

# **MEASURING PRODUCTIVITY IN UNSTABLE LAND RICH ECONOMIES**

## **The challenge for Argentina after Global Financial Collapse**

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***A 15 YEARS HISTORY OF AN OWN  
KLEMS MEASUREMENT OF  
SOURCE OF GROWTH OF AN  
UNSTABLE ECONOMY***

# **SOME INSTITUTIONS THAT SUPPORT SEVERAL STAGES OF THIS RESEARCH**

- **INTERAMERICAN DEVELOPMENT BANK**
- **WORLD BANK**
- **Buenos Aires Stock Exchange Foundation**

# **SOME INTERNATIONAL PUBLICATIONS**

- **Methods cited in OECD Capital Stock Manual 2nd edition**
- **IVIE-FBBVA**
- **ECLAC**
- **International Productivity Monitor**
- **World Economics (forthcoming paper)**

# MAIN RESEARCH LINES

- **SOURCE OF GROWTH AND PRODUCTIVITY**
- **COMPETITIVENESS**
- **WEALTH: Estimation of National Balance Sheet: Vulnerability Analyses through Wealth and Financial Crises Effects)**

***CENTRE OF RESEARCH IN  
ECONOMIC THEORY &  
DEVELOPMENT***

# **BASED ON METHODOLOGY AND RECOMMENDATIONS OF:**

- **SNA 1993 and 2008**
- **EUKLEMS**
- **OECD CANBERRA GROUP II: On the Measurement on Non Financial Assets**
- **OECD CAPITAL STOCK MANNUAL 2nd Edition**
- **OECD PRODUCTIVITY MANNUAL**
- **EUROSTAT, IMF, WORLD BANK**
- **IVIE**
- **CSLS**
- **Jorgenson, Hulten, Diewert, Schreyer, Van Ark, Timmer, Mas, Perez, Quesada, Haltiwanger, Bartelsman, etc.**

# **METHODS AND SERIES FOR SOURCE OF GROWTH 1**

- **CAPITAL SERVICES BY ASSET TYPE AND INDUSTRY**
  - Exhaustive Measurement of Capital Services from more than 80 assets types
  - Testing Functional Shapes of Depreciation (Hulten&Wycof approach)
  - Hedonic Valuation of Capital Stock
  - Testing Alternative Age&Efficiency Profiles and User Costs on Capital Services
- **ICT: price harmonization method** (EUKLEMS, Schreyer, Mas & Quesada, etc.)
- **TREATMENT OF CAPITAL AND LABOR UTILIZATION IN THE GDP CYCLE**



# **METHODS AND SERIES FOR SOURCE OF GROWTH 2**

- **HUMAN CAPITAL: hours worked in more than 70 skills groups**
  - **PRODUCTIVE HUMAN CAPITAL (Mulligan-Sala i Martin)**
  - **WEALTH HUMAN CAPITAL (Jorgenson-Fraumeni Approach)**
  - **LABOR QUALITY INDEX (BLS, Jorgenson-Ho)**
- **NATURAL RESOURCE : Agricultural Land and Subsoil Assets as wealth and service input**

# METHODS AND SERIES FOR SOURCE OF GROWTH AND WEALTH ANALYSIS 3

- **TORNQUIST INDEX**
- **OUTPUT AND VALUE ADDED PRODUCTIVITY**
- **TREATMENT OF CYCICAL AND RECOVERY EFFECTS ON PRODUCTIVITY PERFORMANCE**
- **INDUSTRY ORIGIN OF TFP GROWTH** (Jorgenson, Samuels &Stiroh: Domar Weights)
- **SECTORAL PATTERNS OF PRODUCTIVITY PERFORMANCE: shift share analyses of within, between, cross sectoral effects**
- **FIRM PRODUCTIVITY DYNAMICS** (work in progress with World Bank): **within, reallocation, net entry firm effects**

# What is expected from political economy in the past decades?

## 1990 “PROMARKET & CONVERTIBILITY MACRO REGIME”

- Lower RER
- TFP gains in Non-Tradables enough to Sustain Long run GDP growth

## POST02CRISIS: “COMPETITIVE RER REGIME”

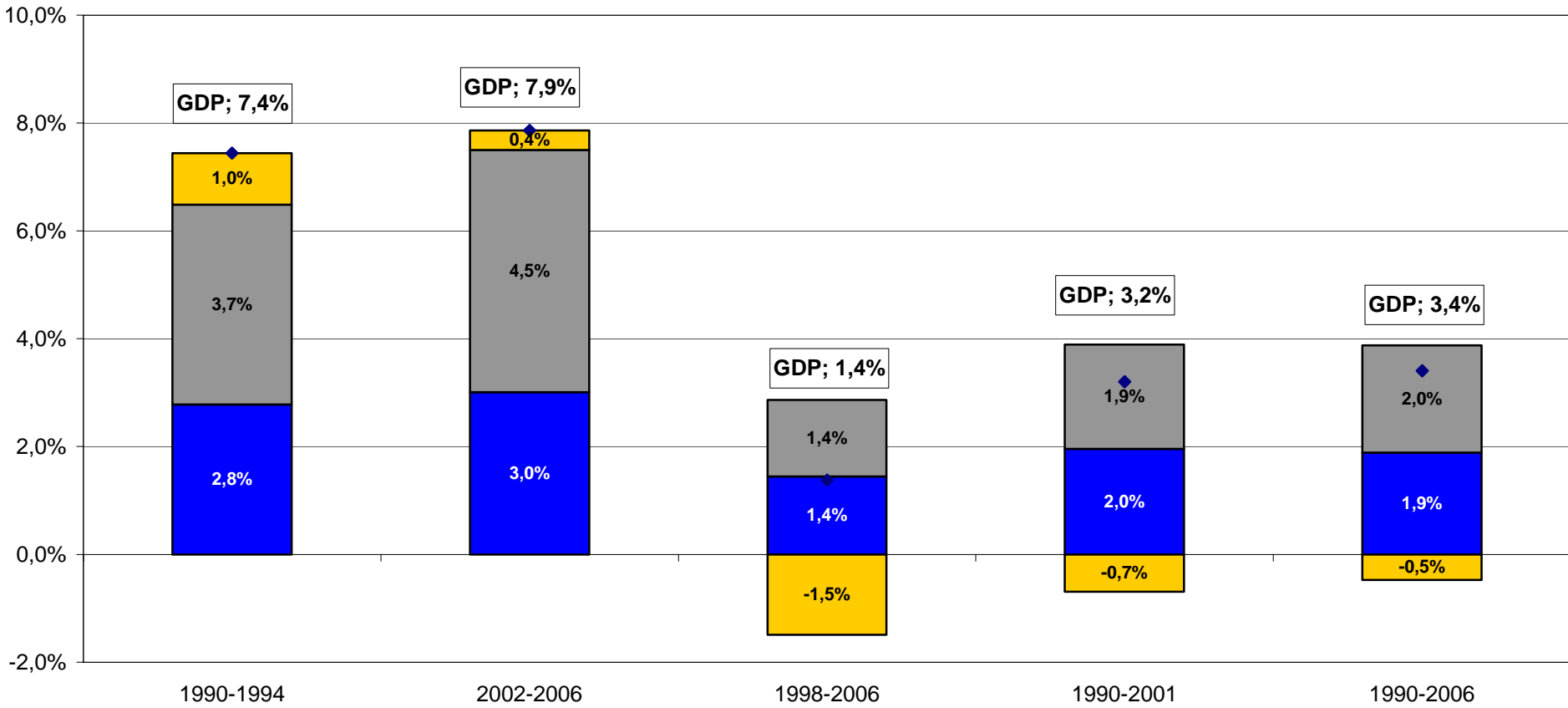
- High RER & TT
- TFP gains in Tradables enough to Sustain Long run GDP growth

**SOCIETY HAS NO EXPOST  
SATISFACTION ON ARGENTINE  
GROWTH**

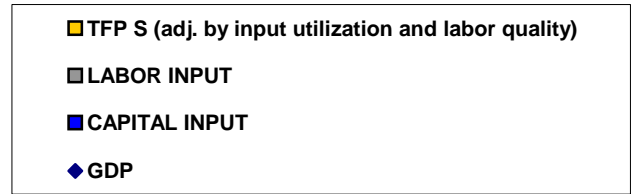
**What are the signals from  
Accounting Growth Focus?**

## SOURCE OF GROWTH OF THE ARGENTINE ECONOMY

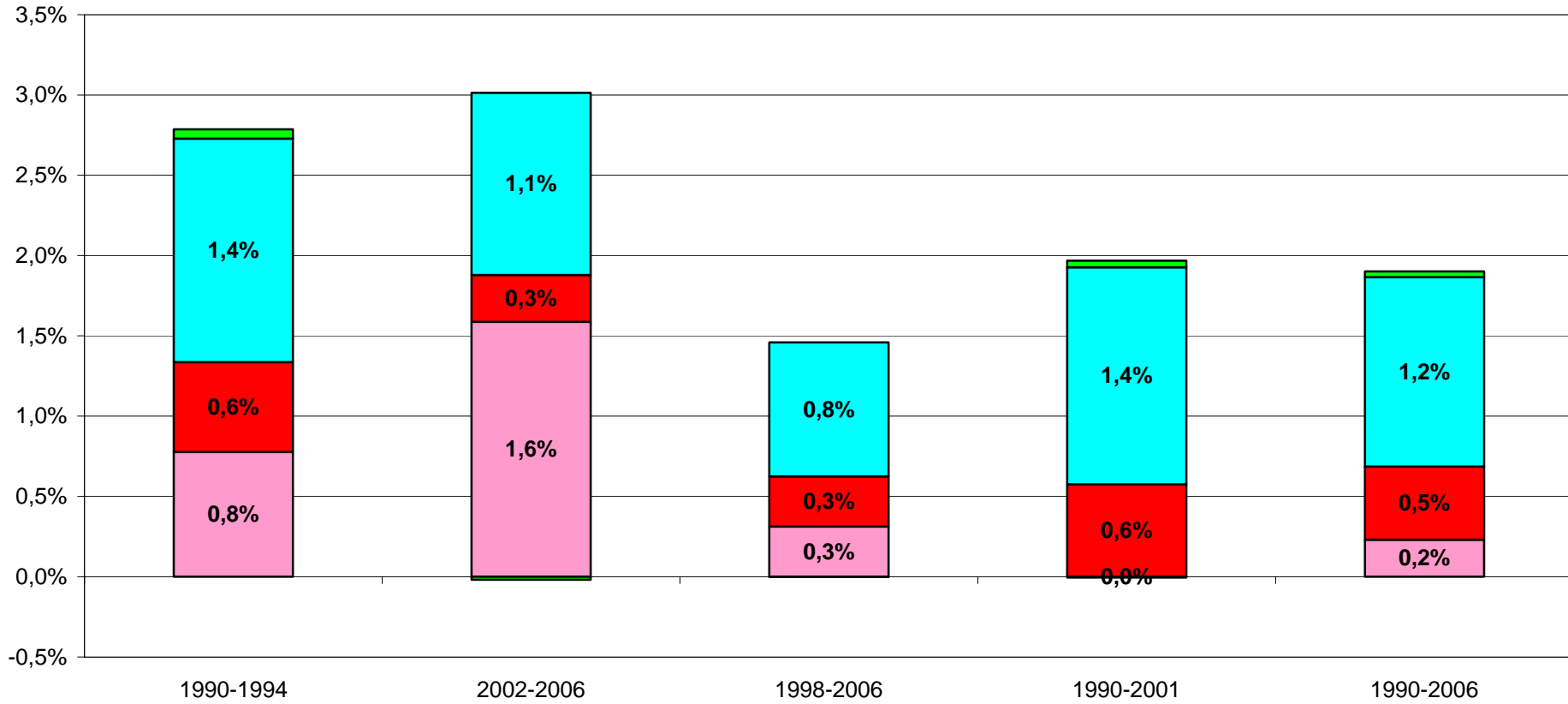
-Annual Contributions to GDP growth-



Source: Author's estimation based on Coremberg (2009)



**CAPITAL INPUT CONTRIBUTION BY ASSET TYPE**  
*-Annual Contributions -*

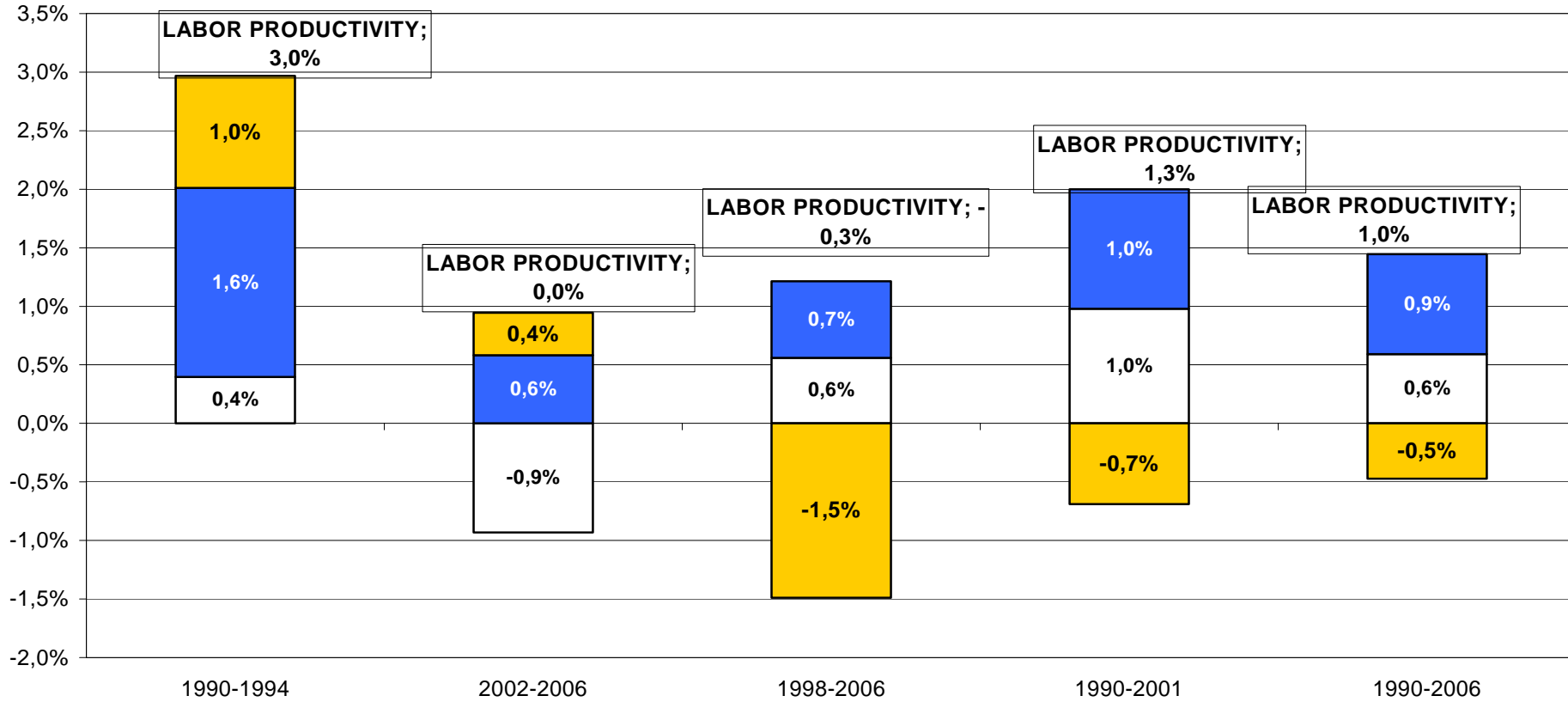


Source: Author's estimation based on Coremberg (2009)

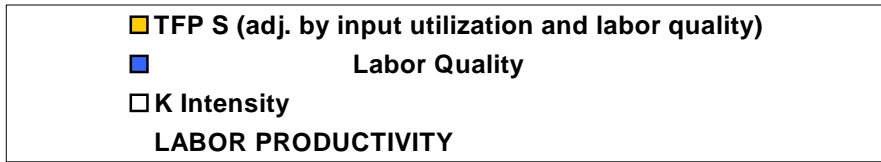


# SOURCE OF LABOR PRODUCTIVITY GROWTH OF THE ARGENTINE ECONOMY

-Annual Contributions -



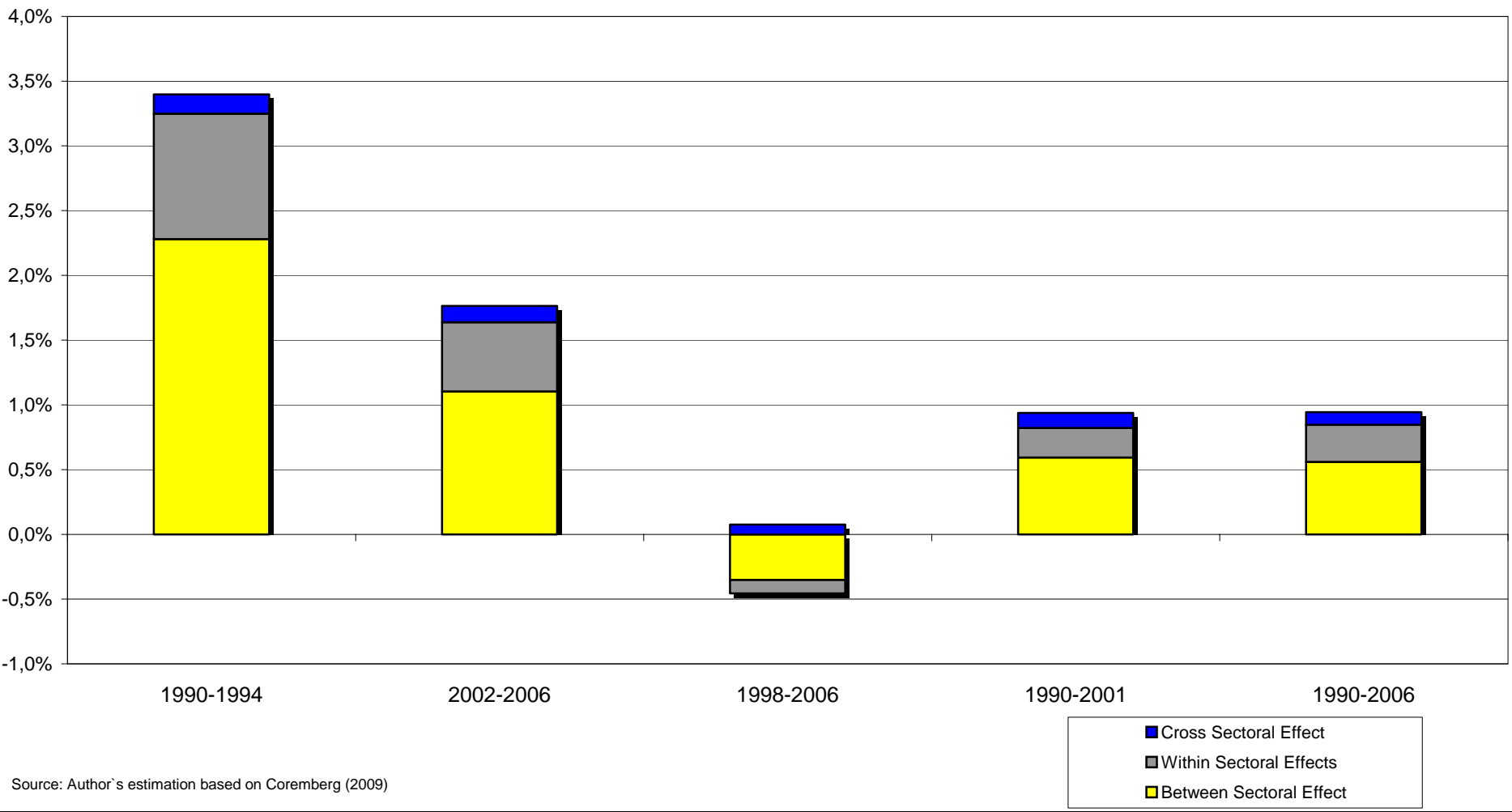
Source: Author's estimation based on Coremberg (2009)



**$\Delta L^q$  ARG is the main input that explained Labor Productivity**

**BUT TFP SLOWDOWN: HK COULD BE WASTED**

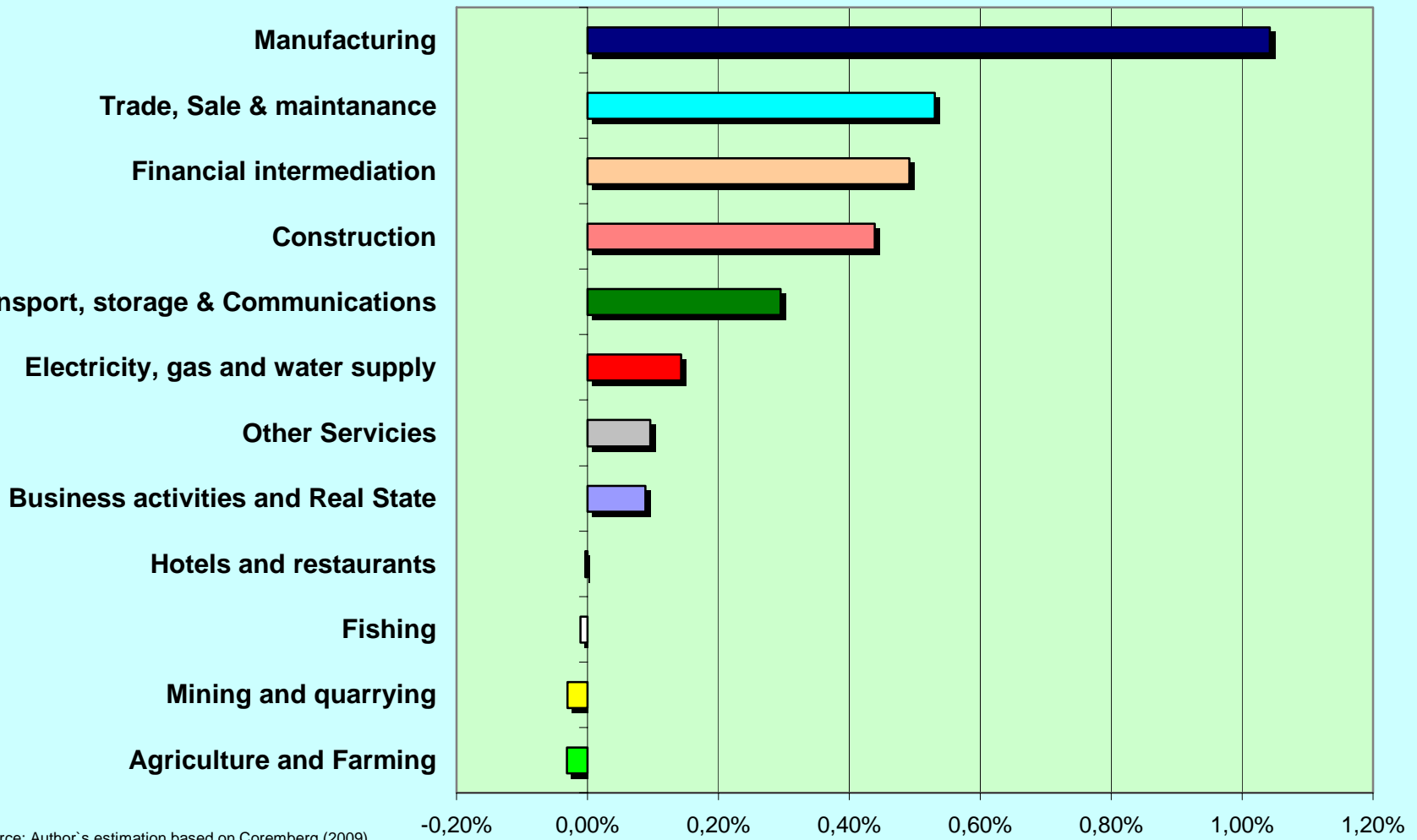
**SHIFT-SHARE DECOMPOSITION OF ARGENTINE TFP GROWTH**  
-Annual Rate of Growth-



Source: Author's estimation based on Coremberg (2009)

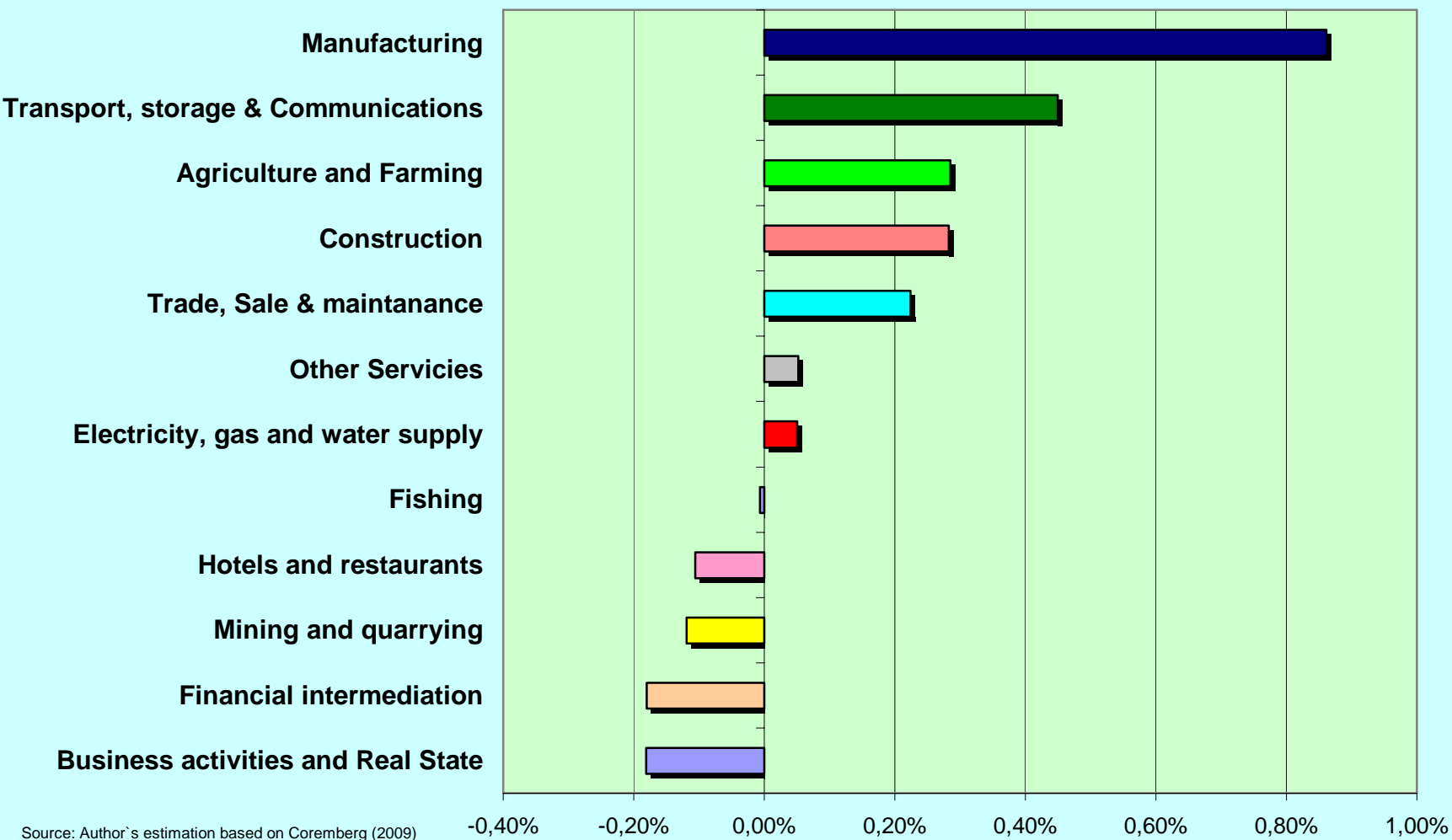


# INDUSTRY ORIGINS OF TFP GROWTH IN ARGENTINA 1990-1994



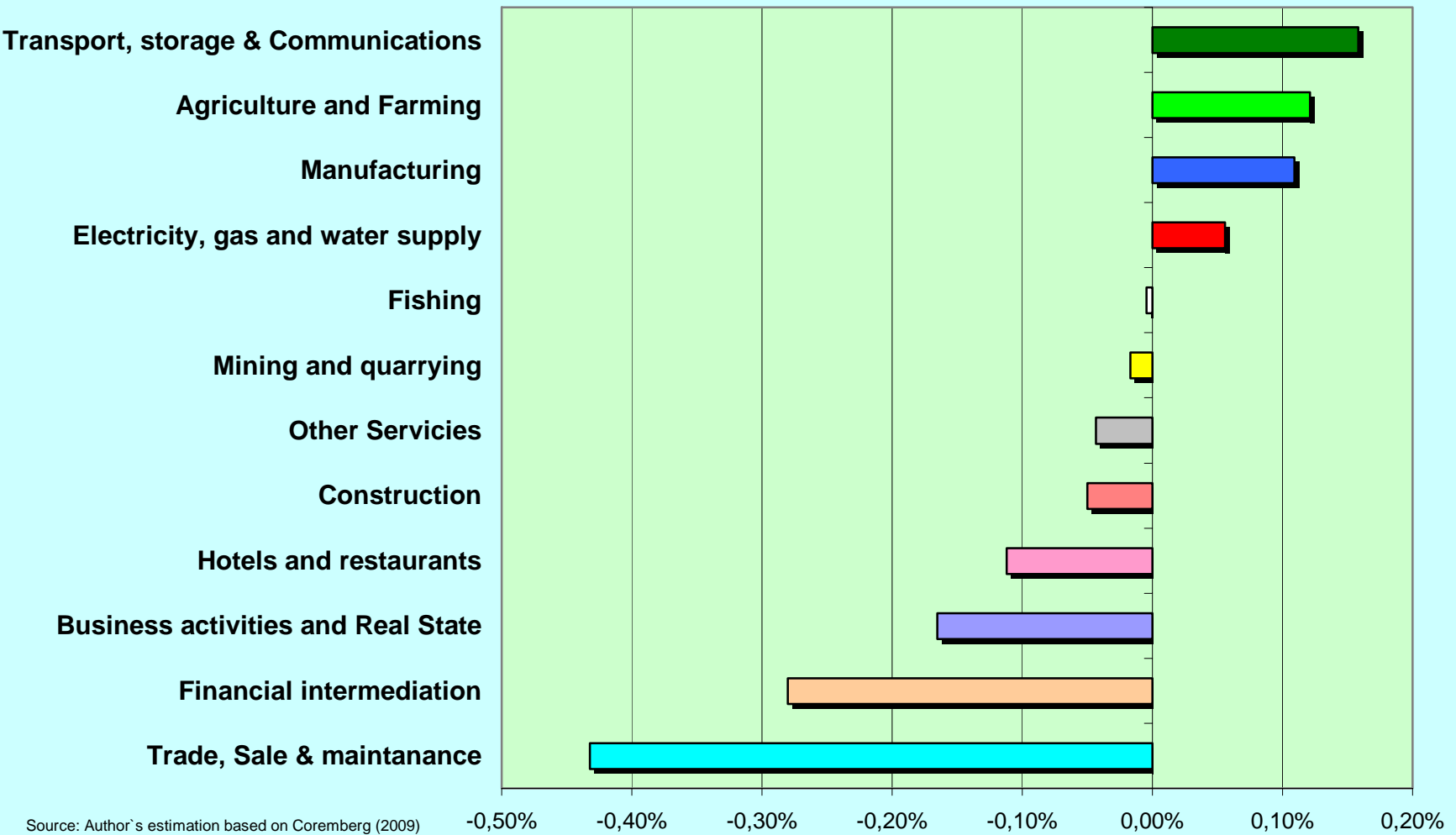
Source: Author's estimation based on Coremberg (2009)

**INDUSTRY ORIGINS OF TFP GROWTH IN ARGENTINA  
2002-2006**



Source: Author's estimation based on Coremberg (2009)

## INDUSTRY ORIGINS OF TFP GROWTH IN ARGENTINA 1998-2006



Source: Author's estimation based on Coremberg (2009)

# CONCLUSIONS

# **UNSUSTAINABLE GROWTH PROFILE OF ARGENTINE ECONOMY 1 a**

## **GROWTH PROFILE BASED ON:**

- **ACCUMULATION AND BETTER QUALITY IN INPUTS:**
  - **NATURAL RESOURCE**
  - **HUMAN CAPITAL**
  - **ICT**

# **UNSUSTAINABLE GROWTH PROFILE OF ARGENTINE ECONOMY 1b**

**BUT THERE STRICT TFP SLOWDOWN**

- **THERE NO MACROSPILLOVERS FROM SPECIAL INPUTS**
- **ONLY SHORT RUN CYCLICAL PRODUCTIVITY GAINS**

**UNSUSTAINABLE GROWTH IN THE LONG RUN**

# **UNSUSTAINABLE GROWTH PROFILE OF ARGENTINE ECONOMY 2**

- **There are some correlation between RER and Sectoral TFP only during recoveries.**
- **Within Productivity gains were insufficient.**
- **There was no “Structural Bonus” and Strategic Complementarities from “Dynamic Industries through different macro regimes: Non tradables 90`s & Tradables after 02**

# **FIRST MESSAGE MEASURE AND MEASURE AND MEASURE .....**

- **IN LAC there are not enough and consistent database on every component for Exhaustive Accounting Source of Growth.**
- **According to our experience, the KLEMS Researcher Team have to construct their own database on some important series**
- **So an important share of the financial, HK, time resources have to be invest on own estimations in KLEMS direction**



# **FIRST MESSAGE: LAC MORE RESEARCH ON MEASUREMENT OF COMPONENTS OF SOURCE OF GROWTH**

- **In LAC there are different methodology in important issues, mainly in GDP and other MacroVariables:**
  - **Informal and Non-Observed Economy: Production + Labor Input**
  - **Laspeyres (most common) vs Fisher Index on official GDP volume index**
  - **Treatment on Non & Underreported of Income**
  - **Desegregation of Official Investment series is not enough: ICT, Natural Resource, by Industry?**

**1 MINUTE MORE?**

# **GROWTH STRATEGIES FOR LAND RICH ECONOMIES AFTER GLOBAL FINANCIAL COLLAPSE 1**

- **So “Get Prices Right” or “peaking the leader” were not enough to support a growth strategy**
- **OLD DILEMA: If the role of agricultural sector is recognized in Argentina as exports based on “wage goods”, strong and sustainable “within” productivity gains must be considered as a key variable that allows increasing production in both markets: exports and domestic market contributing to sustain external accounts and social situation at the same time without generating inflation.**

# **GROWTH STRATEGIES FOR LAND RICH ECONOMIES AFTER GLOBAL FINANCIAL COLLAPSE 2**

- **Need to change the Focus to Pro-Productivity policy in order to Increase Competitiveness without incurred in Devaluation**

**THANK YOU!!!**