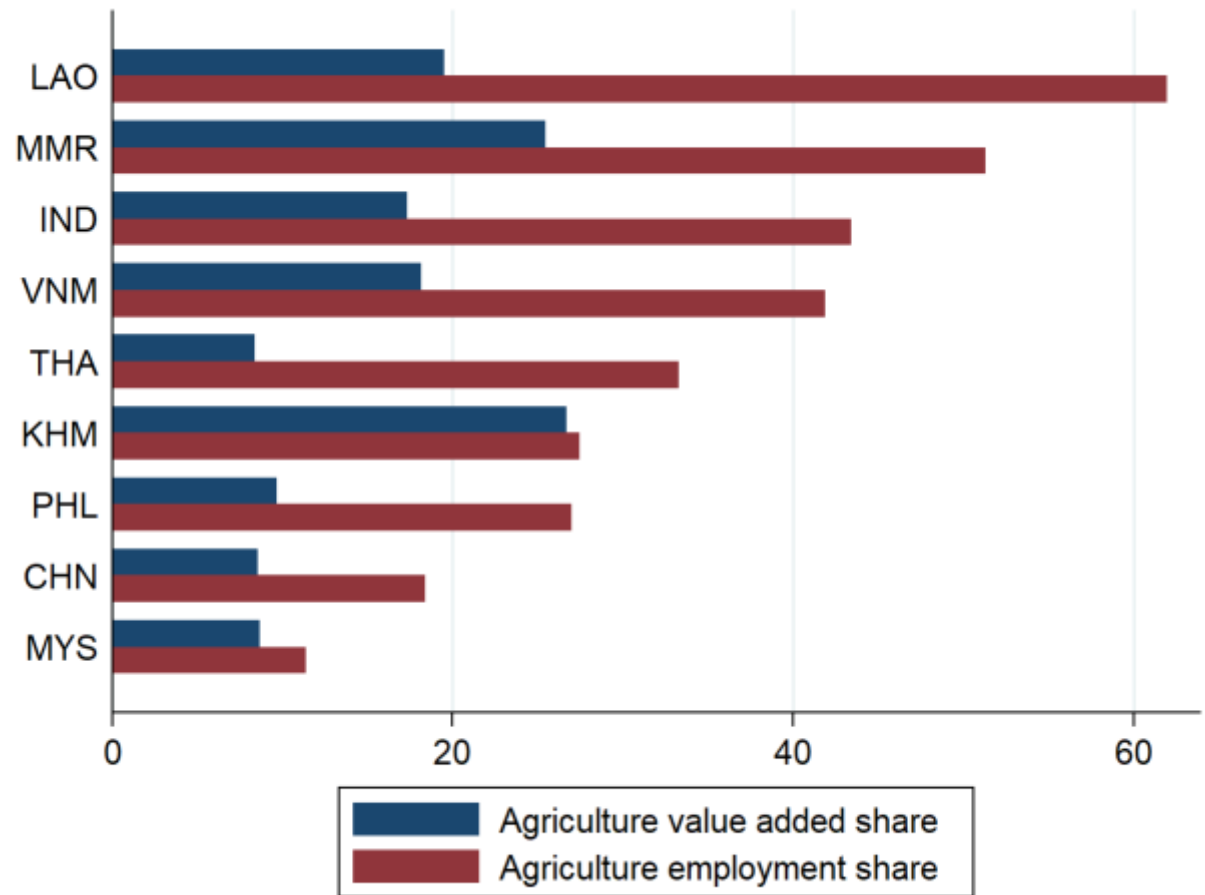
# Trends in Agriculture Development: Employment & Productivity

- By country and region
- Employment share and value added in agriculture in 1996



# Trends in Agriculture Development: Employment and Productivity

- By country and region
- Employment share and value added in agriculture in 2016



Source: World Development Indicator, World Bank



# Productivity Gaps: Some Asian Countries & Regions

Countries and Regions	Average Labor Productivity		Sector with Highest Labor Productivity		Sector with Lowest Labor Productivity	
	1990	2009	Sector	Productivity	Sector	Productivity
KOR	22,743	40,700	PU	311,248	WRT	20,624
HKG	39,966	69,921	PU	535,342	AGR	14,979
JPN	43,798	53,577	PU	189,618	AGR	17,291
SGP	55,530	76,480	PU	268,445	AGR	11,040
MYS	17,347	31,828	MIN	603,475	CON	10,967
THA	7,486	12,586	MIN	297,798	GOV	2,586
CHN	1,813	10,468	FIRE	66,060	AGR	2,670
PHL	6,529	8,439	PU	80,473	AGR	3,053
IDN	4,723	7,934	MIN	87,962	AGR	2,560
IND	2,744	6,421	PU	49,589	AGR	1,932

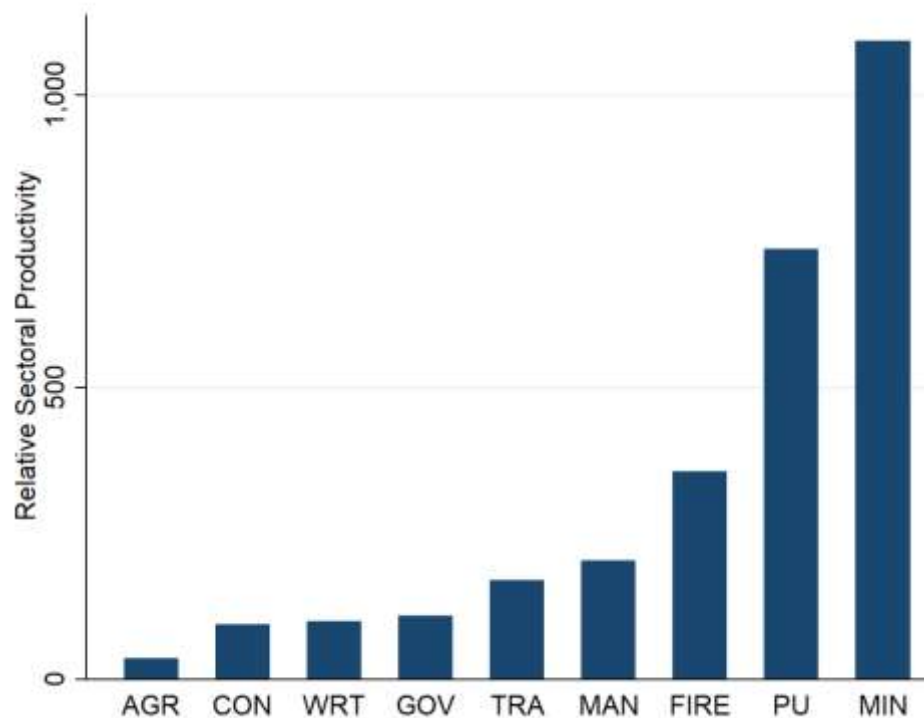
# Productivity Gaps: High Income Countries & Regions

Country and Regions	Average Labor Productivity		Sector with Highest Labor Productivity		Sector with Lowest Labor Productivity	
	1990	2009	Sector	Productivity	Sector	Productivity
ITA	41,110	41,933	PU	235,423	FIRE	5,090
GBR	37,906	54,455	MIN	462,509	AGR	25,881
ESP	41,309	48,806	PU	231,488	FIRE	21,920
DNK	35,261	42,801	MIN	1,377,118	FIRE	21,314
NLD	46,249	54,755	MIN	1,847,694	FIRE	44,489
FRA	41,646	50,377	PU	151,288	FIRE	24,923
SWE	29,385	50,949	PU	188,487	AGR	36,238
CHL	18,185	30,878	MIN	241,517	WRT	16,063
USA	66,567	88,206	PU	366,311	GOV	58,333

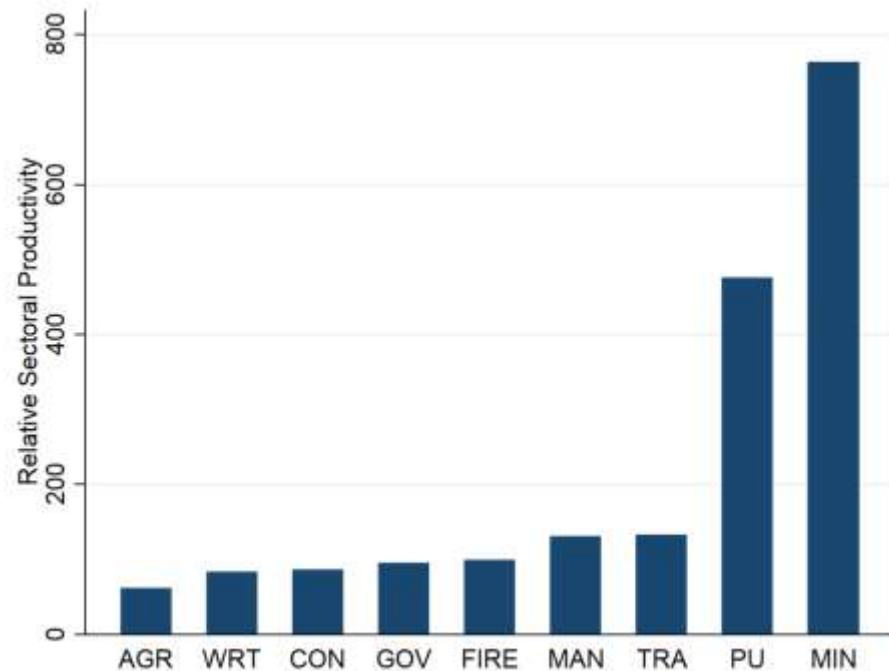


# Productivity Gaps: Relative Sectoral Productivity

- The Relative Sectoral Productivity in 2009

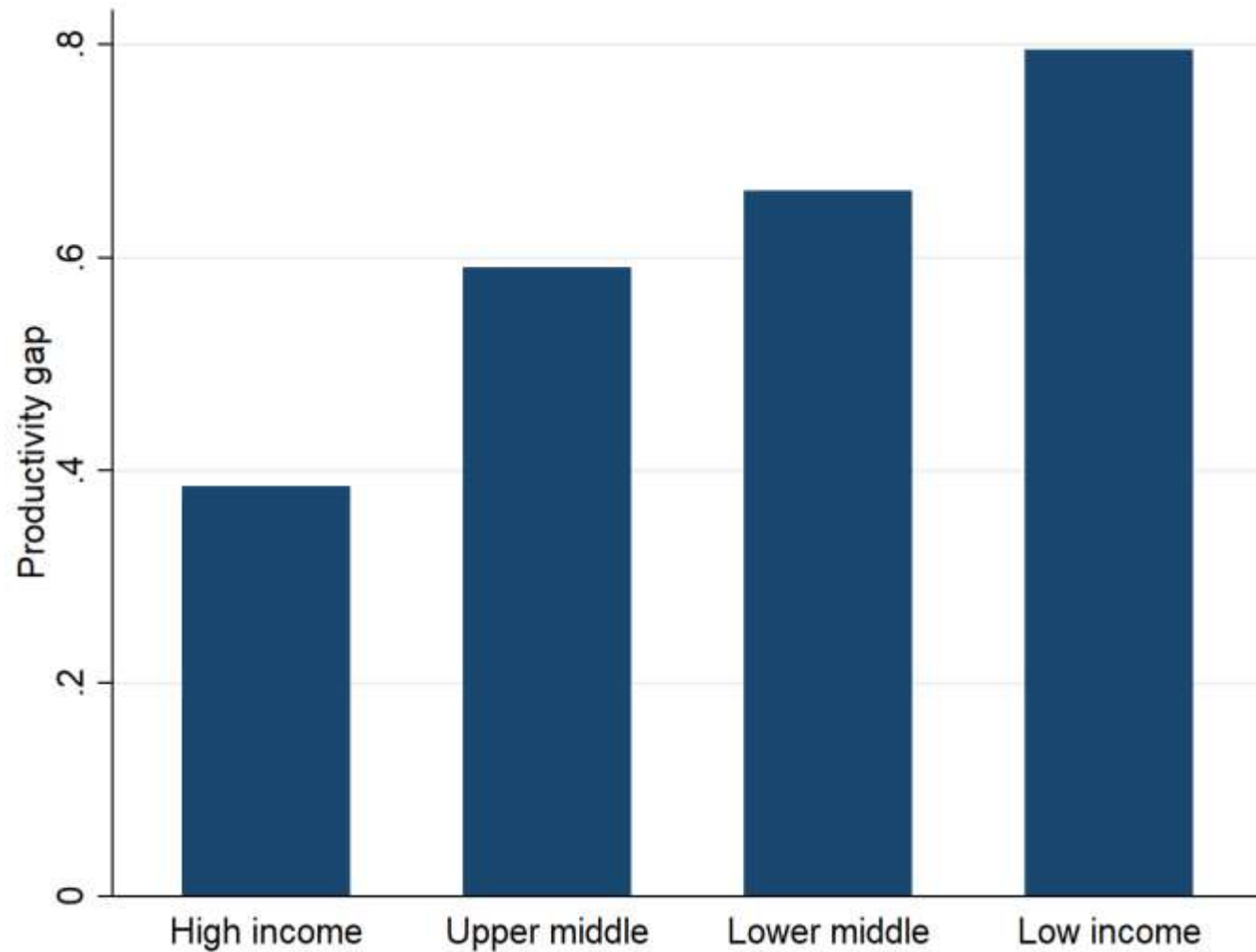


(a) Selected Asian Countries and Regions

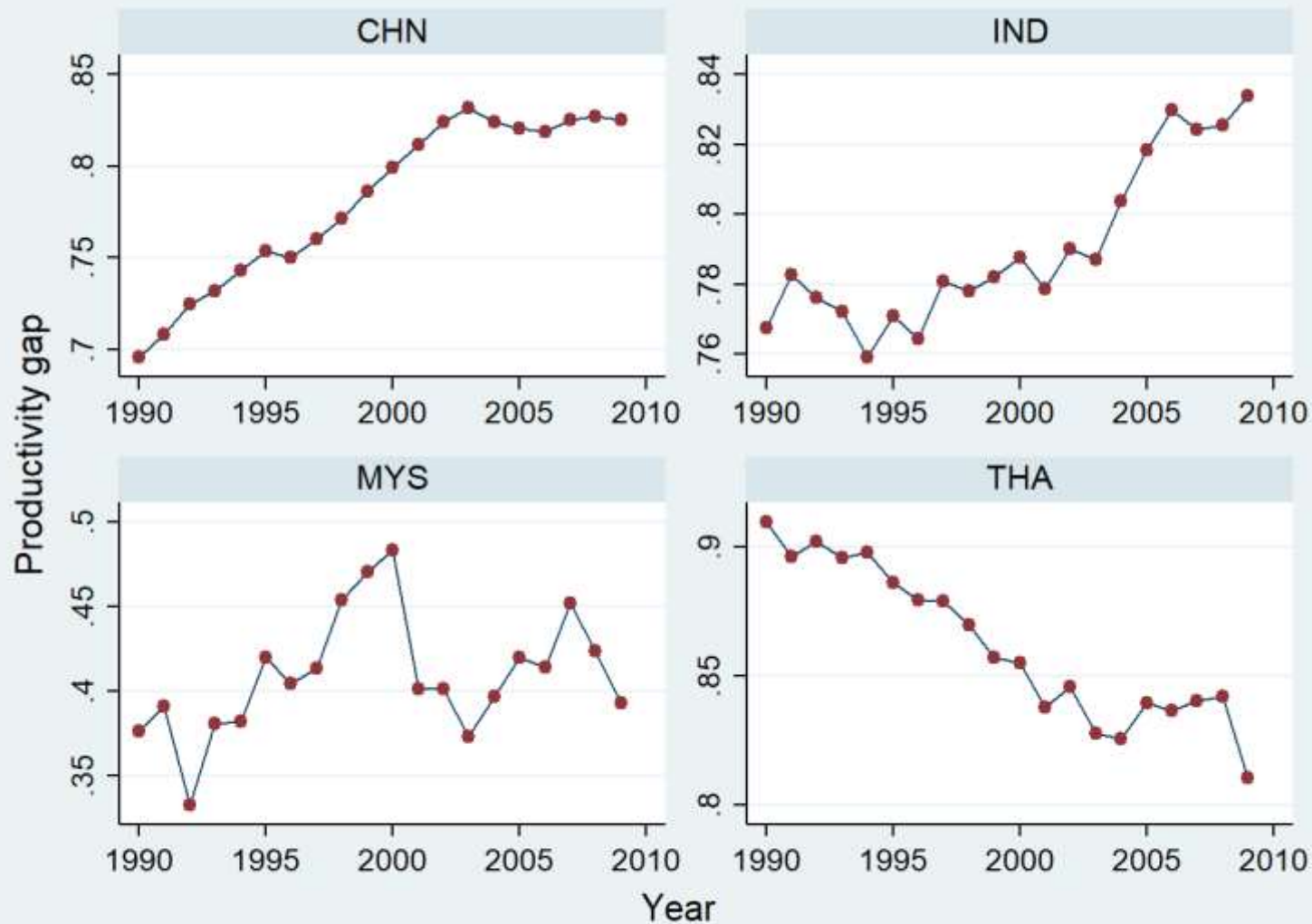


(b) Selected High Income Countries and Regions

# Productivity Gaps: By Income Groups

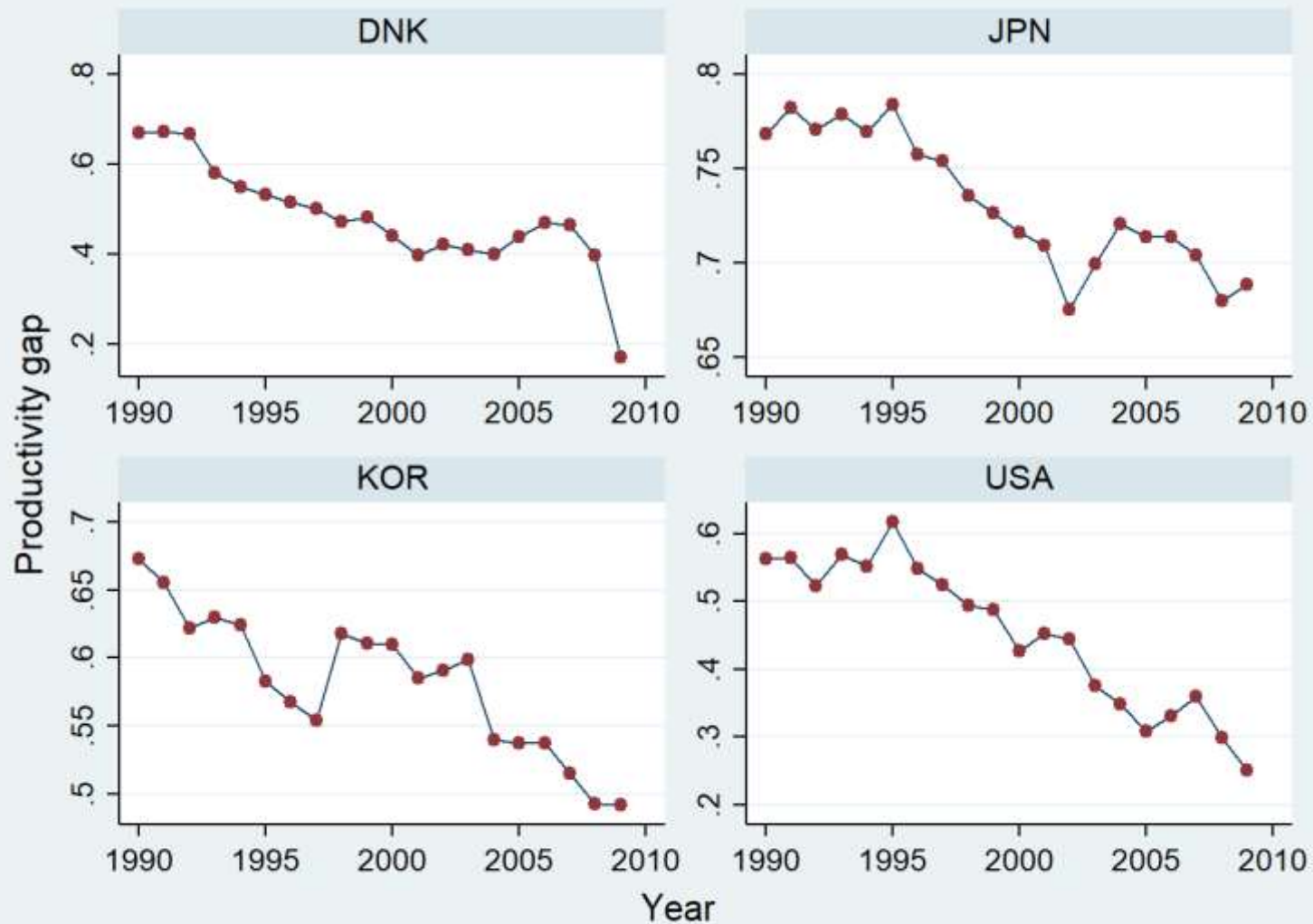


# Productivity Gaps: Trends Across Countries & Regions



Graphs by Country

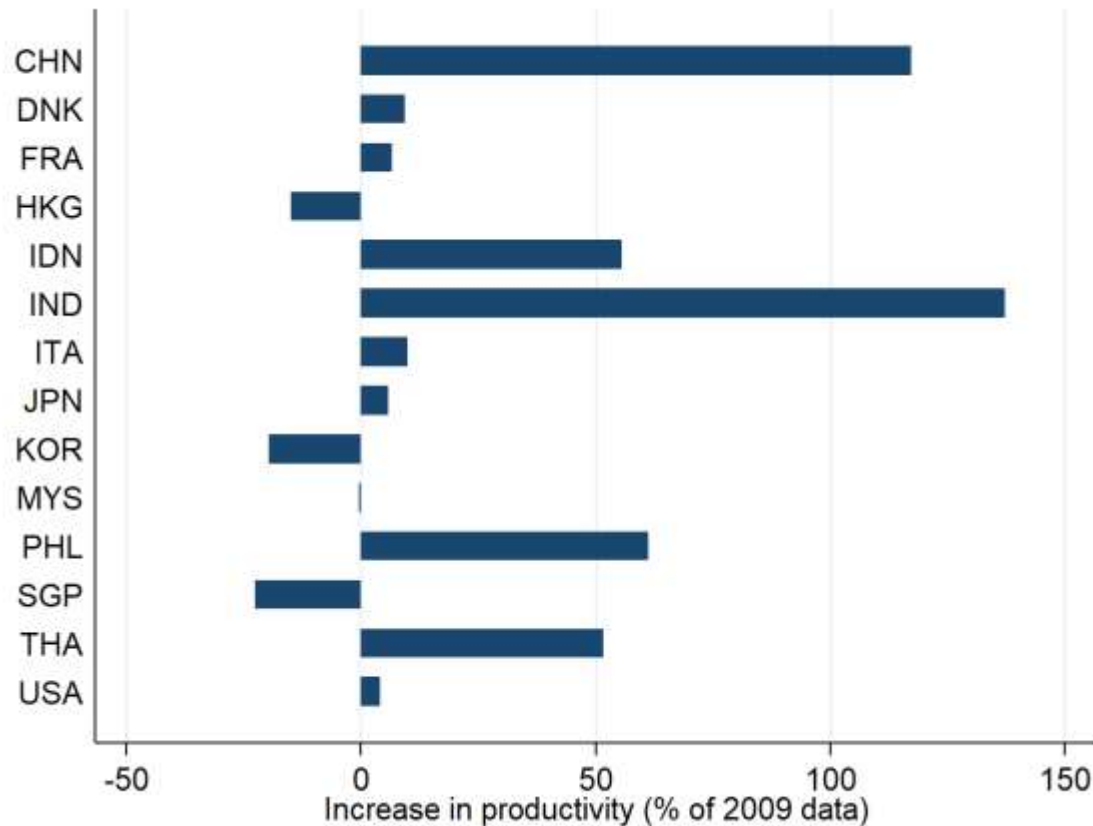
# Productivity Gaps: Trends Across Countries & Regions



Graphs by Country

# Moving Labor Out of the Agriculture Sector

- If employment distribution were matched to observed data in high-income countries and regions



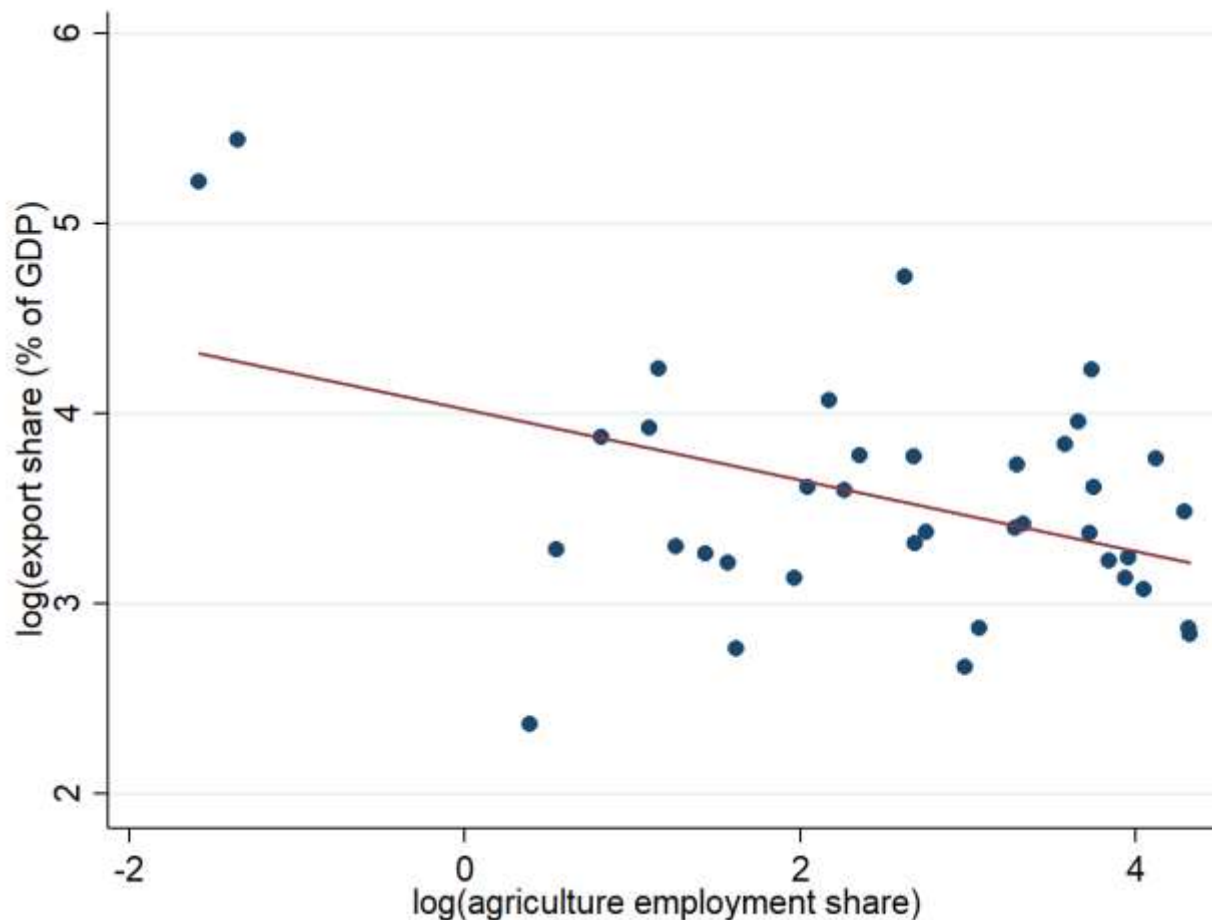


# Moving Labor Out of the Agriculture Sector: Argument in the Literature

- The idea that poor countries and regions need to reallocate labor from traditional, low productivity sectors toward modern, high productivity sectors has a long tradition in development economics (Lewis 1954, Fei and Ranis 1964, Chenery 1979)
  - ✓ Surplus labor in the agriculture sector
  - ✓ Capital accumulation in the non-agriculture sector
  - ✓ Barriers in the factor markets

# Impact of Trade on Structural Change: Overall Impacts

- The change in export share is negatively correlated with the agriculture employment share



# Impact of Trade on Structural Change: Empirical Evidence from China

	Migrants%	Agriculture%	Unemployment%	lnTFP
Panel A	(1)	(2)	(3)	(4)
$\Delta$ Export exposure	0.179** (0.0788)	-0.302** (0.120)	-0.212*** (0.0669)	0.324** (0.162)
Constant	-0.0679* (0.0356)	0.0743 (0.0547)	0.118*** (0.0304)	-0.0684 (0.0767)
Observations	315	315	315	315

## Note:

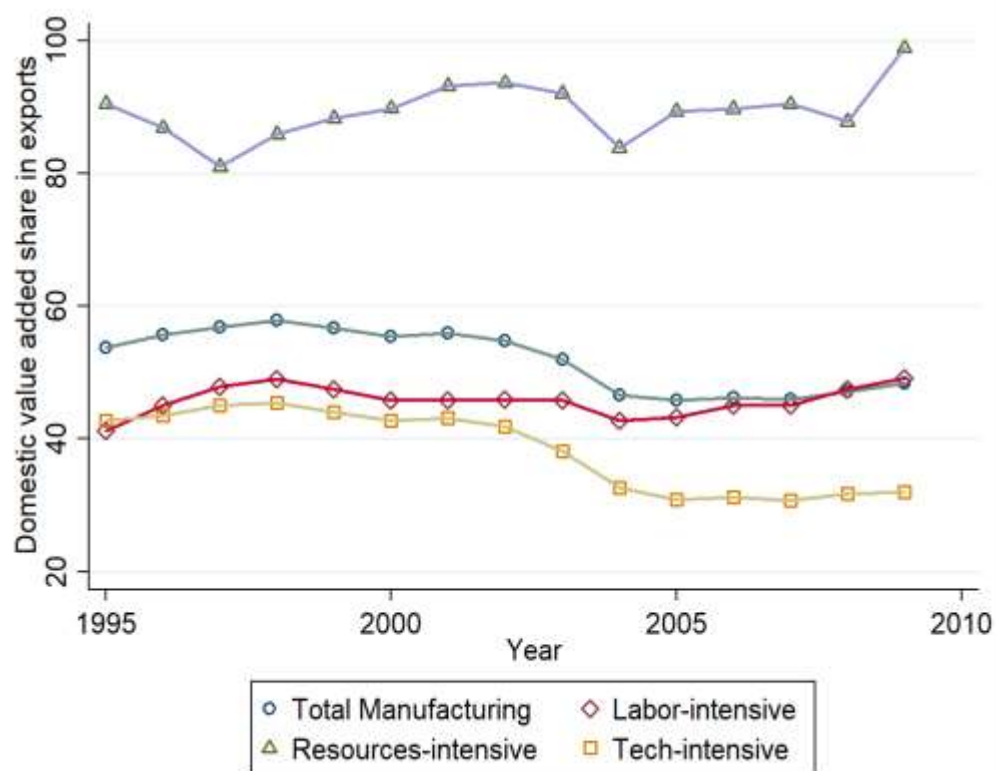
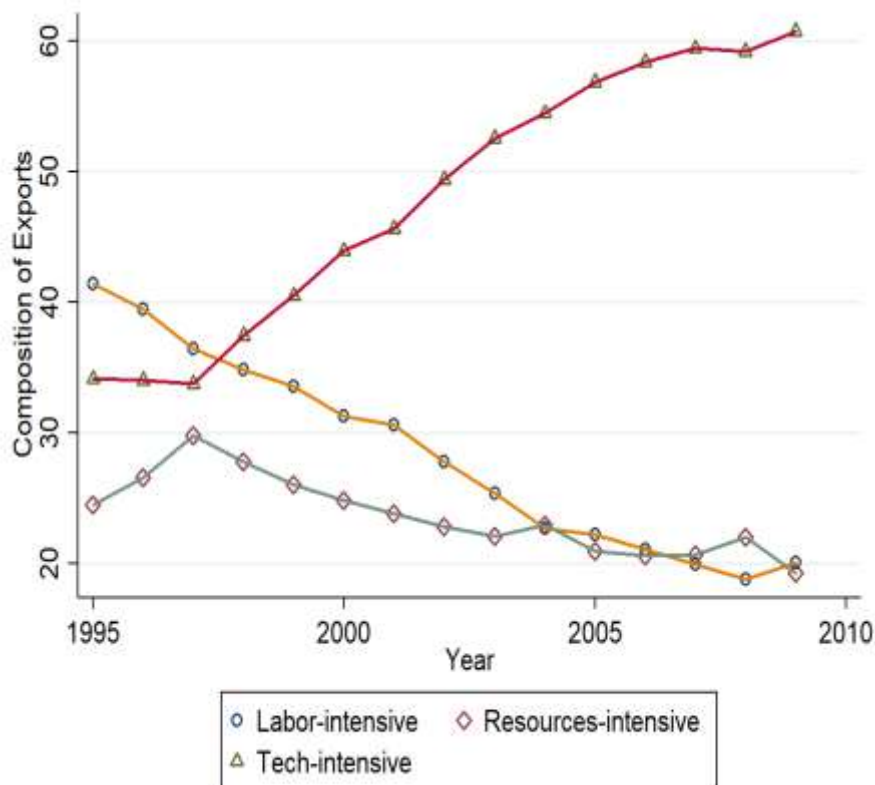
- Export Exposure: Employment weight export exposure per worker
- Migrants %: Rural-urban migrants/ Total working age population
- Agriculture %: Agriculture employment/ Total working age population

## Interpretation:

- The average employment-weight export exposure increased from 0.323 (\$10 million) to 1.76 (\$10 million) from 2000 to 2010 in China
  - A 13% decline in the agriculture employment share
- Compared with a prefecture at the 25th percentile of export exposure growth (0.267), the prefecture at the 75th percentile (0.533)
  - Migration share increased by 4.76 percentage points more

# Impact of Trade on Structural Change: Composition of Trade Matters

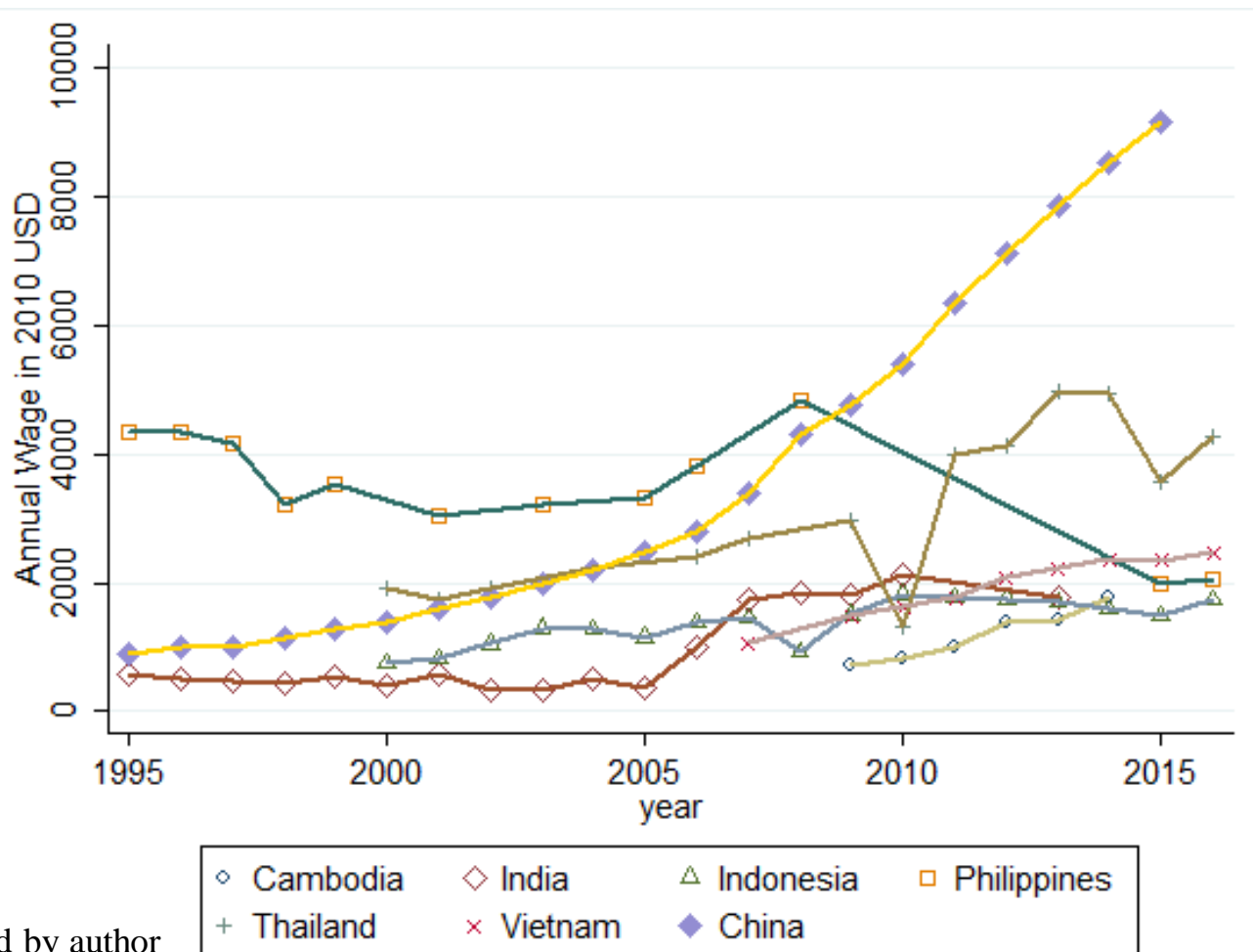
- The labor intensive sectors and labor intensive production process absorb unskilled labor from the agriculture sector



Source: Calculated by author, based on online appendix of Johnson and Noguera (2012)

# Impact of Trade on Structural Change: Composition of Trade Matters

- The comparative advantage is changing over time. Lots of labor-intensive production activities are moving out of China.



Source: Calculated by author



# Conclusions

- Agriculture employment and productivity varies across income groups
- Large productivity gaps across sectors within each country and region
  - The agriculture/non-agriculture gap is smaller in high-income countries and regions
- Moving labor out of agricultural sector towards sectors with high productivity increases the overall productivity in developing countries and regions
- International trade induces structural change, and labor-intensive production activities are needed to absorb labor from agriculture