

“Intertwining Inequality and Labor Market under the New Normal”


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The study investigates the effect of population ageing on occupational composition as well as its impacts on productivity, income, and inequality

- Some key findings:
 - Ageing demographics will enlarge the pool of self-employed workers and employers
 - Labor shortage will put pressure on wages, forcing less productive employers to become self employed
 - Lower interest rates will attract more low-skilled workers to become self-employed
 - The larger pool of self-employed workers will lower aggregate productivity and raise income inequality

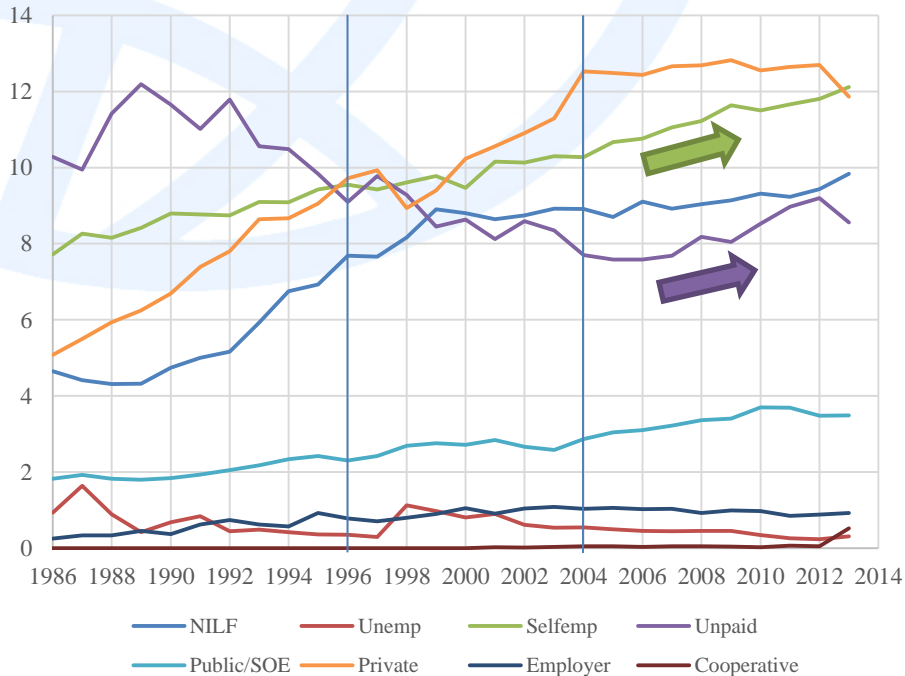


Demographics and interest
rate may not be the only
important determinants of
occupational choice in
Thailand

We need to look back to recent history for clues about the key drivers of occupational/sectoral choice

- From 1986 to 1996, private firms generated a total of 4.9 million jobs in the modern sector: mostly in manufacturing (1.83 million), construction (1.4 million), and wholesale & retail trade (0.82 million)

Working Age Population by Employment Status (million)

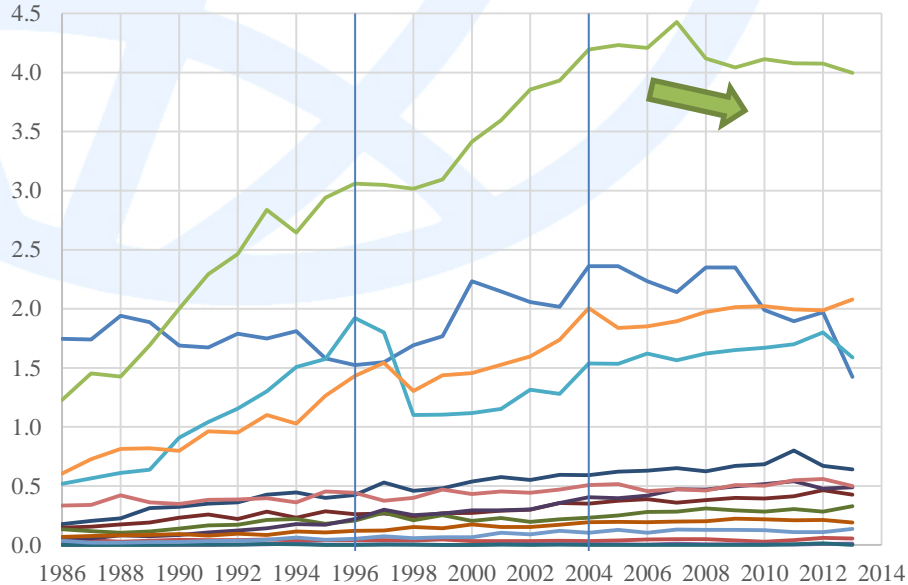


- However, growth in private firm employment has been stagnant since 2004
- 2.7 million more workers have become self-employed or unpaid family workers (potential workforce grew by 3.7 million)
- 0.62 million more have become workers in the public sector/SOEs

Manufacturing was the main engine of growth during the boom

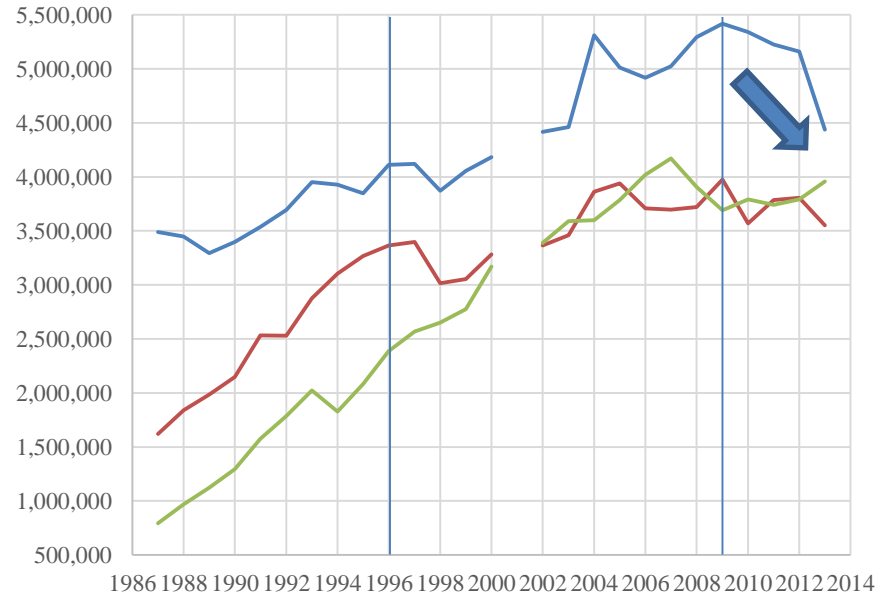
- But private manufacturing firms have shed nearly 200,000 workers during 2004-2013
- On the whole, small private firms have shed almost 1 million jobs in just 4 years

Breakdown of Private Employee (million)



— agri — mining — manif — electric — constr
 — wholesale — hotels — transport — finance — property
 — public — educ — health — other

Private Employees by Firm Size Category

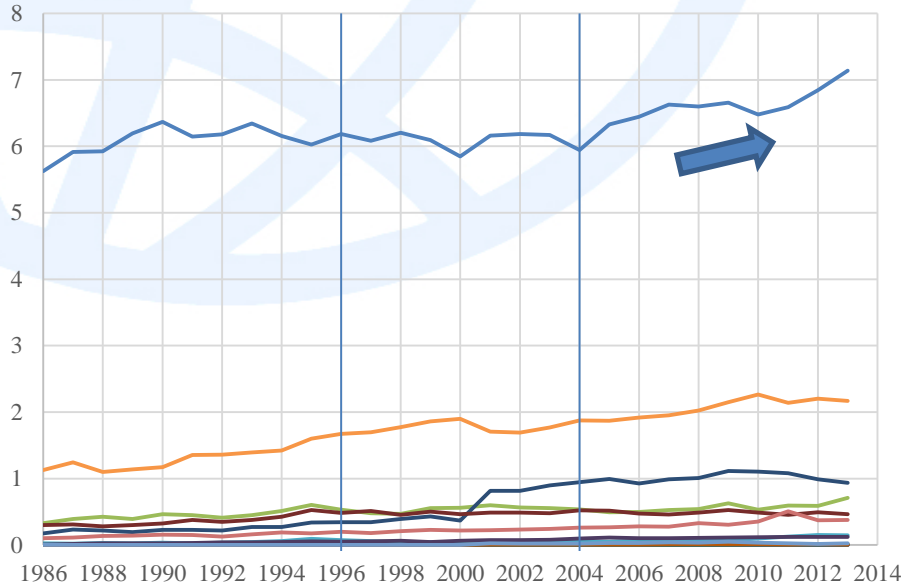


— small — medium — large
 <10 workers 10-100 workers >100 workers

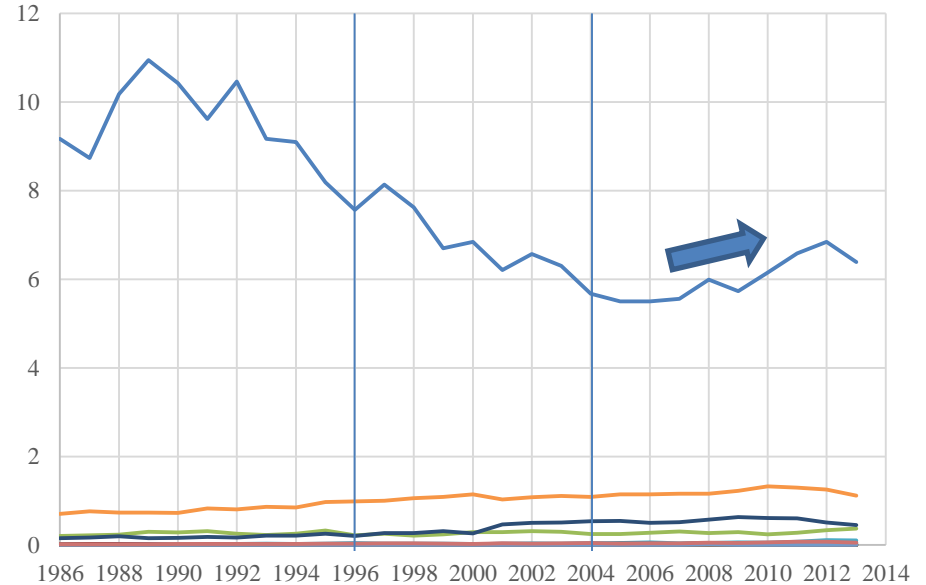
1.2 million more workers have become self-employed in agriculture over the 2004-2013 period

- Similarly, 710,000 more people have become unpaid family workers in agriculture
- The increase in low productivity “entrepreneurial activities” (mainly in agriculture) was dragging down aggregate labor productivity growth in the last decade

Breakdown of Self Employment (million)



Breakdown of Unpaid Family Workers (million)



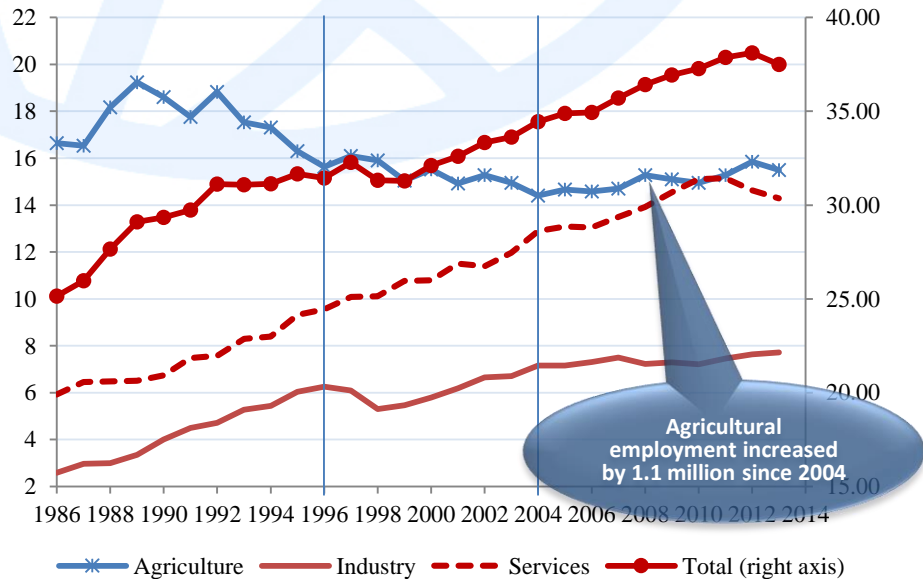
agri mining manuf electric constr
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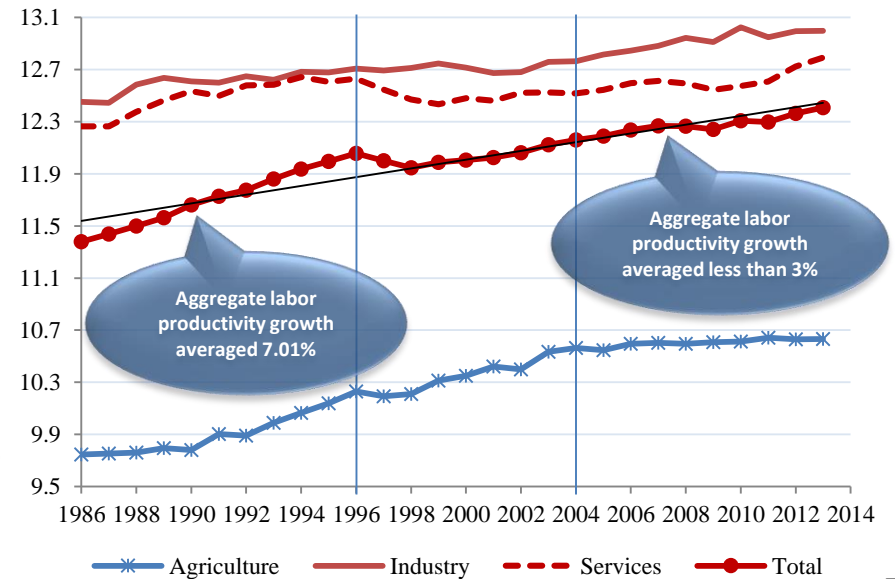
During the boom, the movement of labor from agriculture to the modern sector was contributing significantly to growth

- Labor productivity was growing at an unprecedented pace, averaging 7% throughout the 1986-1996 period
- However, since agricultural employment started to rise again after 2004, aggregate productivity growth fell to less than 3%
- Q: What was driving this trend reversal?

Total Employment by Sector (million people)

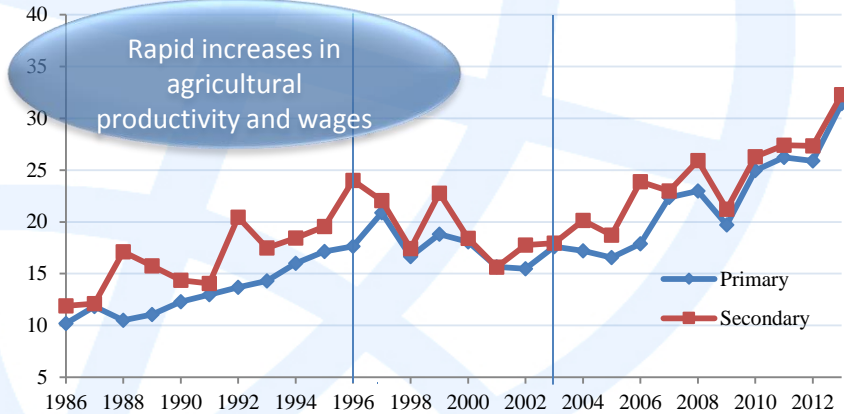


Log Value-Added per Worker - constant 2002 THB

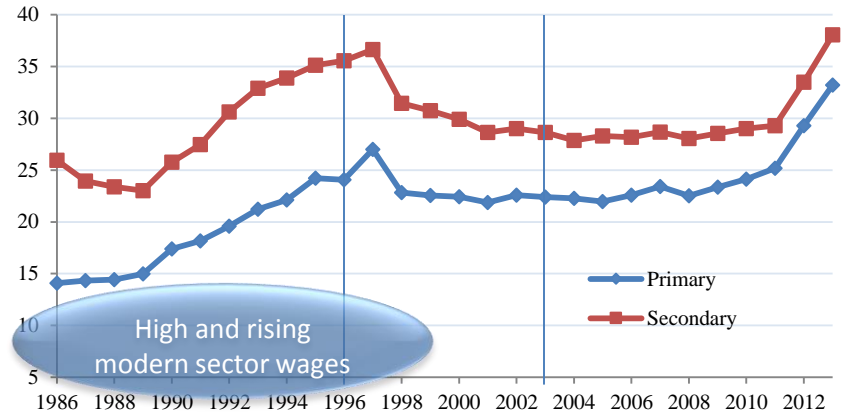


Two key factors were behind the movement of labor between sectors. Let's look first at the economic boom decade....

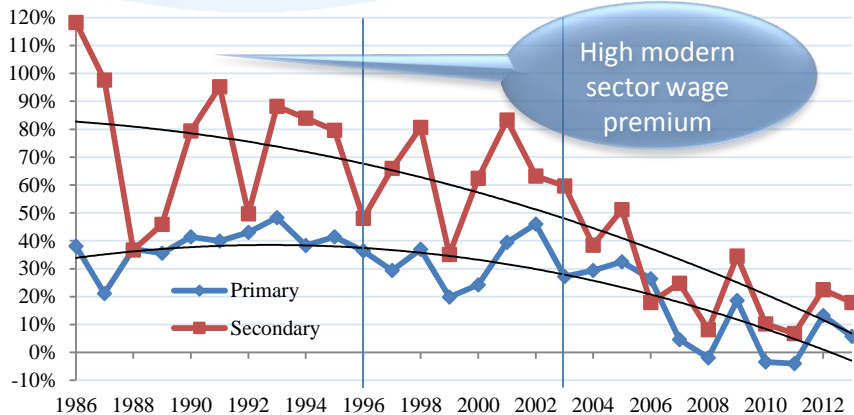
Hourly Wage Rates in Agriculture (2011 prices)



Hourly Wage Rates in the Modern Sector (2011 prices)



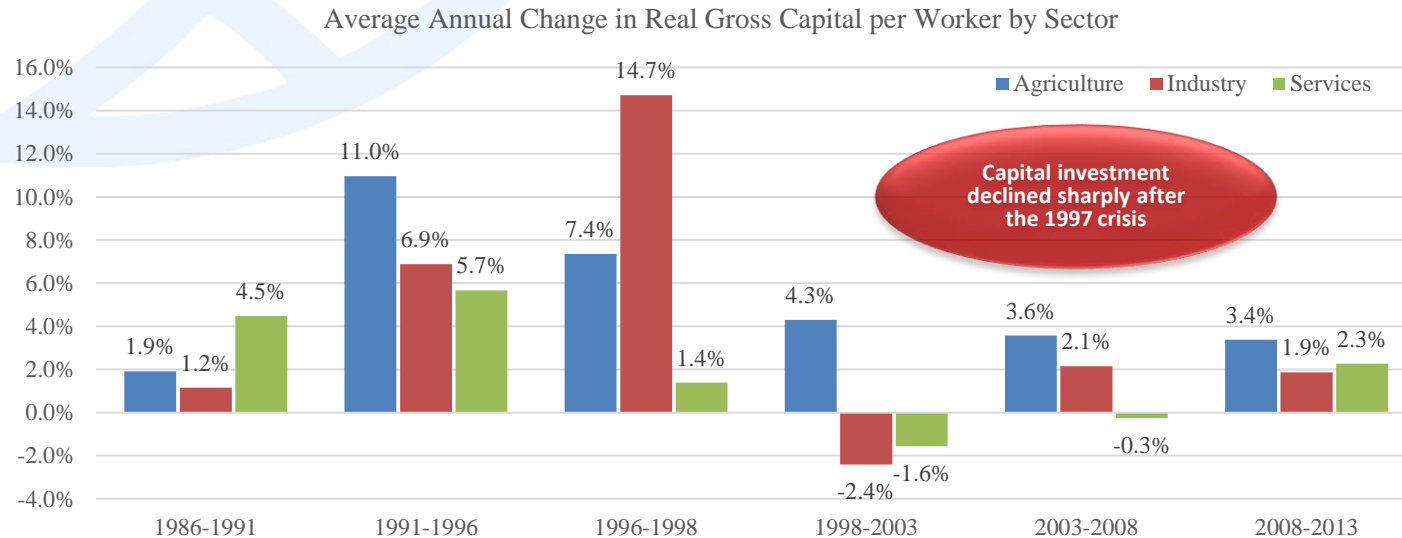
Modern Sector/Agriculture Hourly Wage Premium



- “labor push” effects of agricultural productivity growth (farm mechanization, better seeds, etc.) released surplus workers for the expanding modern sector
- “labor pull” effects from rapidly increasing modern sector wages and attractive employment opportunities

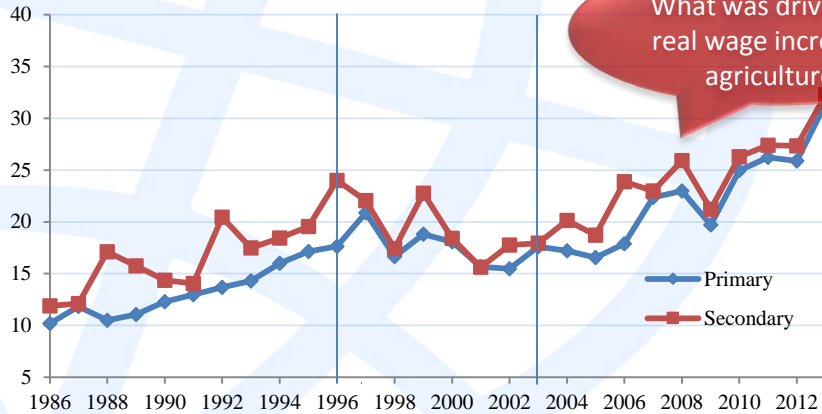
The rapid increases in productivity, wages, and modern job opportunities during the boom were possible because of the high rates of capital accumulation observed in all sectors

- High average annual increase in gross capital per worker of 8.2% observed from 1986 to 1996 (6.6% in agriculture; 4.1% in industry; and 5.2% in services)
- However, the rate of capital deepening fell to only 1.5% per year from 1998 to 2013 (3.8% in agriculture; 0.6% in industry; and 0.2% in services)

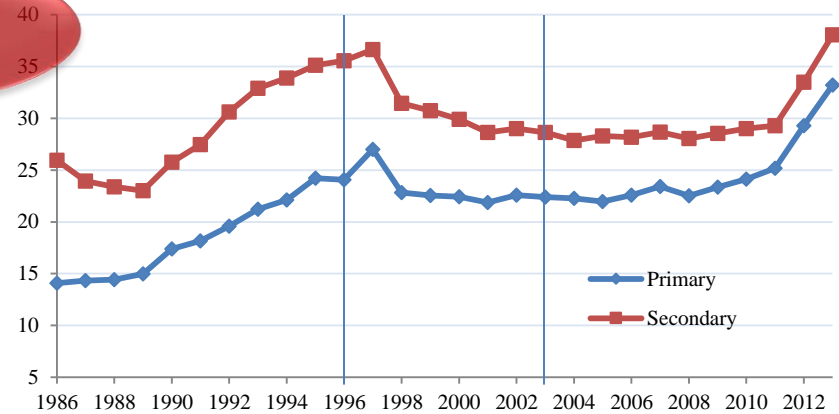


There is no longer a big financial incentive for farmers to seek non-farm jobs: the non-farm “wage premium” has largely disappeared in the last decade

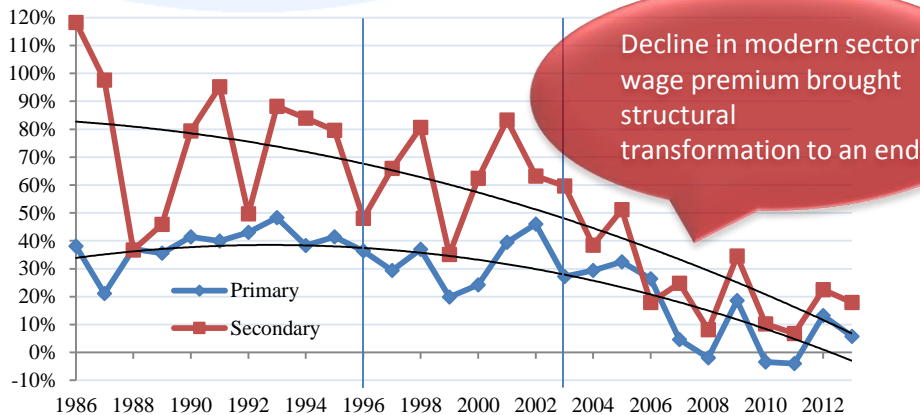
Hourly Wage Rates in Agriculture (2011 prices)



Hourly Wage Rates in the Modern Sector (2011 prices)



Modern Sector/Agriculture Hourly Wage Premium

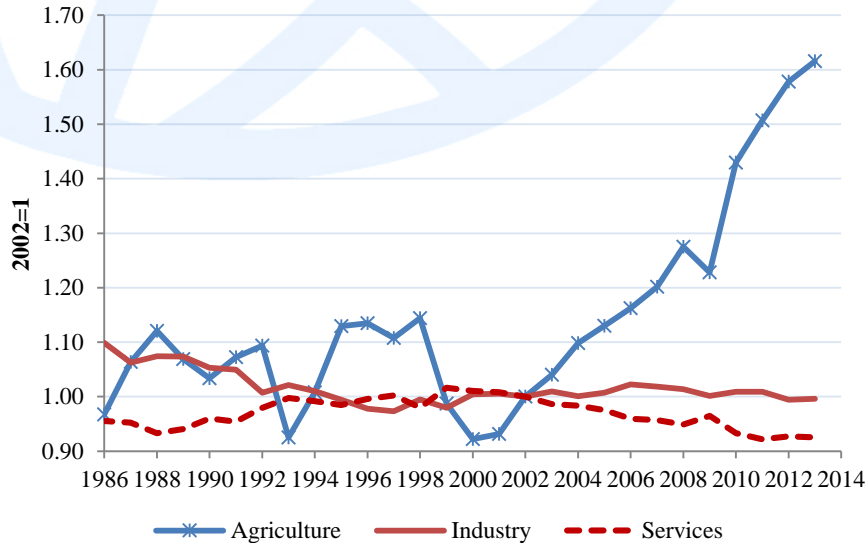


- “labor push” from high agricultural productivity growth is no longer working
- “labor pull” effects also disappeared as modern firms are no longer investing at the same rate as before
- But how did wages in agriculture manage to keep rising over the last decade?...

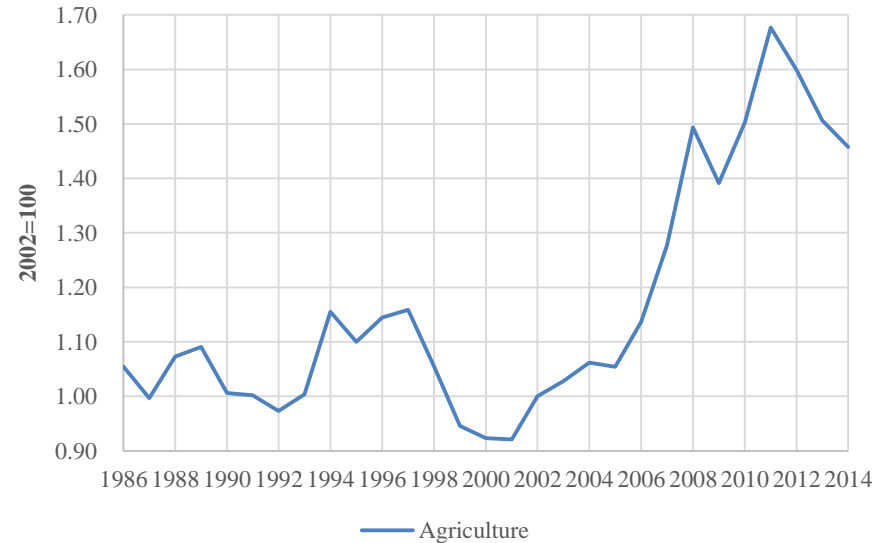
...Because the sustained increase in agricultural output price contributed significantly to the rise in agricultural real wages

- Real agricultural output price went up by 73.5% from 2001 to 2013
- The increase in real wages in agriculture was thus mostly driven by the rise in real agricultural output price – brought on by consistently large increases in the world agricultural commodity prices

Real Output Price – Thailand
Sectoral price deflator/GDP deflator



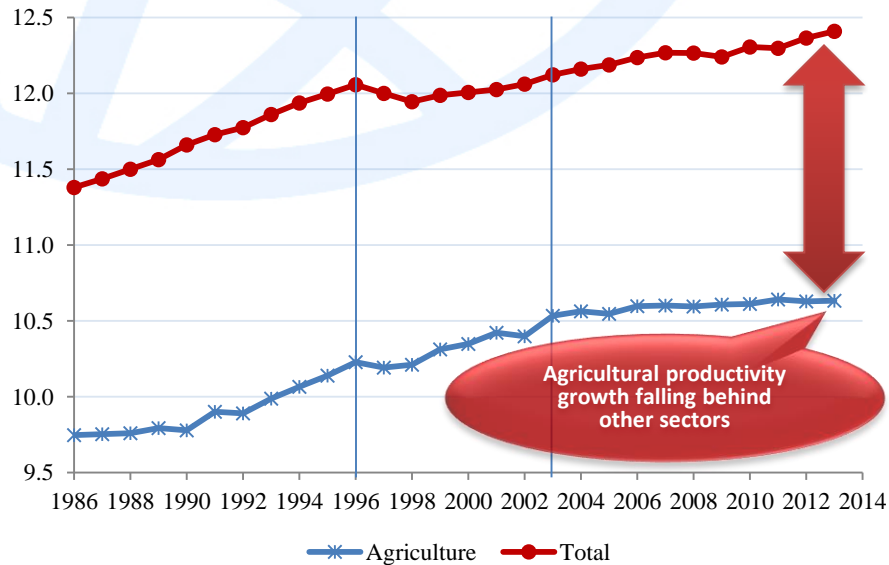
World Agricultural Commodity Price Index
(constant 2005 USD)



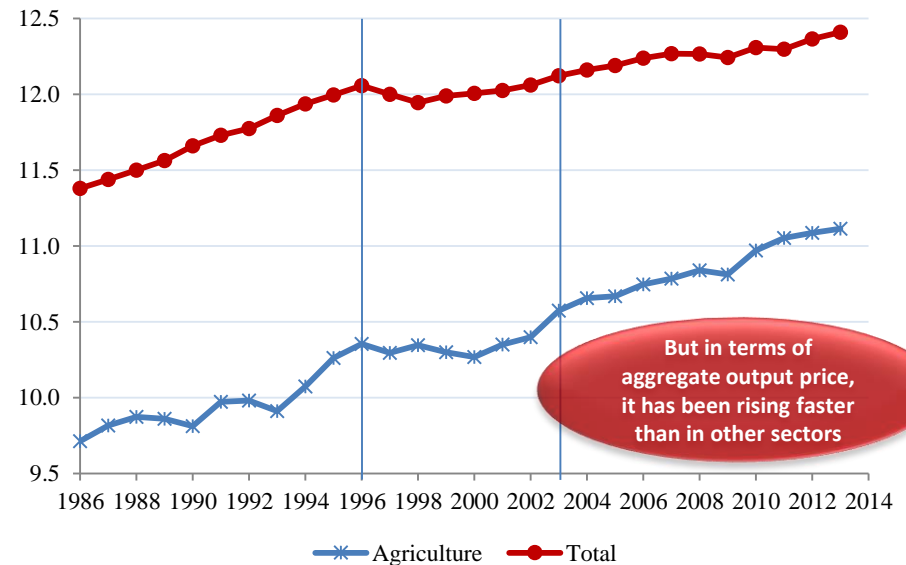
Is this worrisome for the Thai economy?

- **Yes and No!**
- No, because farmers have earned more and this has significantly reduced poverty
- From 2003 to 2013 agricultural productivity (left graph) increased by just 11%, but in terms of aggregate price level, output per worker (right graph) rose by a massive 72%

Log Value-Added per Worker - constant 2002 THB
(Nom. Sectoral GDP/employment)/sectoral price deflator



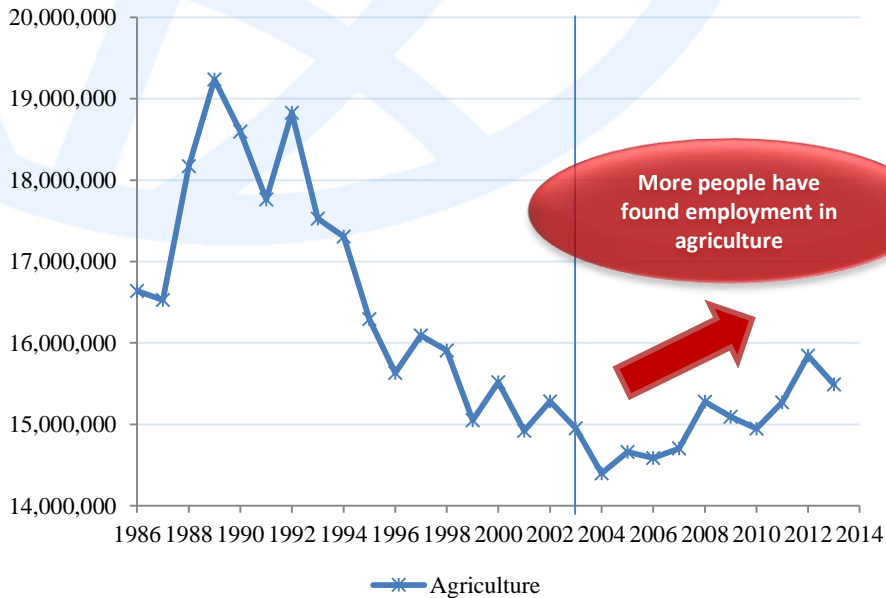
Log Value Added per Worker - at GDP price
(Nom. Sectoral GDP/employment)/GDP deflator



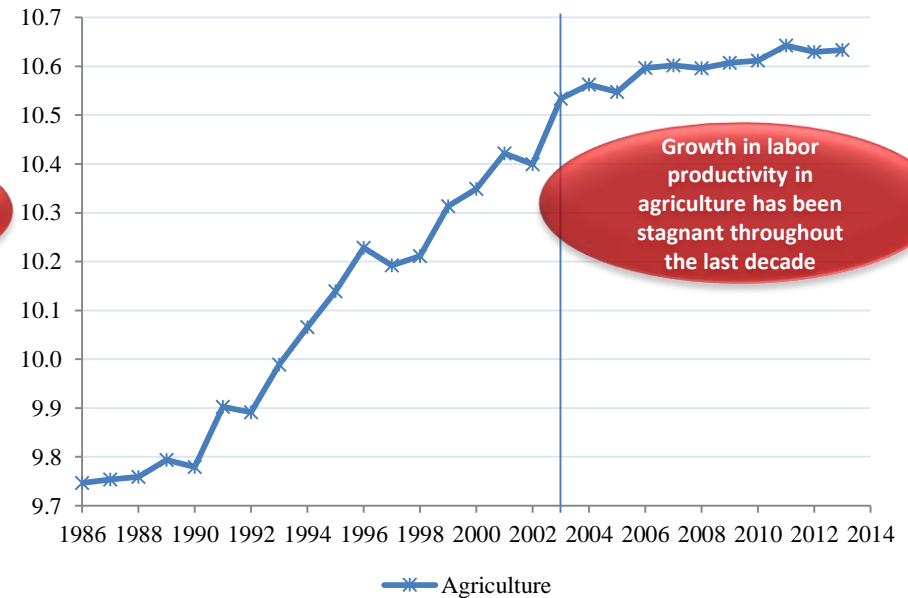
Is this worrisome for the Thai economy?

- Yes, because farmers remain the least productive workers in the economy and there has been very little growth over the last decade
- Aggregate labor productivity suffers as a result

Total Employment in Agriculture

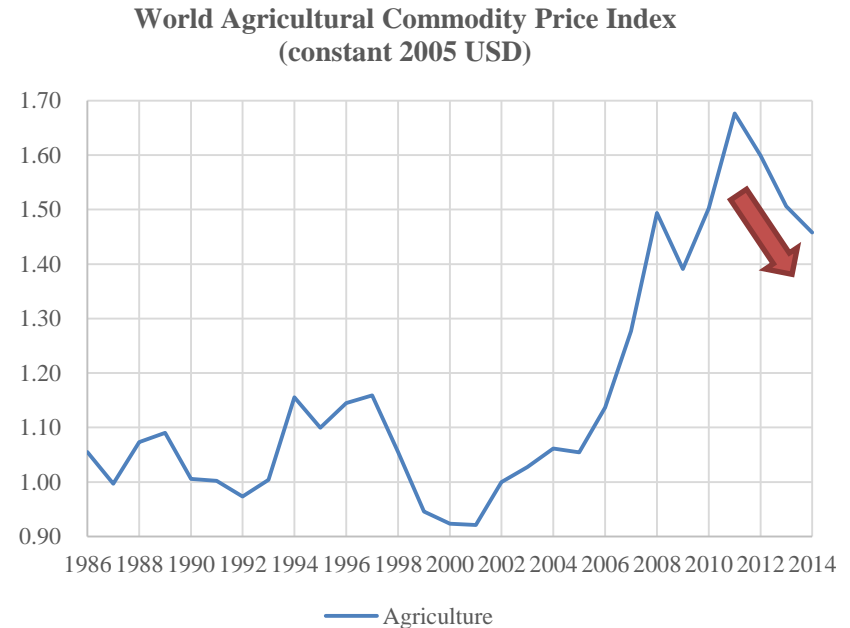
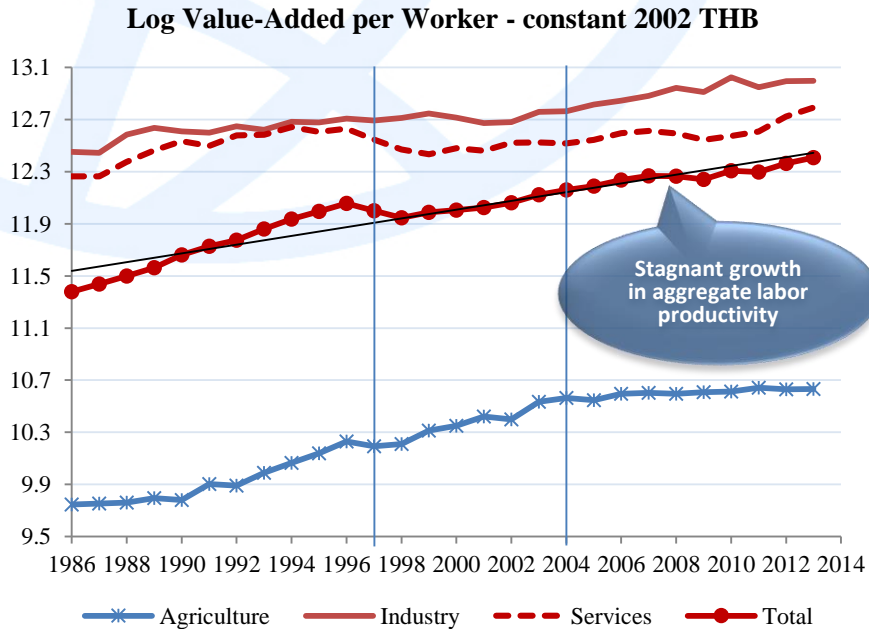


Log Value-Added per Worker – Agriculture



Furthermore, more people are now vulnerable to agricultural price shocks...

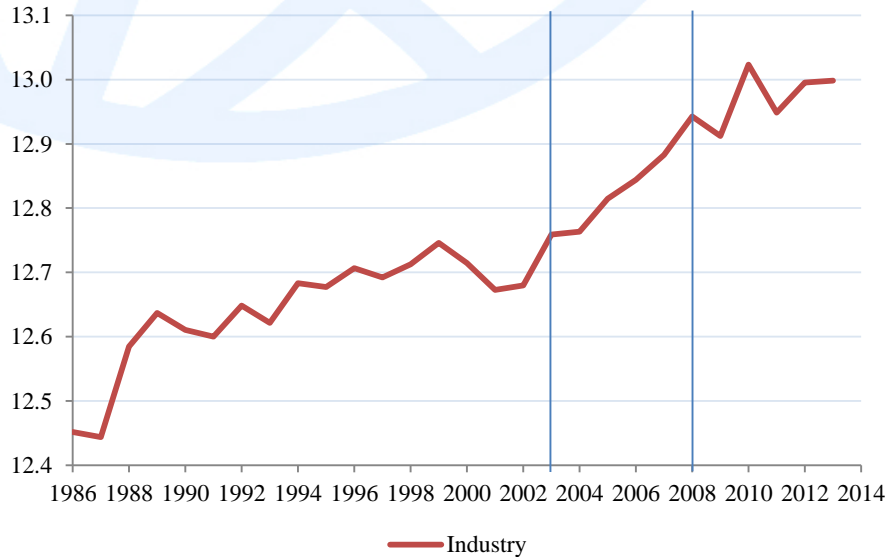
- Since 2012, world agricultural commodity prices have turned less favorable and can be seen to follow a declining trend
- Without government support, income of agricultural workers would fall with global prices



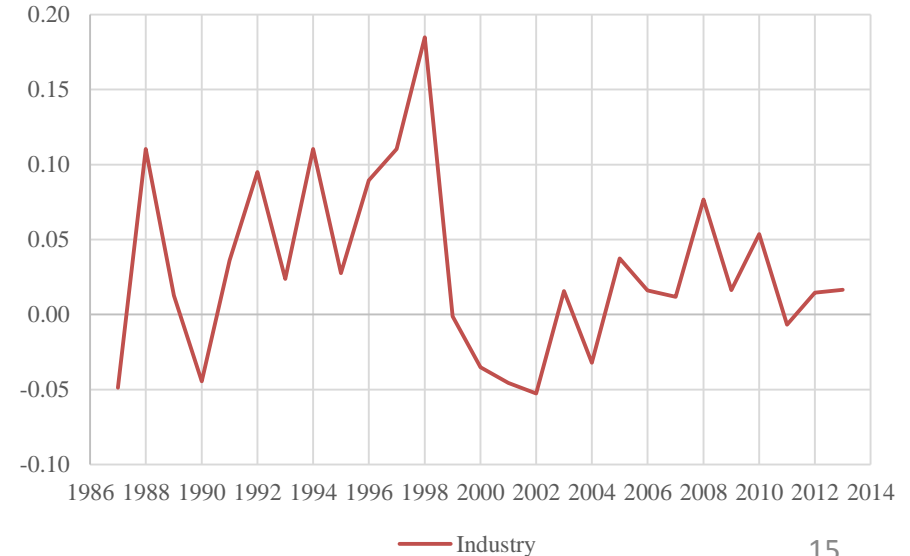
Productivity in the industrial sector has been rising, but the sector has not been creating jobs

- Industrial labor productivity growth rate from 2003 until the global financial crisis has been even faster than the pre-1997 crisis pace
- The worst case scenario is when income in agriculture falls and there are no attractive modern sector jobs available for those workers leaving agriculture
- **Why have industrial firms not been hiring and investing more in the last decade?**

Log Value-Added per Worker - Industry

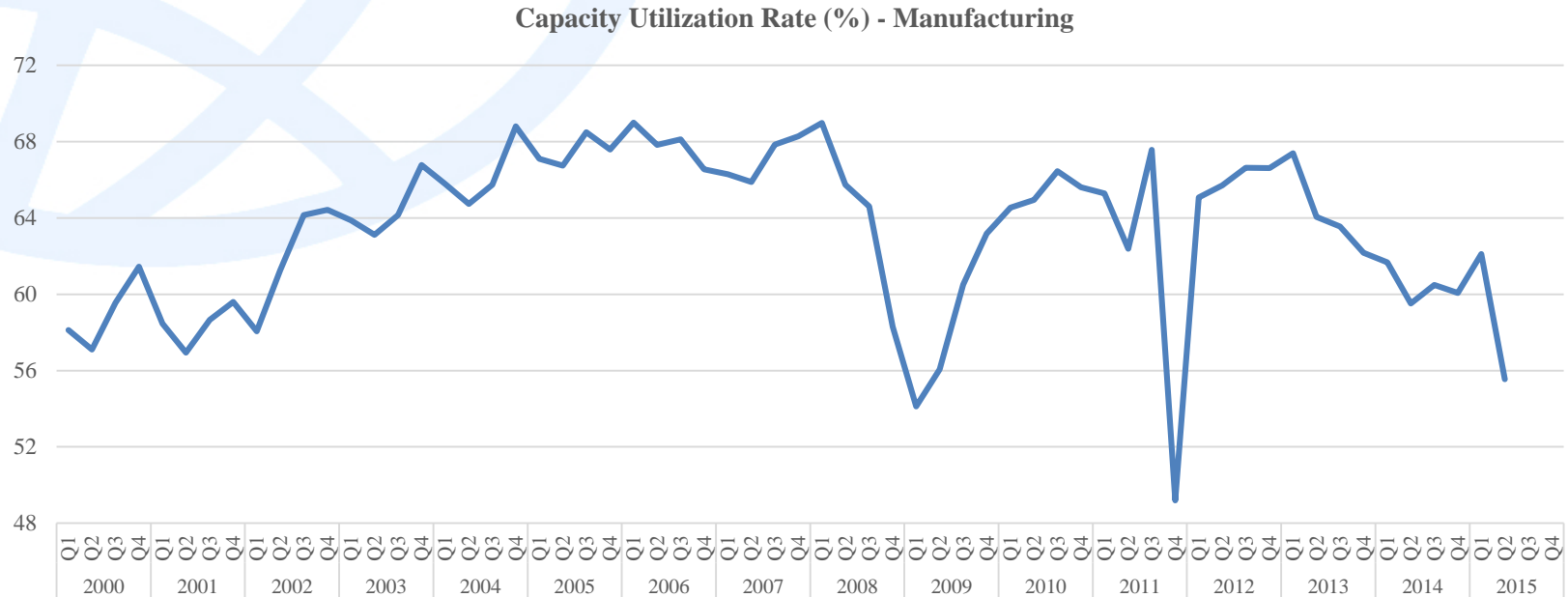


Annual Change in Gross Capital/Worker - Industry



The capacity utilization rate may suggest some possible answers...

1. The slump in demand for Thai manufactured products after the global crisis could explain the fall in capacity utilization and hence capital investment and hiring
2. Has Thai firms lost competitiveness in the global market?
3. Has domestic demand been insufficient?
4. What should we do about it?



Note: 78% of industrial sector GDP comes from manufacturing



Annex

Framework for Analyzing the Demand and Supply of Agricultural Labor

- The following framework is employed to investigate the determinants of structural transformation in Thailand

Demand for agricultural labor:

- ? +

$Q = f(\text{agri wage}, \text{agri productivity}, \text{agri output price}, \text{other factors})$

Supply of agricultural labor:

+ -

$Q = f(\text{agri wage}, \text{non-agri wage}, \text{economic shocks}, \text{other factors})$

- Labor productivity is endogenous and “cereal yield” (kg. per hectare) is used as an instrument
- Hypothesis:** Growth in labor productivity (due to mechanization, better seeds etc.) reduces demand for agricultural labor and frees up labor for the growing modern sector

Estimation Results

Demand:

$$\ln(\widehat{Qd}_t) = -15.1^{***} - 0.30^{**} \ln(Wag_t) - 0.31^{***} \ln(Prod_t) + 0.35^{***} \ln(Pag_{t-3}) \\ + 0.38^{***} \ln(Qd_{t-1}) + \sum_{i=2}^4 \delta_i Q_i + \alpha_4 trend + \alpha_5 trend^2$$

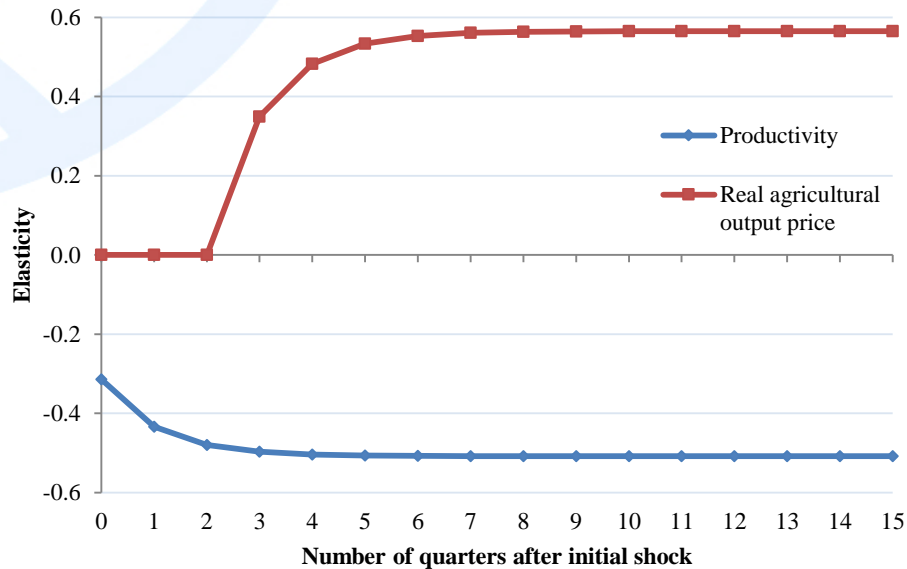
Supply:


$$\ln(\widehat{Qs}_t) = 13.08^{***} + 0.49^{***} \ln(Wag_t) - 0.34 \ln(Wnag_t) + 0.34^{***} \ln(Qs_{t-1}) \\ + \sum_k \theta_k Crisis97_{t-k} + \sum_l \sigma_l Crisis08_{t-l} + \sum_m \delta_k Flood11_{t-m} + \sum_{i=2}^4 \gamma_i Q_i \\ + \beta_4 trend$$

- All estimated coefficients have expected signs
- Improvements in agricultural production technology in Thailand seem to have decreased farm labor demand and allowed the release of surplus labor for modern sector employment

An increase in the price of agricultural output stimulates demand for agricultural labor (three quarters after the initial price increase) and the long-run price elasticity of demand is significantly larger than the short-run elasticity

The Effects of Permanent Shocks to Real Agricultural Output Price and Productivity on Agricultural Labor Demand

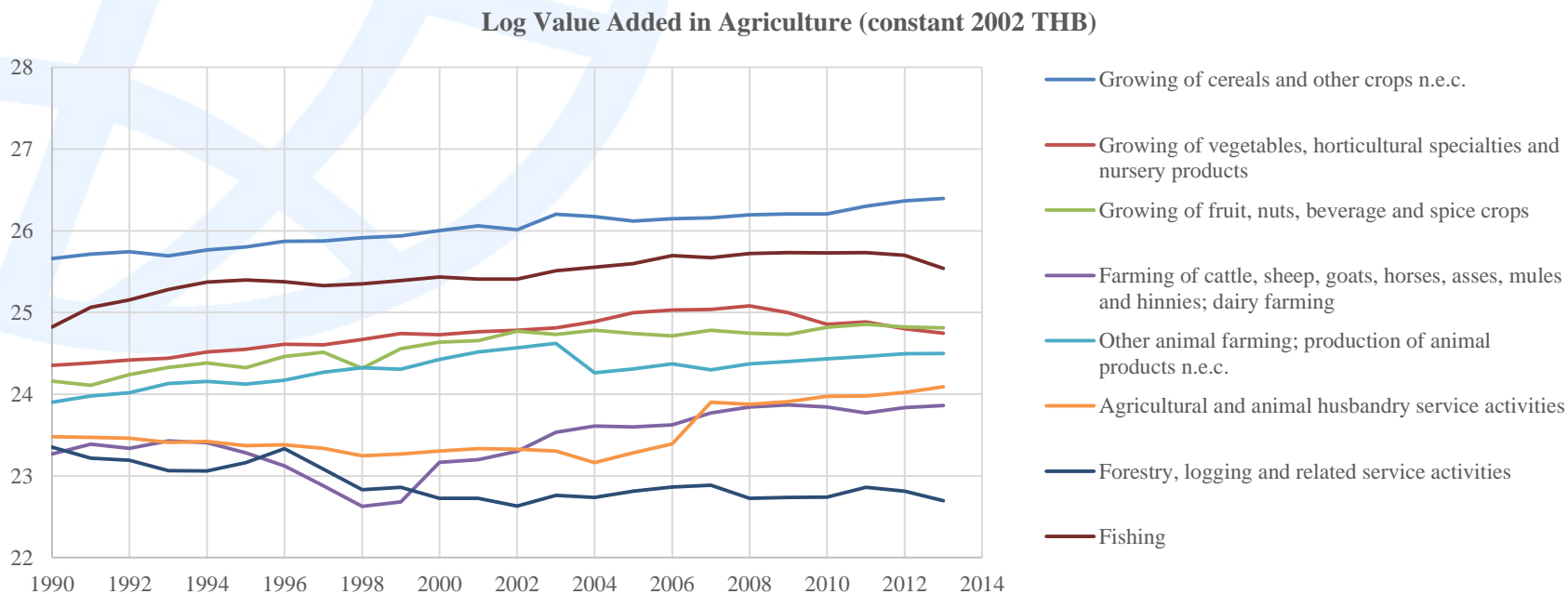




Breakdown of agricultural GDP and agricultural output prices

Growing of cereals and other crops is the biggest component of agricultural output

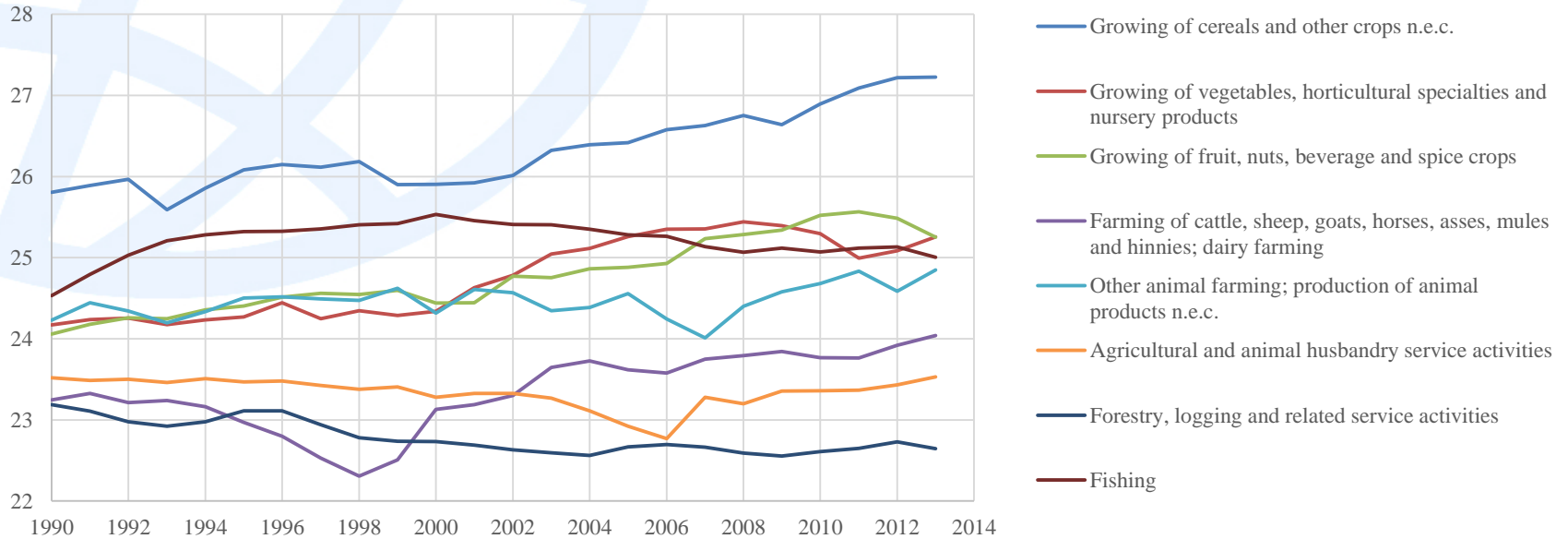
- From 2003 to 2013, cereals output went up by 22%....



...However, cereals output at the aggregate price level went up by 148% over the same period

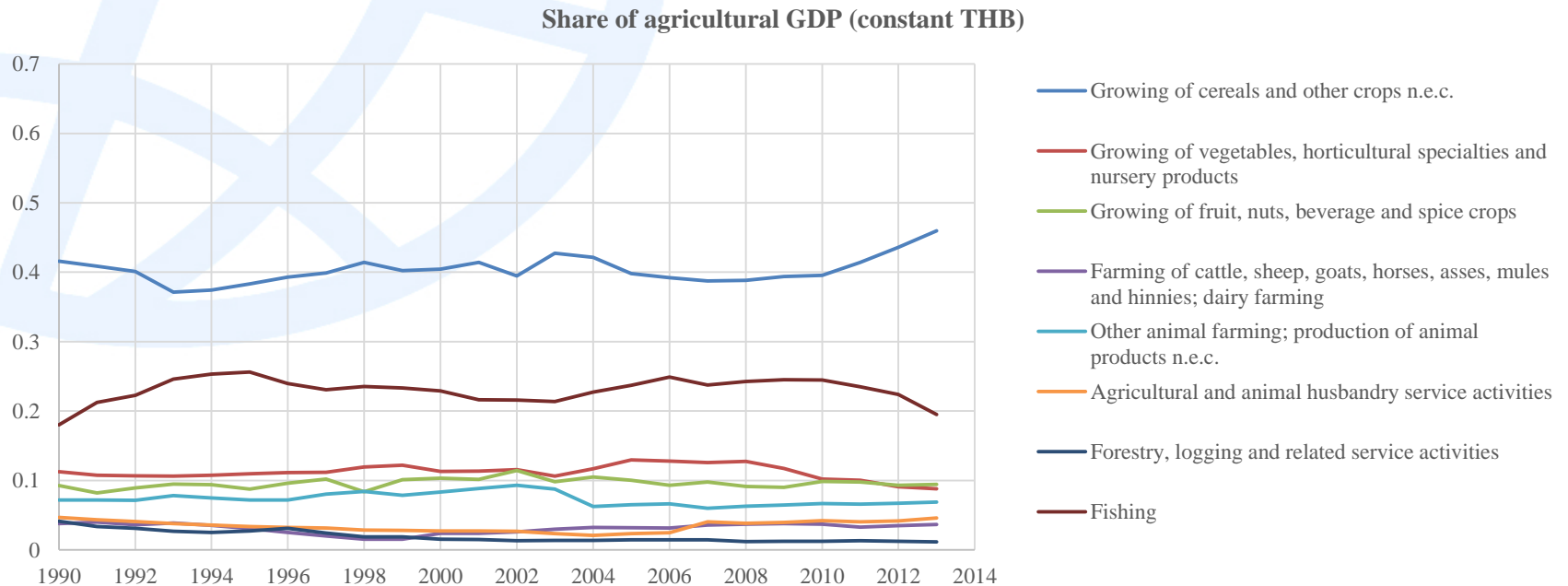
- This reflects the massive increase in real output prices of cereals (output price of cereals/aggregate price)

Log Value Added in Agriculture (at real output price)



Shares of different types of agricultural outputs to total agricultural output

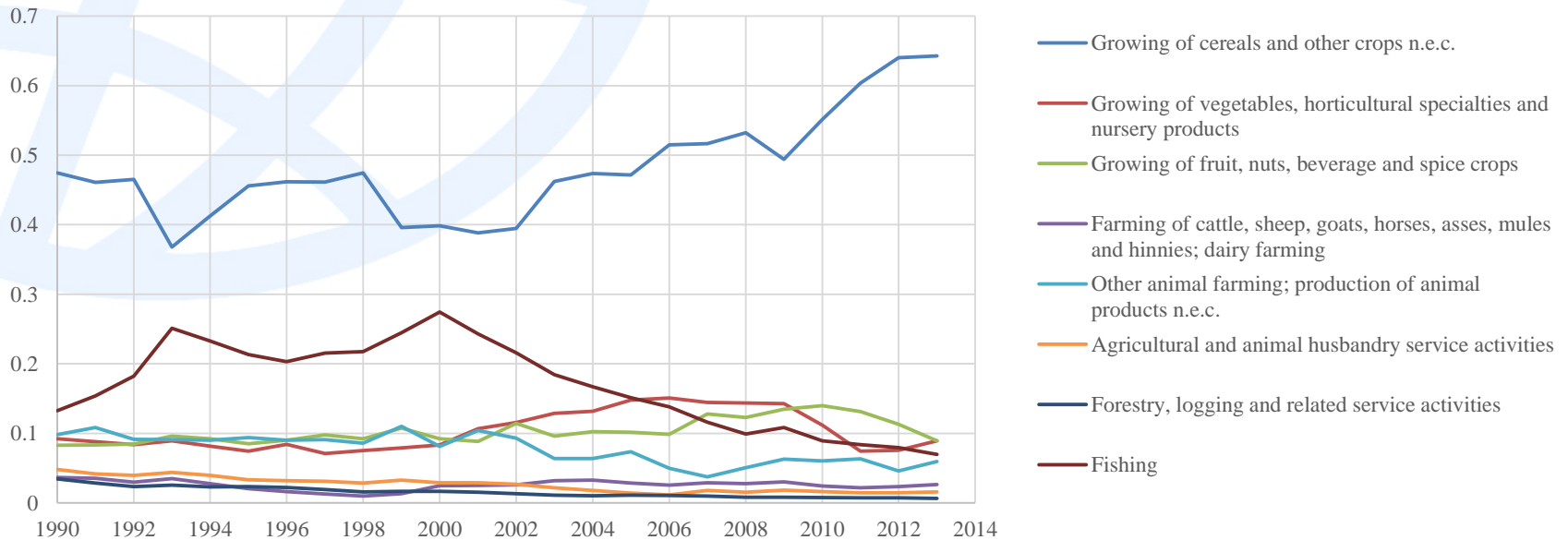
- Large increase in cereals output after 2010 is likely a result of government policies (rice pledging scheme)



Shares of agricultural income from different activities to total agricultural income

- Large increase in income from cereals production could be a major factor behind rapid decline in poverty

Share of agricultural GDP (real output price)



Real output price for cereals and other crops has been increasing at a much faster rate than the real price of agricultural output

