

ARKLEMS + LAND



Universidad de Buenos Aires
Facultad de Ciencias Económicas



ARKLEMS+LAND DATABASE 3.0

Measuring Productivity in Unstable and Natural Resource Dependent Economies: ARGENTINA

**Second World KLEMS Conference Harvard University
Cambridge, Massachusetts, August 9-10, 2012**



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Economía Política de Buenos Aires



Unión Industrial Argentina

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THE ARGENTINA PRODUCTIVITY SLOWDOWN

Findings of ARKLEMS + LAND Series 3.0
(updating 2010-11)

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*Methodological And Empirical Issues for
Unstable and Natural Resource Dependent
Economies*

MAIN TOPICS OF RESEARCH

- **Sources of Growth, Productivity and Competitiveness (ARKLEMS+LAND)**
- **SNA, I-O Matrix, Regional GDP**
- **PPP World Bank Project**
- **Natural Resource Sustainability**
- **Wealth, National Balance Sheet:**
Measurement Issues and Vulnerability Analysis of Financial Crisis and Real effects on LAC and Emerging Economies

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**OBJECTIVES AND
METHODOLOGY**

WHY PRODUCTIVITY IS IMPORTANT

- ***GROWTH: More Productivity improves the sustainability of Long Run Growth***
- ***WELFARE: Improvement in Living Standards and Welfare.***
- ***LABOR MARKET: Moderate distributional conflict. Allows sustainable wage increases without pushing inflation. Measures Labor Skills and Income Distribution.***
- ***MONETARY POLICY: OUTPUT GAP: It allows to measure the Potential Productive Capacity of a Country, Sector or firm***
- ***COMPETITIVENESS: Increase Real Exchange Rate without resorting to sudden devaluations.***

OBJECTIVES IDENTIFICATION OF GROWTH PROFILE OF ARG.

- METHODOLOGICAL ISSUES
- KLEMS METHOD. TO IDENTIFY SOURCE OF GROWTH
- SPECIFIC ISSUES FOR LAC AND ARGENTINA: peak to peak analyses, informal labor, natural resource
- MACROECONOMIC CONTEXT: 1990'S vs POSTCRISIS 2002 PERIOD
- CAPITAL, LABOR, HK, NR, SECTORAL ORIGINS OF TFP
- SIDE ISSUES: LABOR COSTS, OUTPUT GAP

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
 - Revision by Economic and Housing Census 2004, 2010
- **ICT: price harmonization method** (EUKLEMS, Schreyer, Mas & Quesada, etc.)
- **Updating and revision of Supply and Use tables: material, services and energy inputs**

METHODS AND SERIES FOR SOURCE OF GROWTH 2

- **Non Observed Economy + Informal L market**
- **HUMAN CAPITAL: Gender, Experience, Education and Occupational Categories** (reg and non registered employees, informal self-employed, etc. hours worked in more than 70 skills groups:)
 - **LABOR QUALITY INDEX (BLS, Jorgenson-Ho, EUKLEMS)**
 - PRODUCTIVE HUMAN CAPITAL (Mulligan-Sala i Martin)
 - WEALTH HUMAN CAPITAL (Jorgenson-Fraumeni Approach)
- **NATURAL RESOURCE : Agricultural Land and Subsoil Assets as wealth and service input**
- **Peak to Peak TFP: K, L Utilization in the GDP Cycle**

METHODS AND SERIES FOR SOURCE OF GROWTH AND WEALTH ANALYSIS 3

- TORNQUIST INDEX
- OUTPUT AND VALUE ADDED PRODUCTIVITY
- TREATMENT OF CYCLICAL 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

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Stylized facts of Unstable Natural Resource

Rich Economies: LAC & AR

- **NR (agricultural land and subsoil assets)**
- **Non Observed Economy (NOE)**
- **Informal Labor Markets: Occupational Categories**
- **Effect of Terms of Trade**
- **Effects of Macroeconomic Instability and the crisis over Productivity and Growth.**
- **Infrastructures**

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UPDATING 2010

Expectations about Economic Policy in the last decades

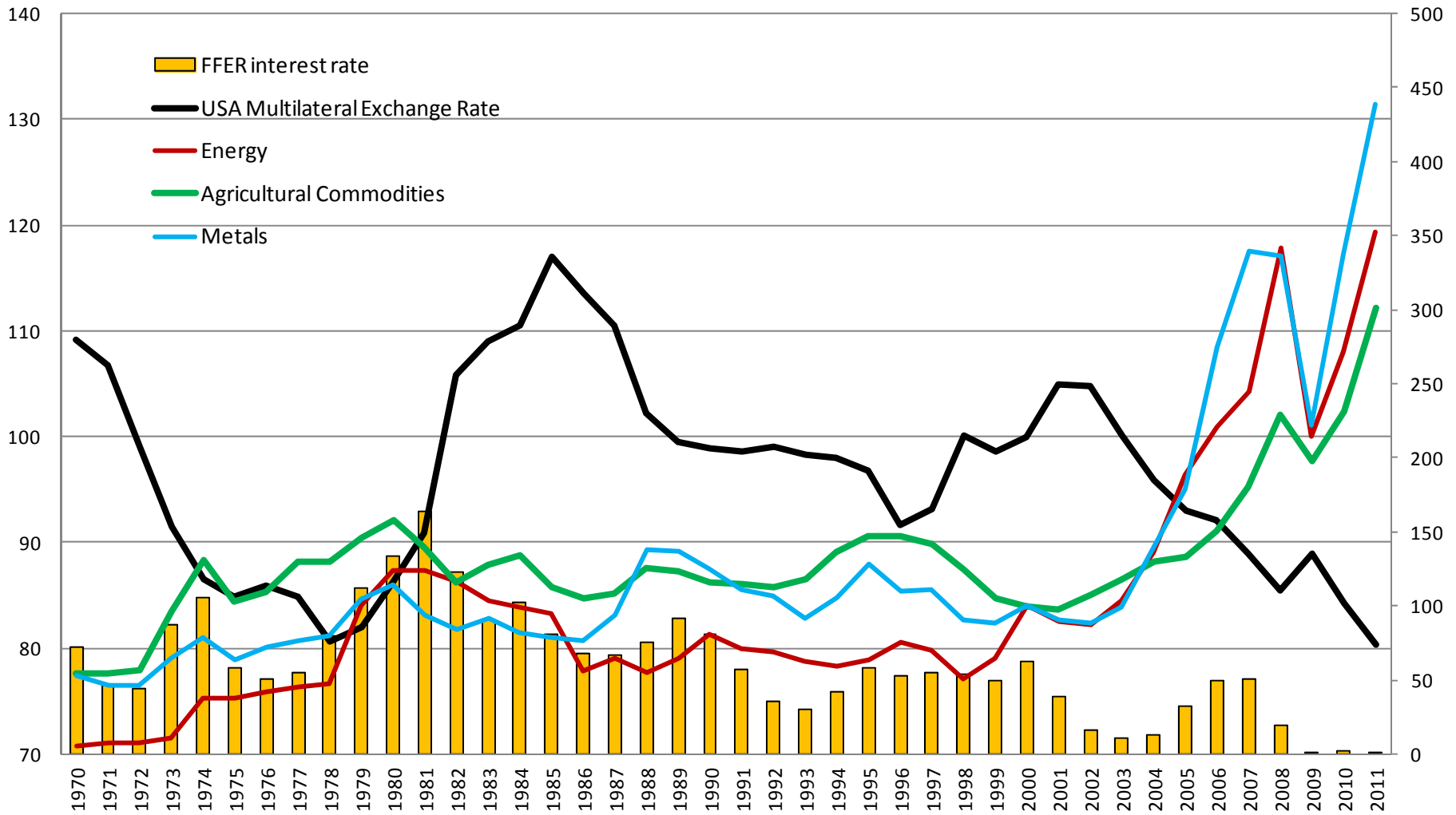
1990 “PROMARKET & CONVERTIBILITY MACRO REGIME”

- Trade Openness: Embodied Tech.+ICT + FDI spillovers
- Lower RER
- ICT spillovers & TFP gains in Non-Tradables enough to Sustain Long run GDP growth
- Currency Board as Inconsistent Political Economy: not enough flex to external shocks

POST02CRISIS: “COMPETITIVE RER REGIME”

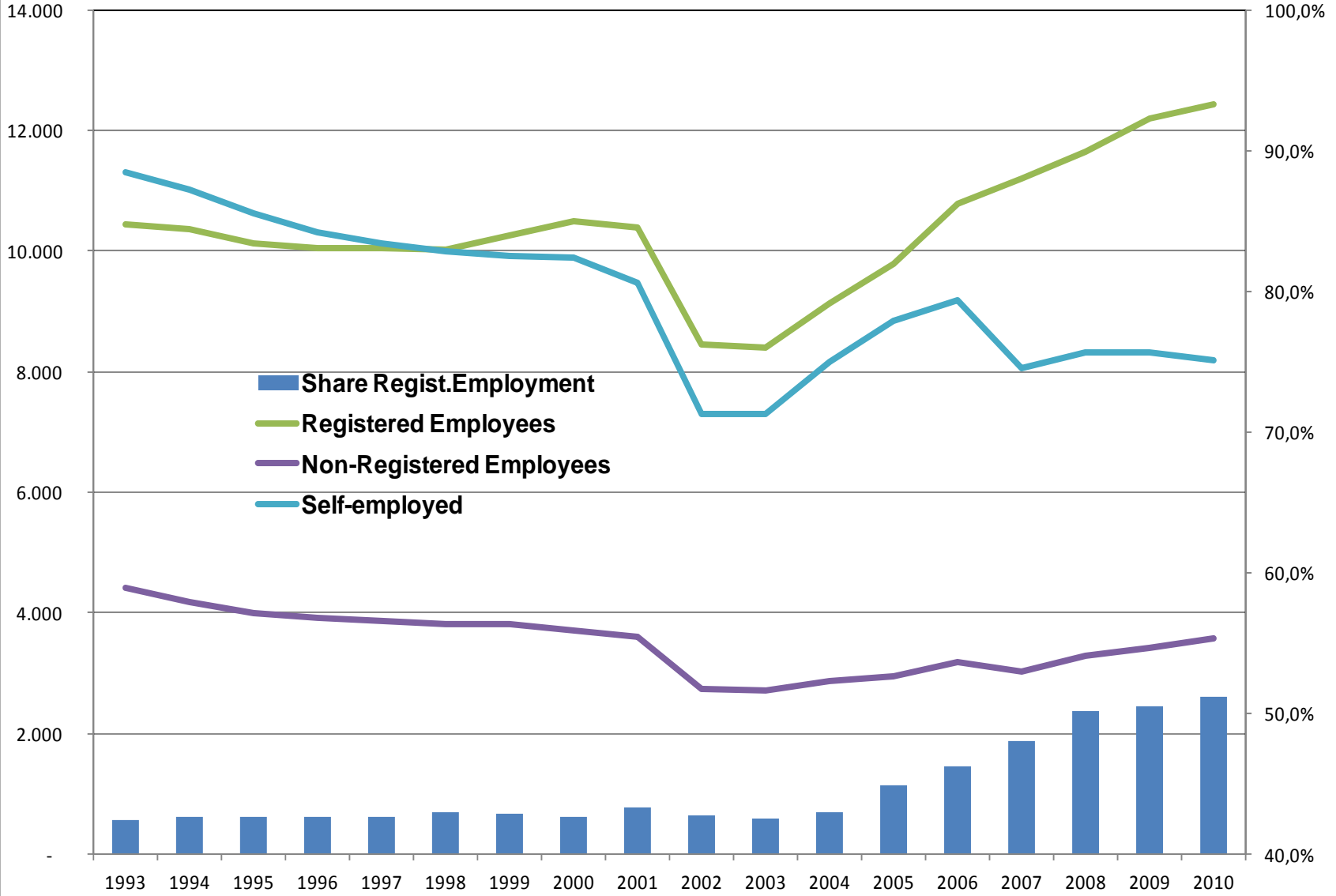
- Import Substitution
- Demand Driven Growth and now Inflation
- High RER & +TT (Commodities Boom: +China+Dollar Devaluation)
- TFP gains in Tradables enough to Sustain Long run GDP growth

Agricultural Commodities Prices-Multilateral Exchange Rate USA-Interest rate ref. (FFER)



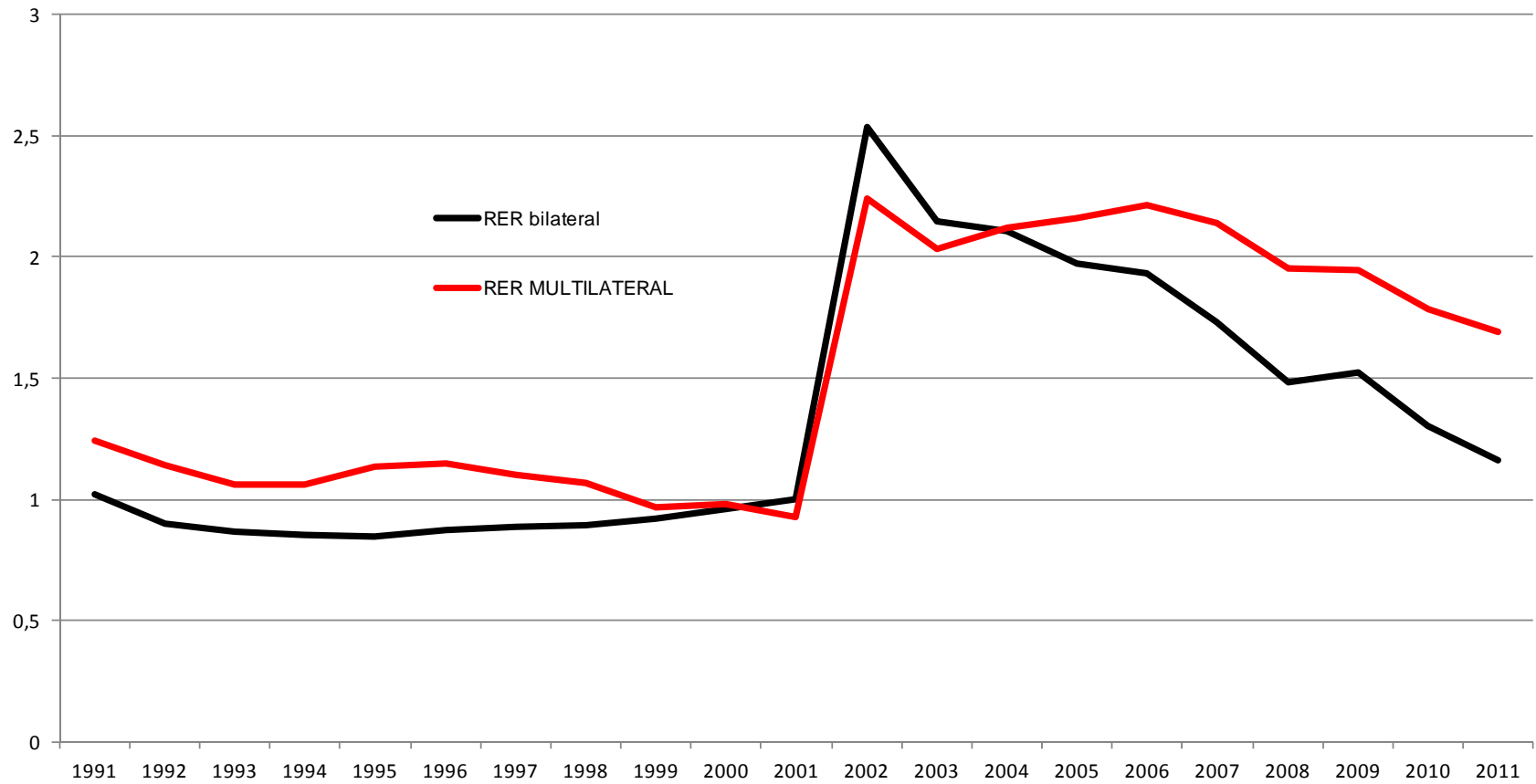
Source: ARKLEMS, FR, WorldBank

Real Income by Occupational Category



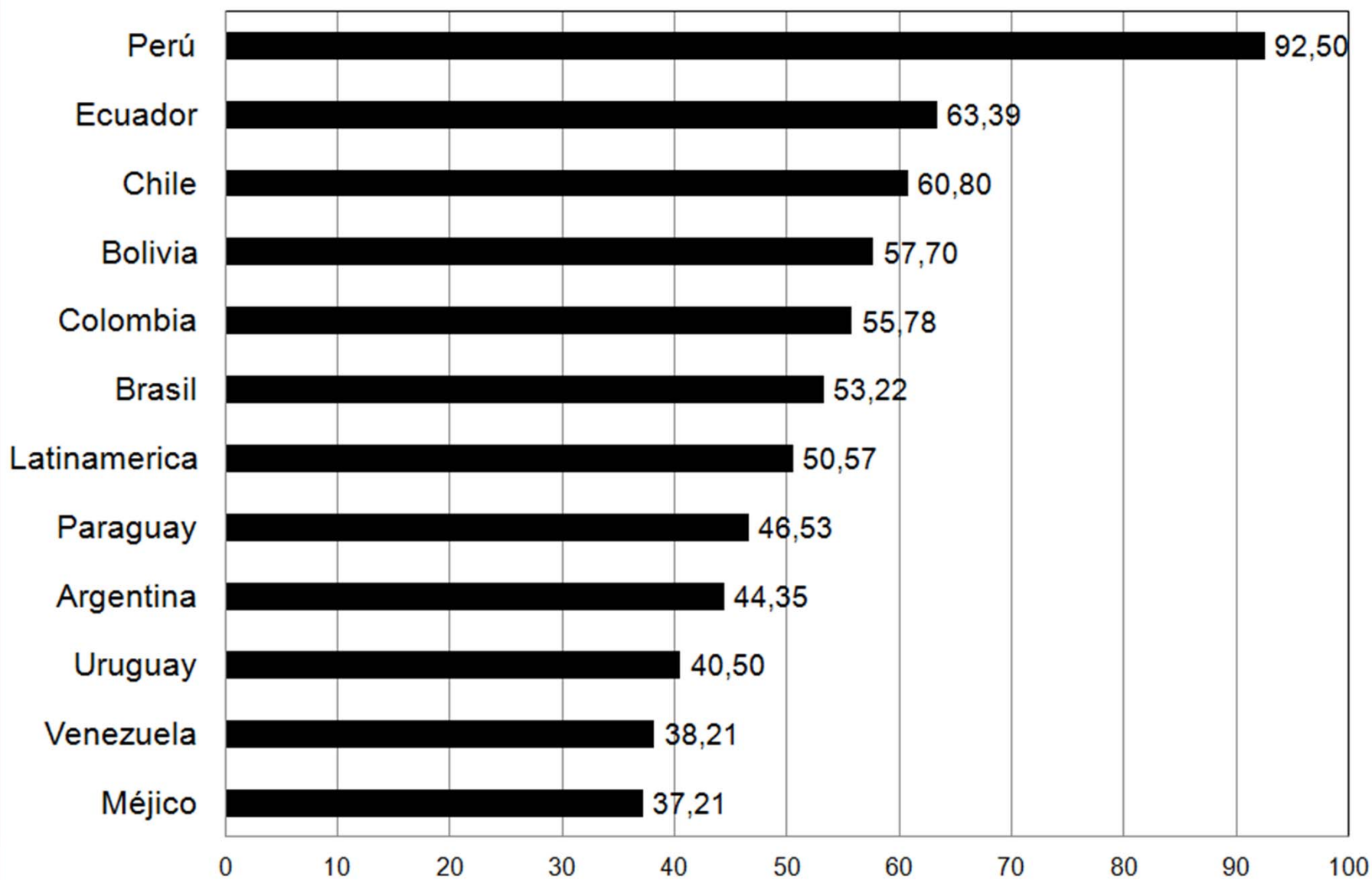
Source: ARKLEMS

REAL EXCHANGE RATE ARGENTINA
Bilateral with u\$s and Multilateral 2001=100
1990-2011

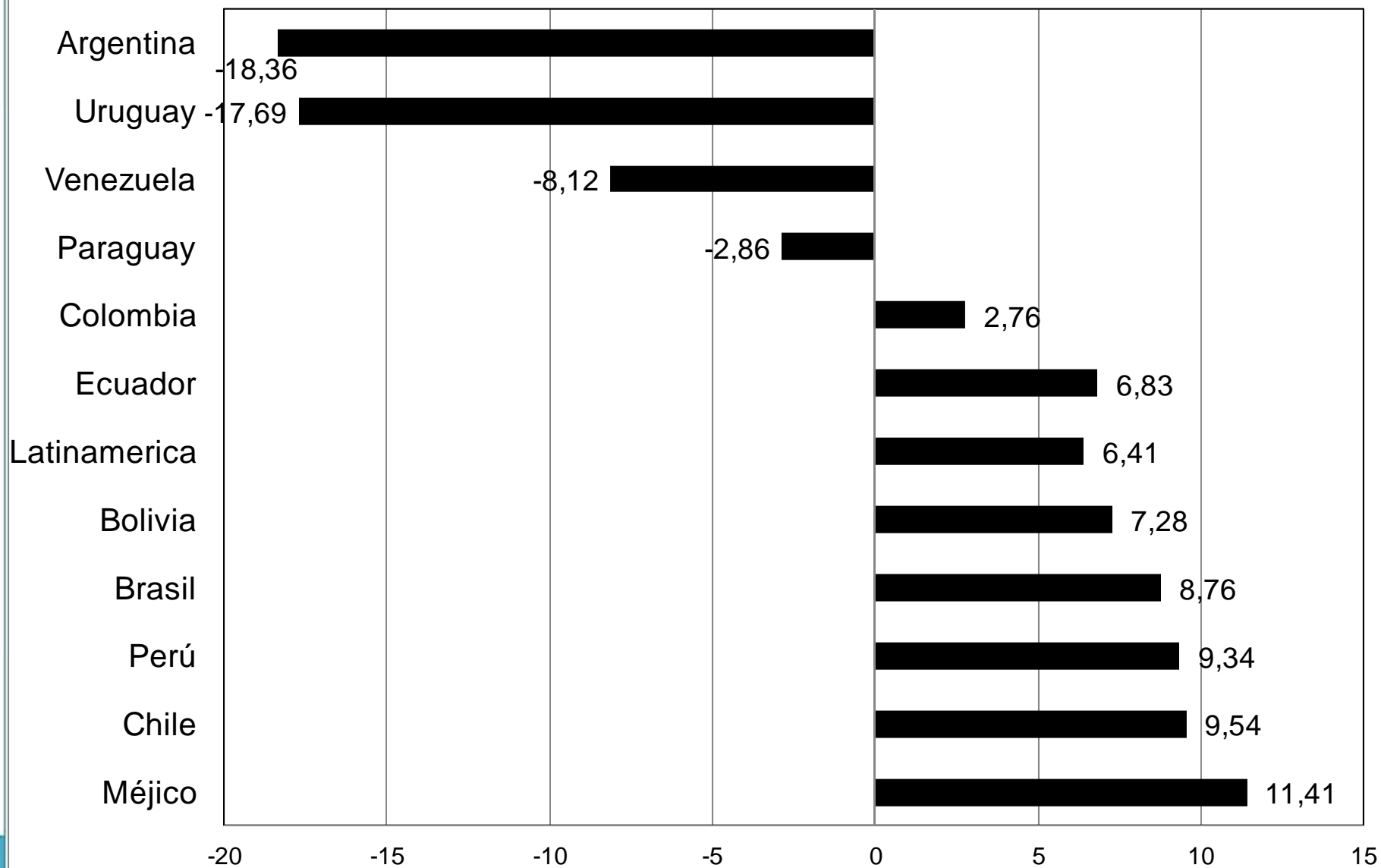


Source: ARKLEMS based on Central Bank and alternative sources

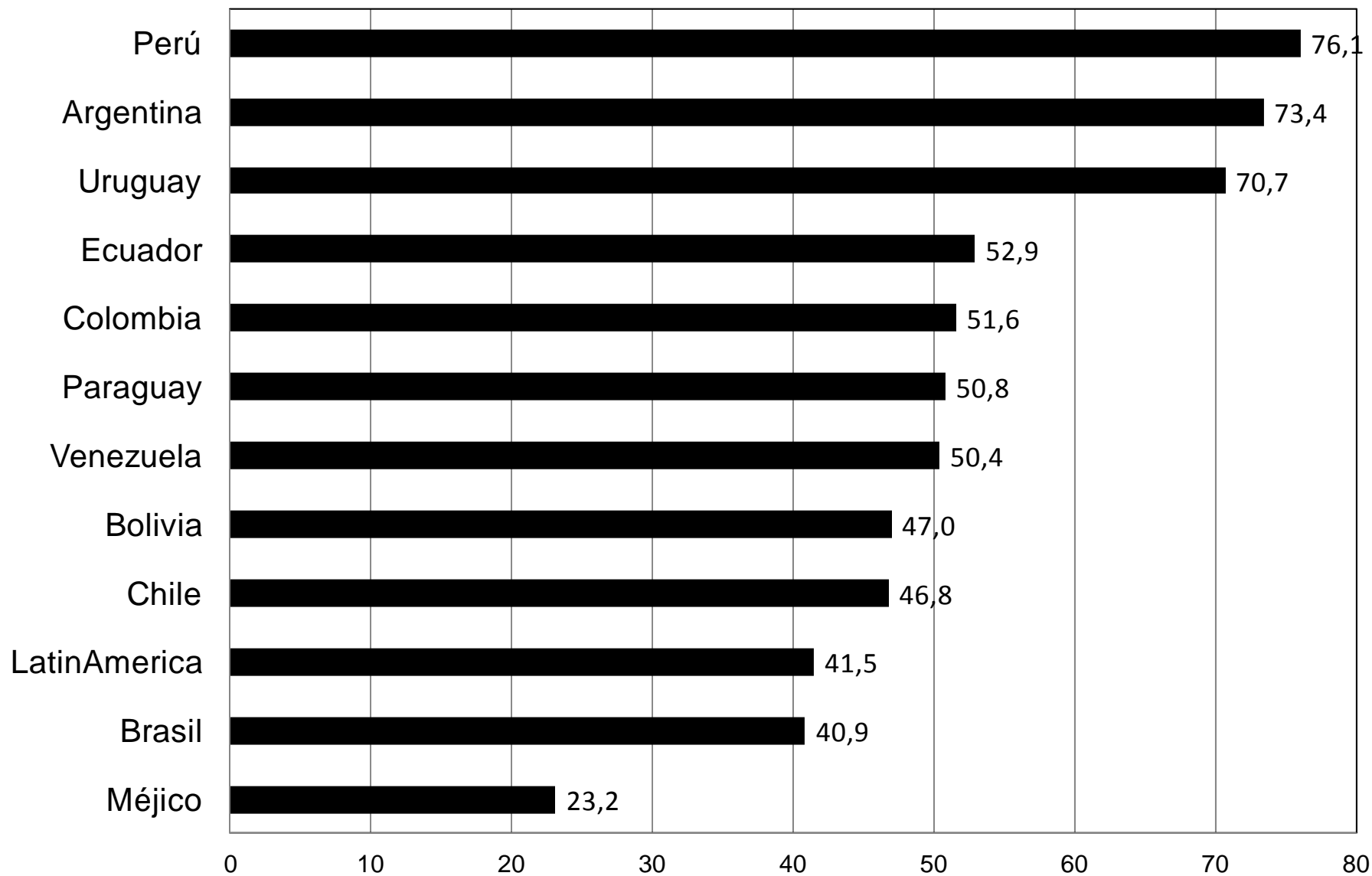
Latinamerica
GDP Growth 1998-2011 (%)



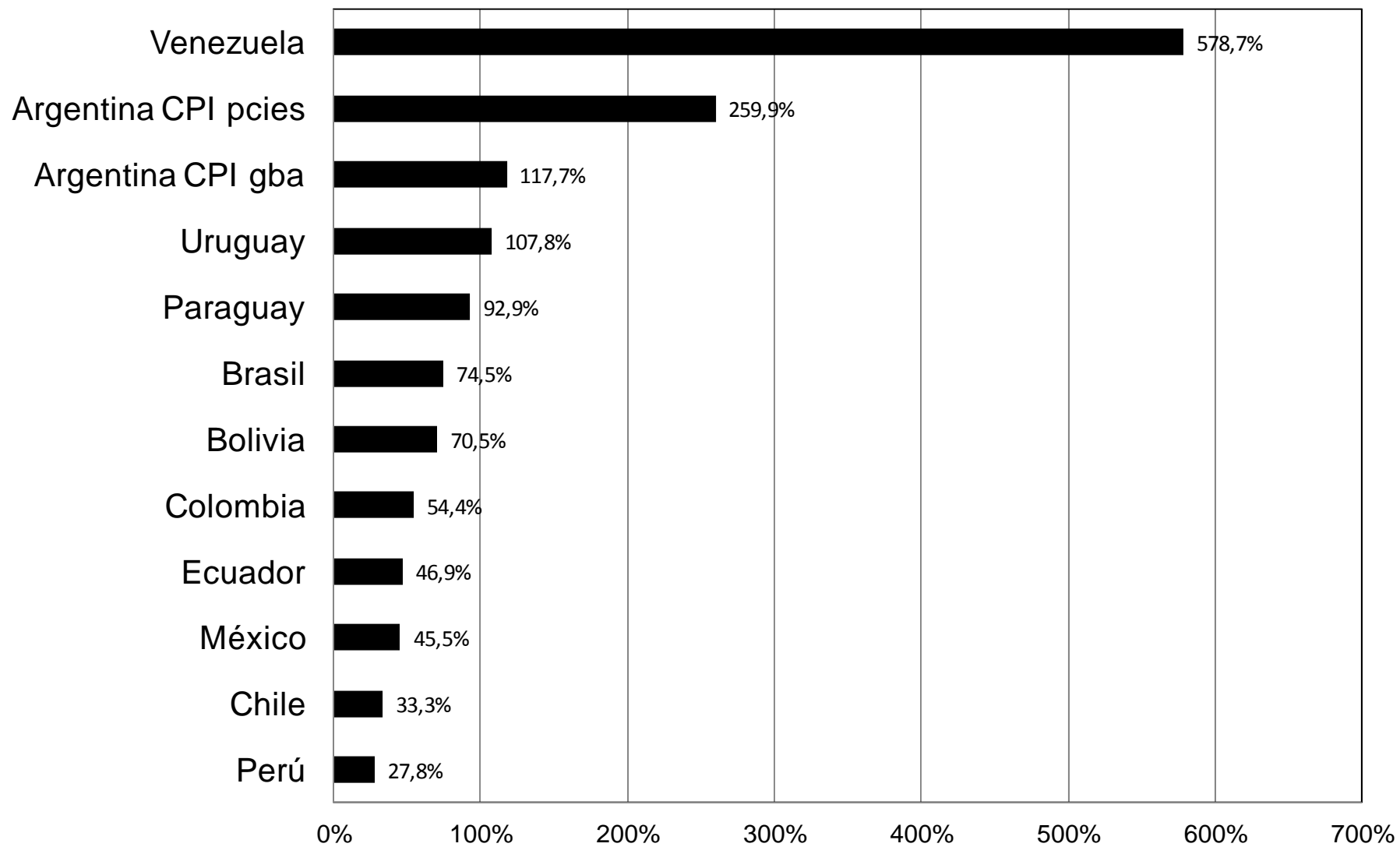
Latinamerica
GDP Growth 1998-2002 (%)



Latinamerica
GDP Growth 2002-2011 (%)



America Latina
Inflation (Average Annual Rate)
2002-2011 (%)



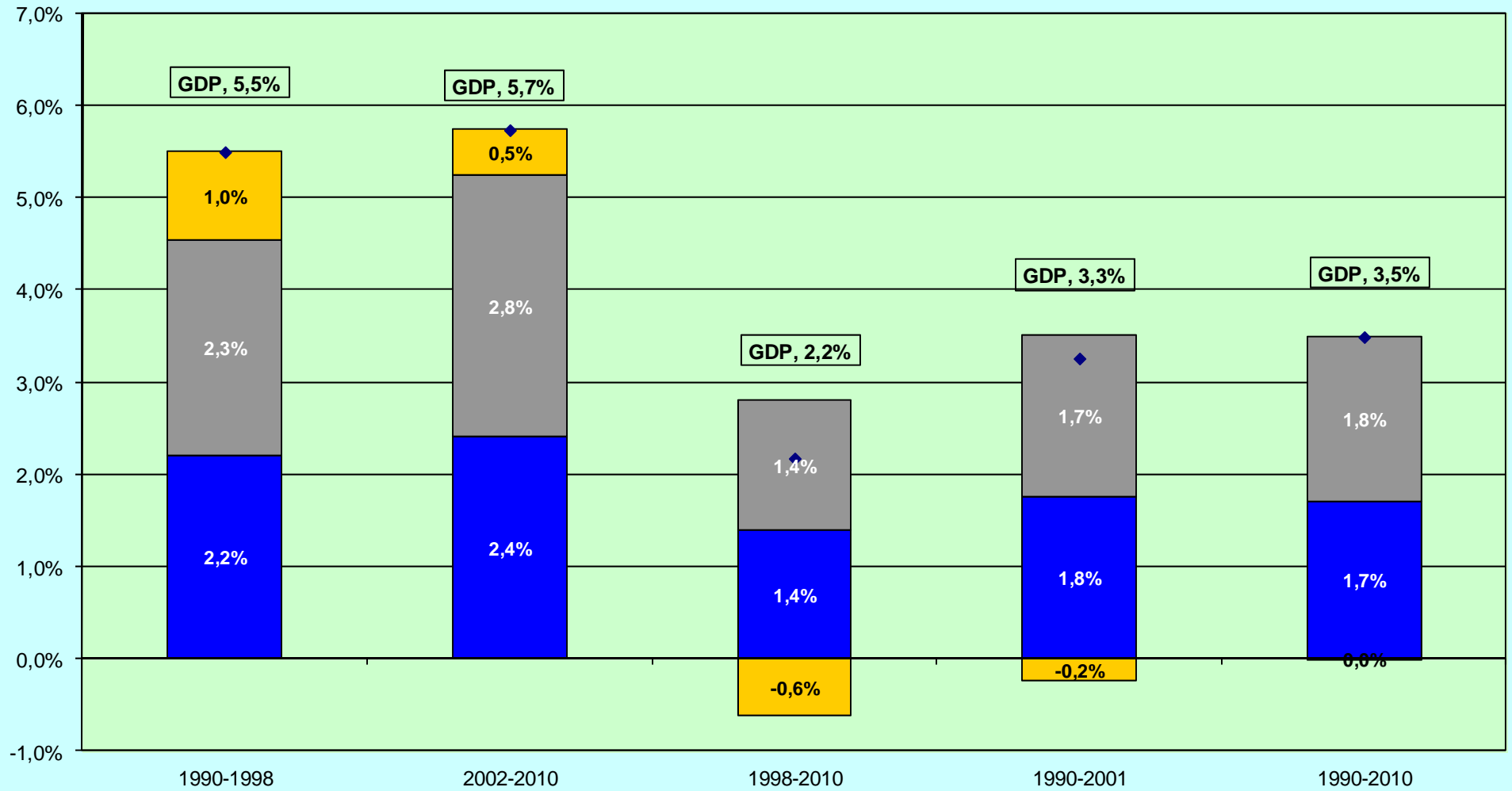
Is the Present Economic Growth Profile based on Commodities Export Boom Sustainable in The Long Run?

Is there Enough TFP gains to sustain Demand Driven Growth under inflation and Appreciation of Domestic Currency?

ARGENTINEAN SOCIETY HAS NO EXPOST SATISFACTION ON ARGENTINE GROWTH

**What are the signals from
ARKLEMS Measurement of the
Growth Profile and Productivity?**

SOURCE OF ARGENTINA ECONOMIC GROWTH -Annual Contribution-



Source: ARKLEMS+LAND

■ K input ■ L input ■ Strict TFP ◆ GDP

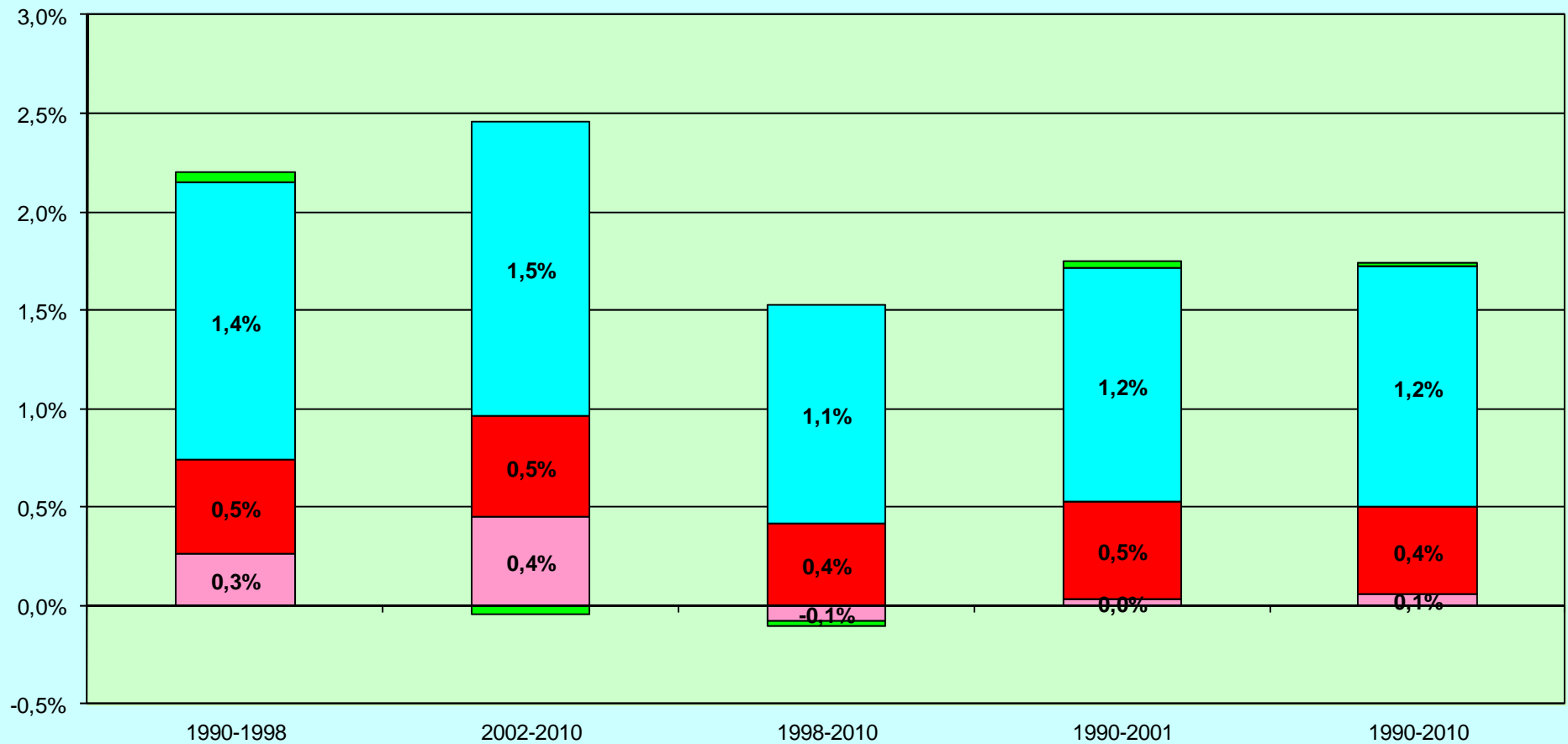
U2

Ver si hablar primero de Fuentes del Labor o de GDP

Usuario, 11/2/2011

SOURCE OF ARGENTINA CAPITAL SERVICE INPUT CONTRIBUTION

-Annual Contribution-

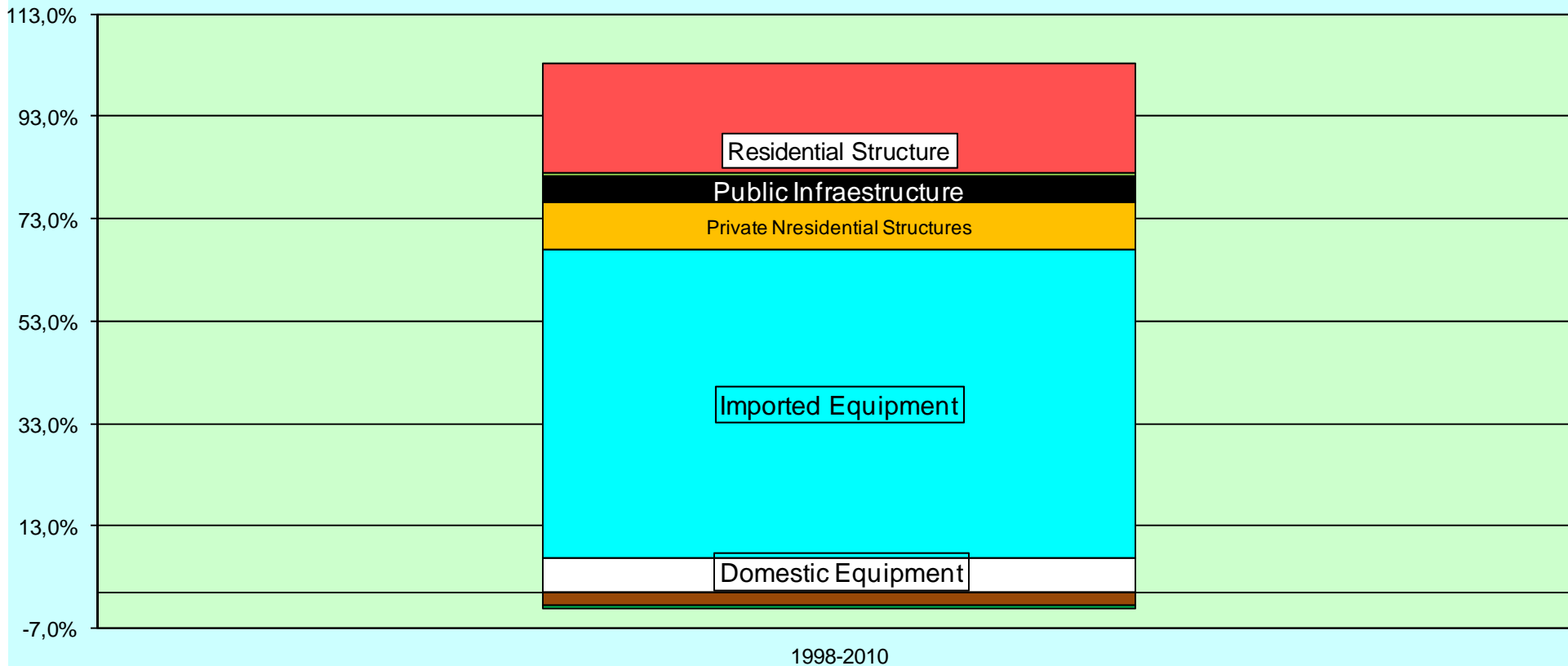


Source: ARKLEMS+LAND

■ Utilisation effect
 ■ ICT
 ■ Non ICT
 ■ Natural Resource

CAPITAL SERVICE GROWTH BY ASSET TYPE

Shares

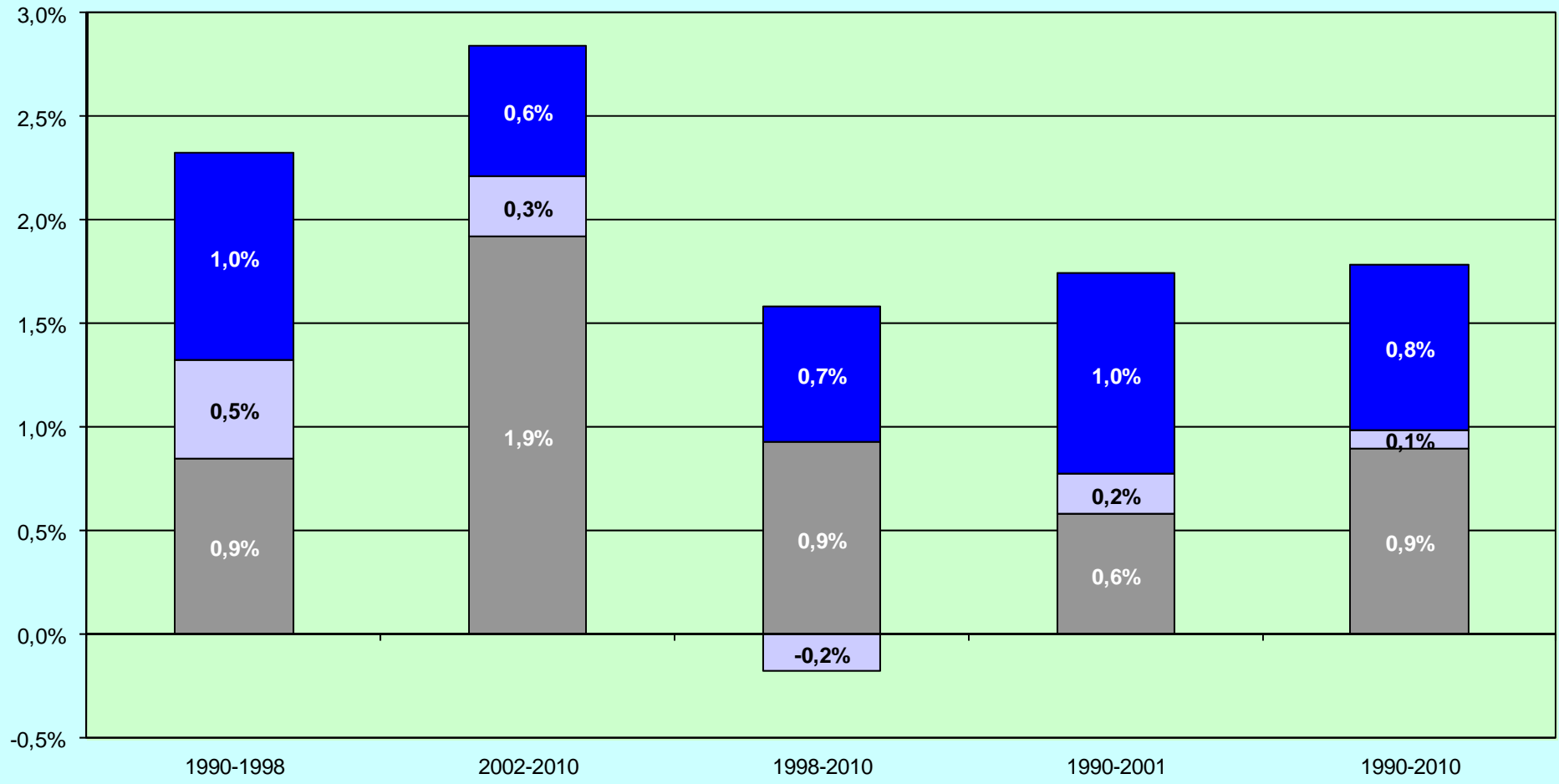


- Domestic Equipment
- Imported Equipment
- Private Nresidential Structures
- Public Infrastructure
- Subsoil Assets
- Other Agricultural Assets
- Agricultural Land
- Residential Structure

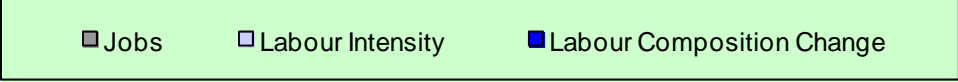
Source: ARKLEMS+LAND

ARGENTINA LABOR INPUT CONTRIBUTION BY COMPONENT

-Annual Contribution-

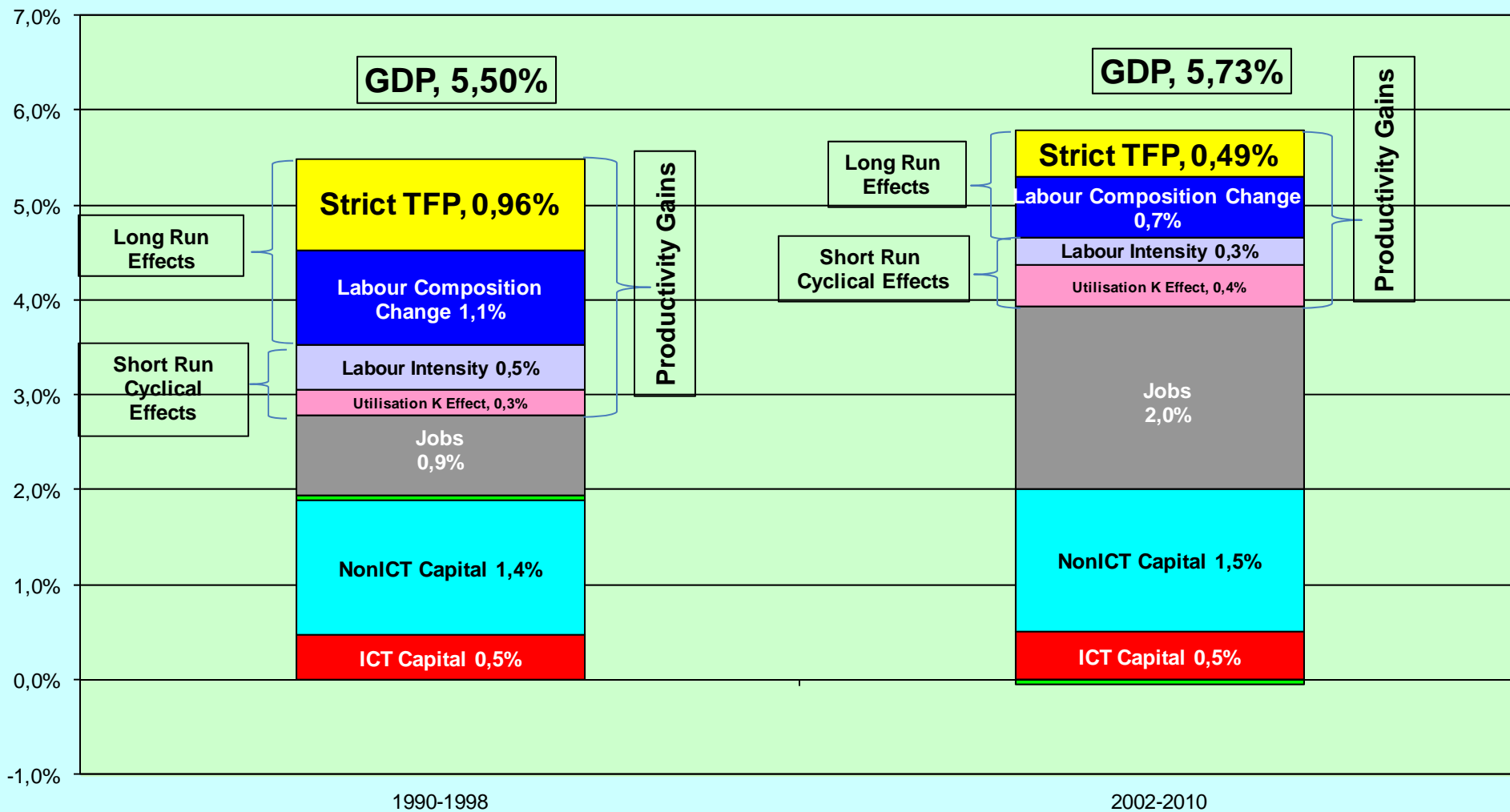


Source: ARKLEMS+LAND



SOURCE OF ARGENTINA ECONOMIC GROWTH

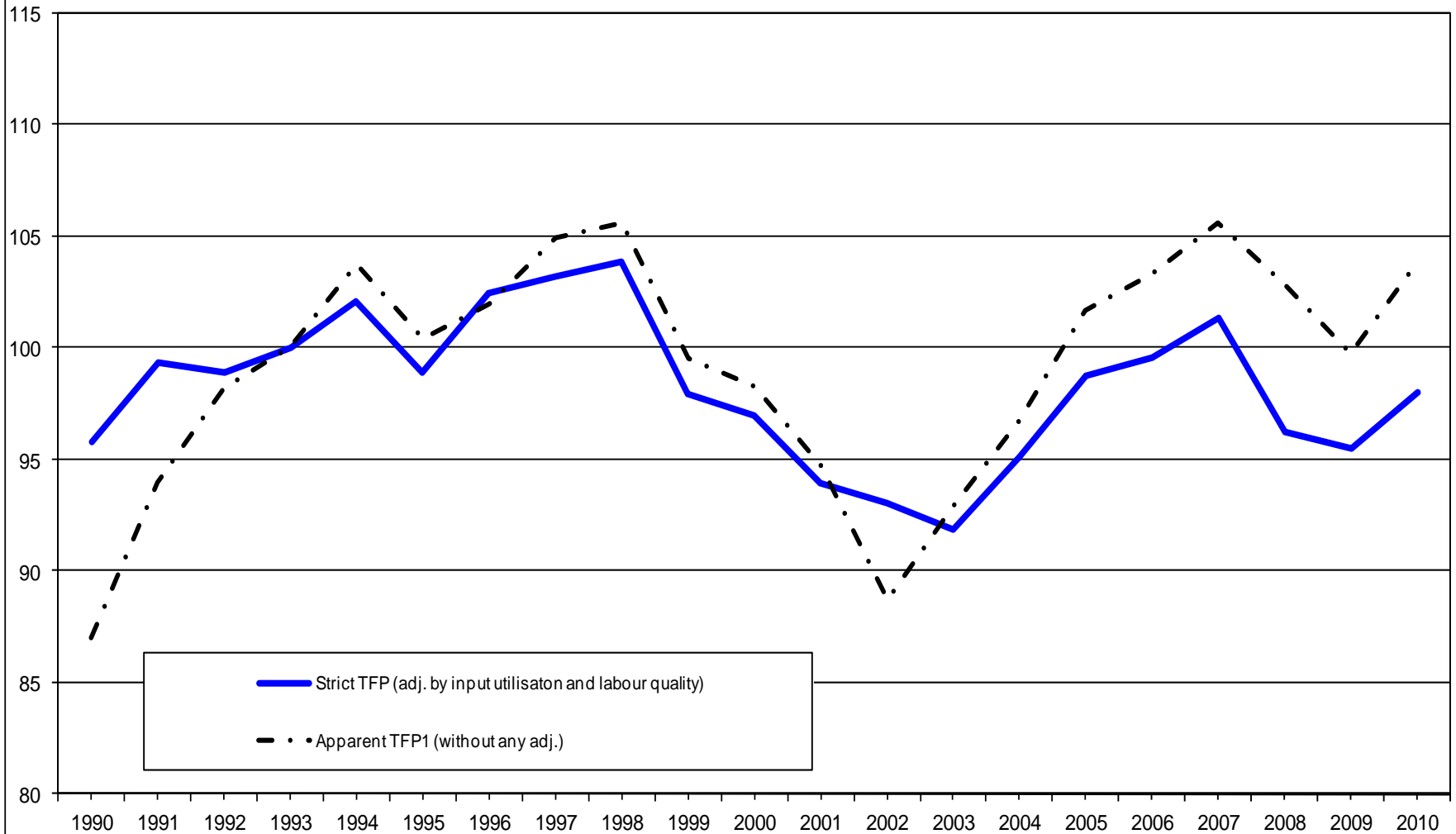
-Annual Contribution-



Source: ARKLEMS+LAND

TOTAL FACTOR PRODUCTIVITY OF ARGENTINA

1993=100



Source: ARKLEMS+LAND

LABOUR INPUT IN ARGENTINA

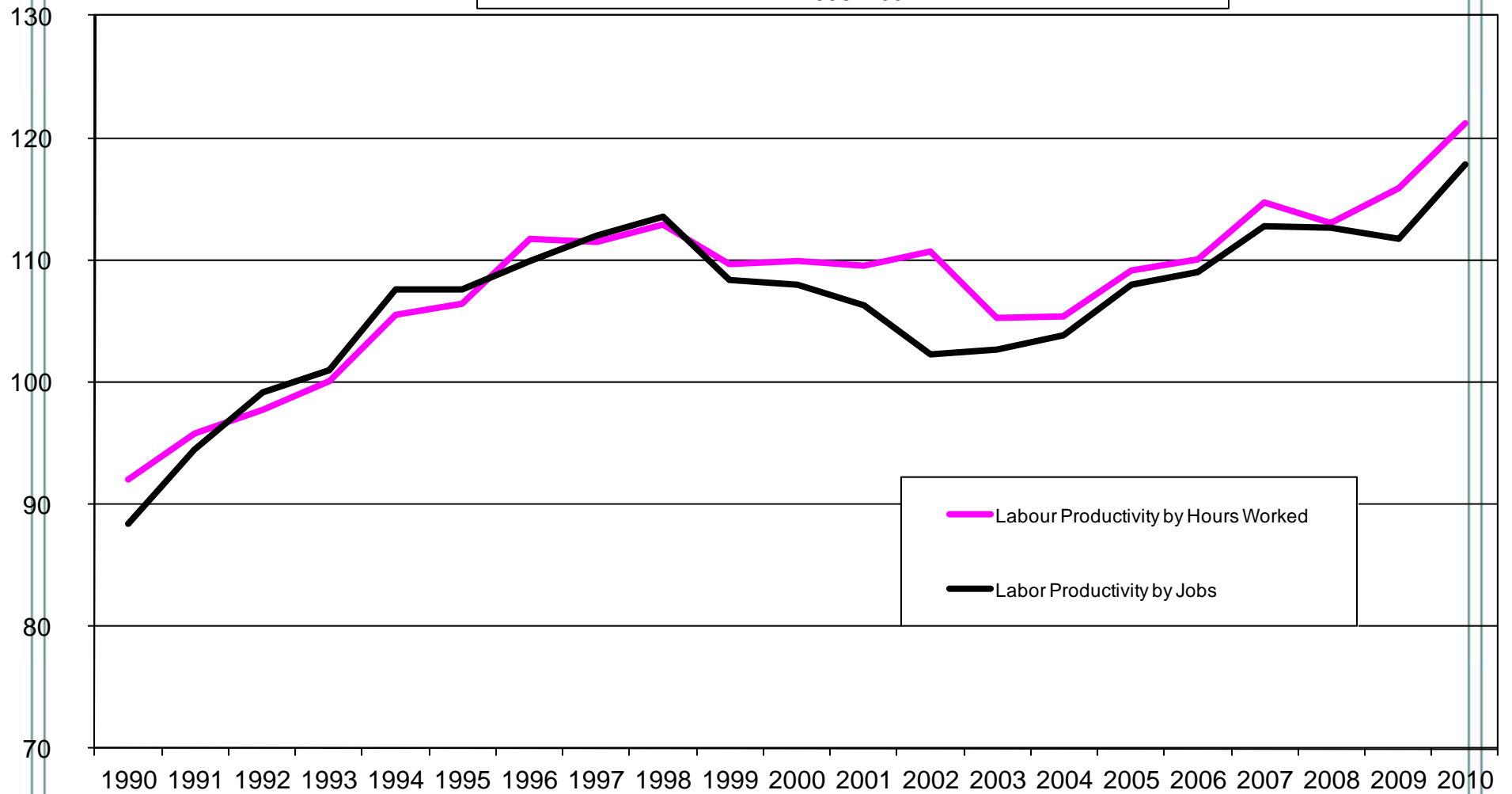
1993=100



Source: ARKLEMS+LAND

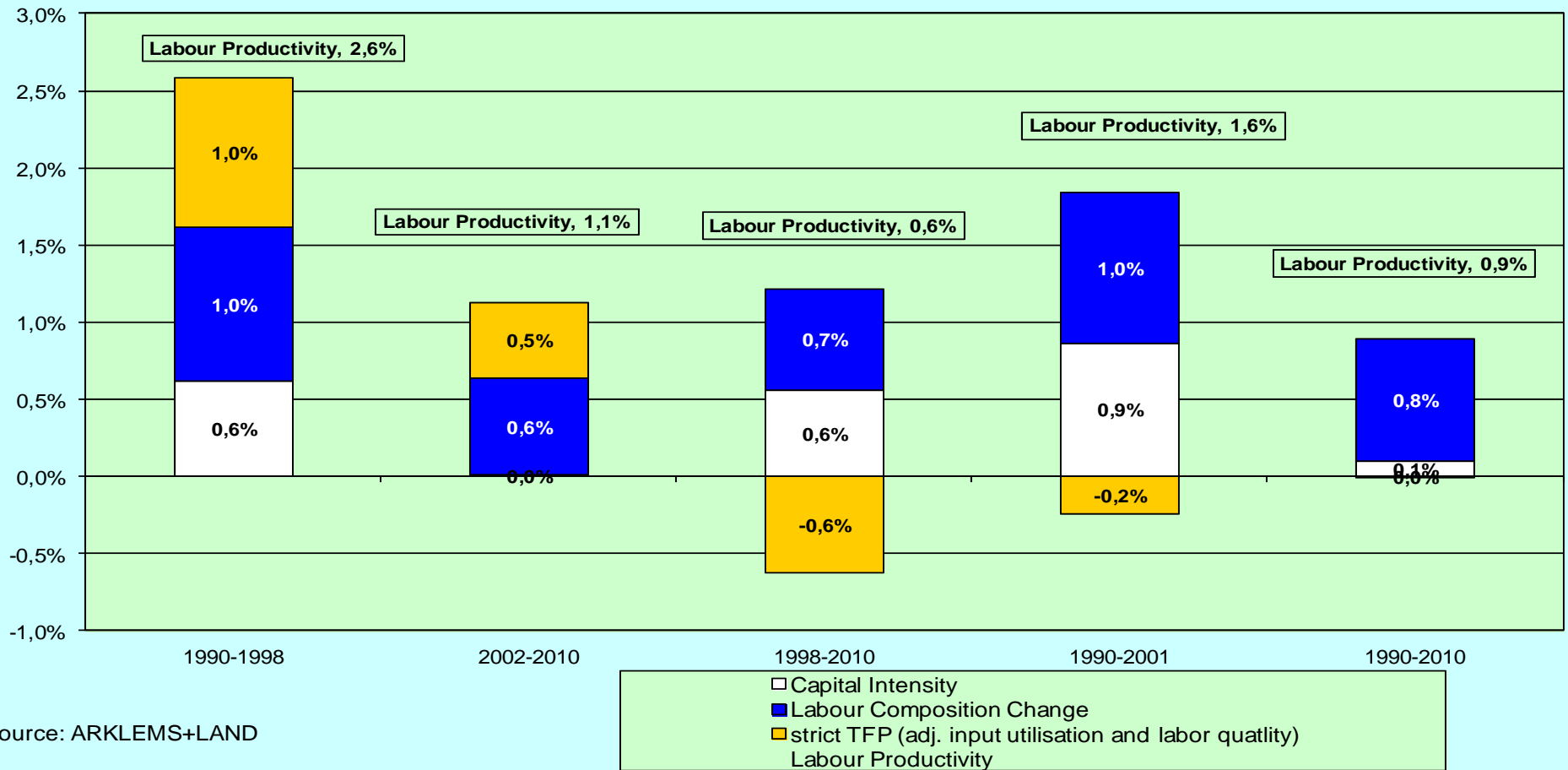
LABOUR PRODUCTIVITY IN ARGENTINA

1993=100



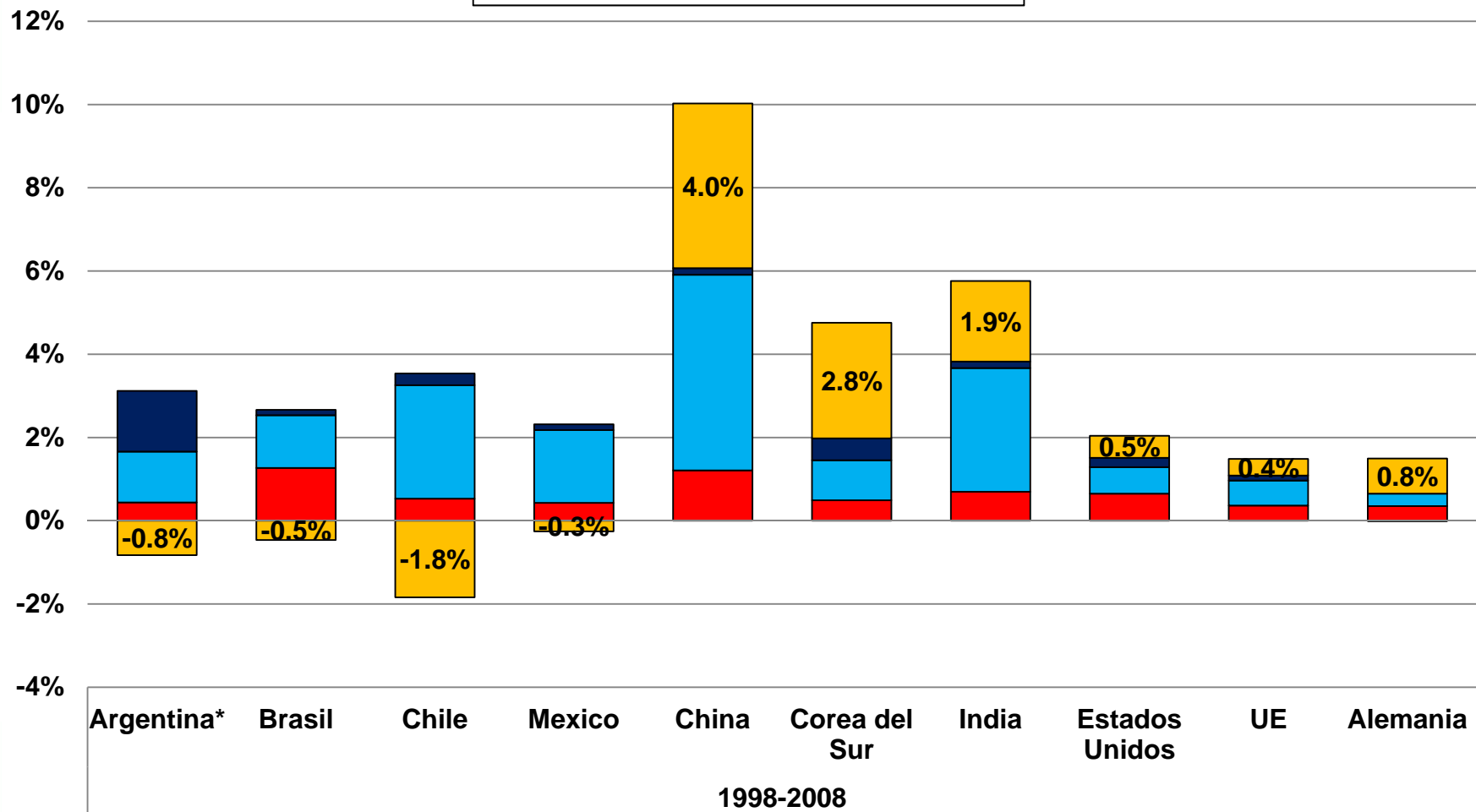
Source: ARKLEMS+LAND

SOURCE OF ARGENTINA'S LABOUR PRODUCTIVITY GROWTH -Annual Contributions-



**$\Delta L^q ARG$ is the main input that explained Labor Productivity
BUT TFP SLOWDOWN: HK COULD BE WASTED**

SOURCE OF ECONOMIC GROWTH -Annual Contributions-

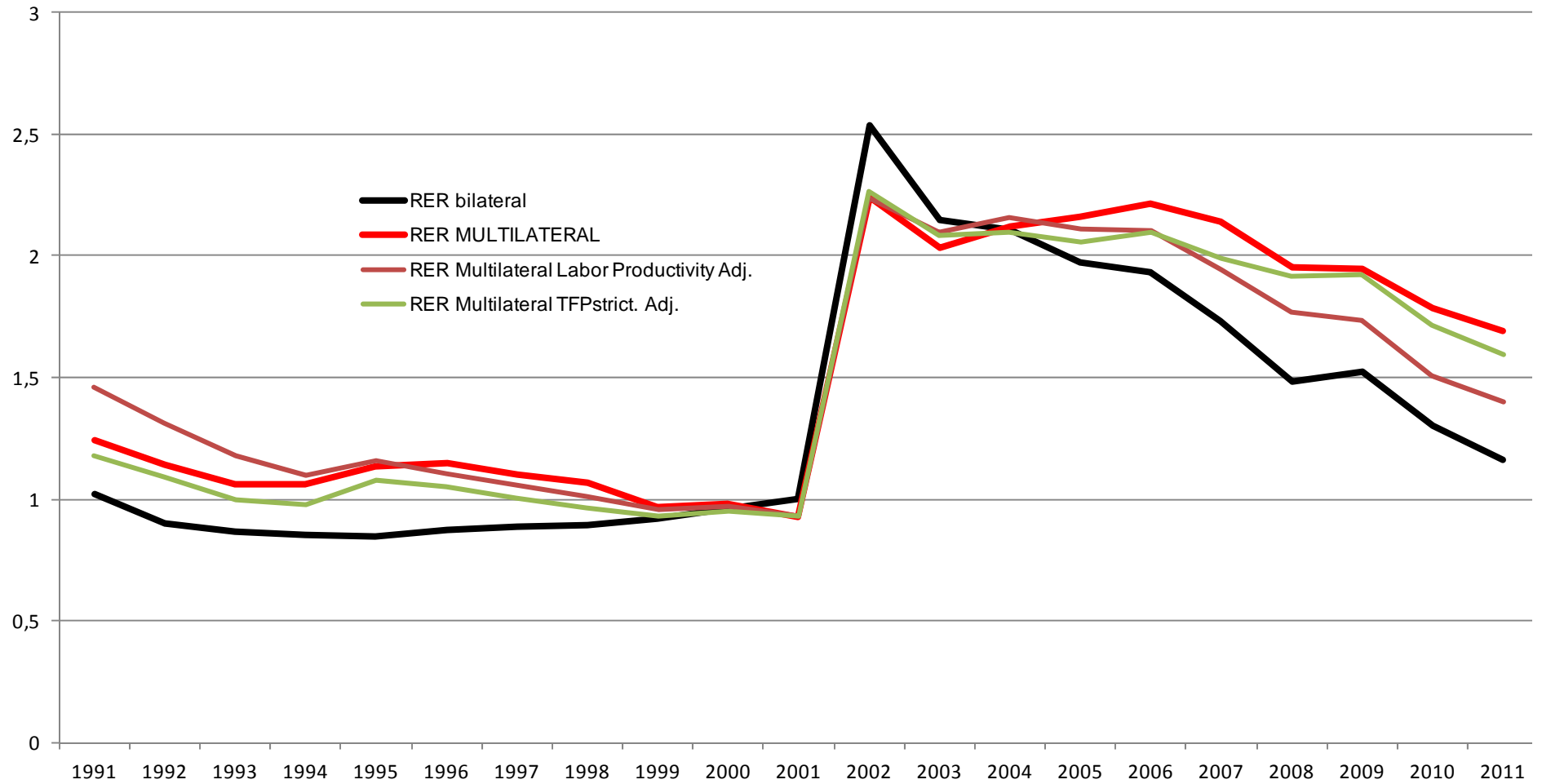


Source: TED database , Argentina (ARKLEMS+LAND)

■ ICT ■ NON ICT ■ Labor Composition ■ TFP

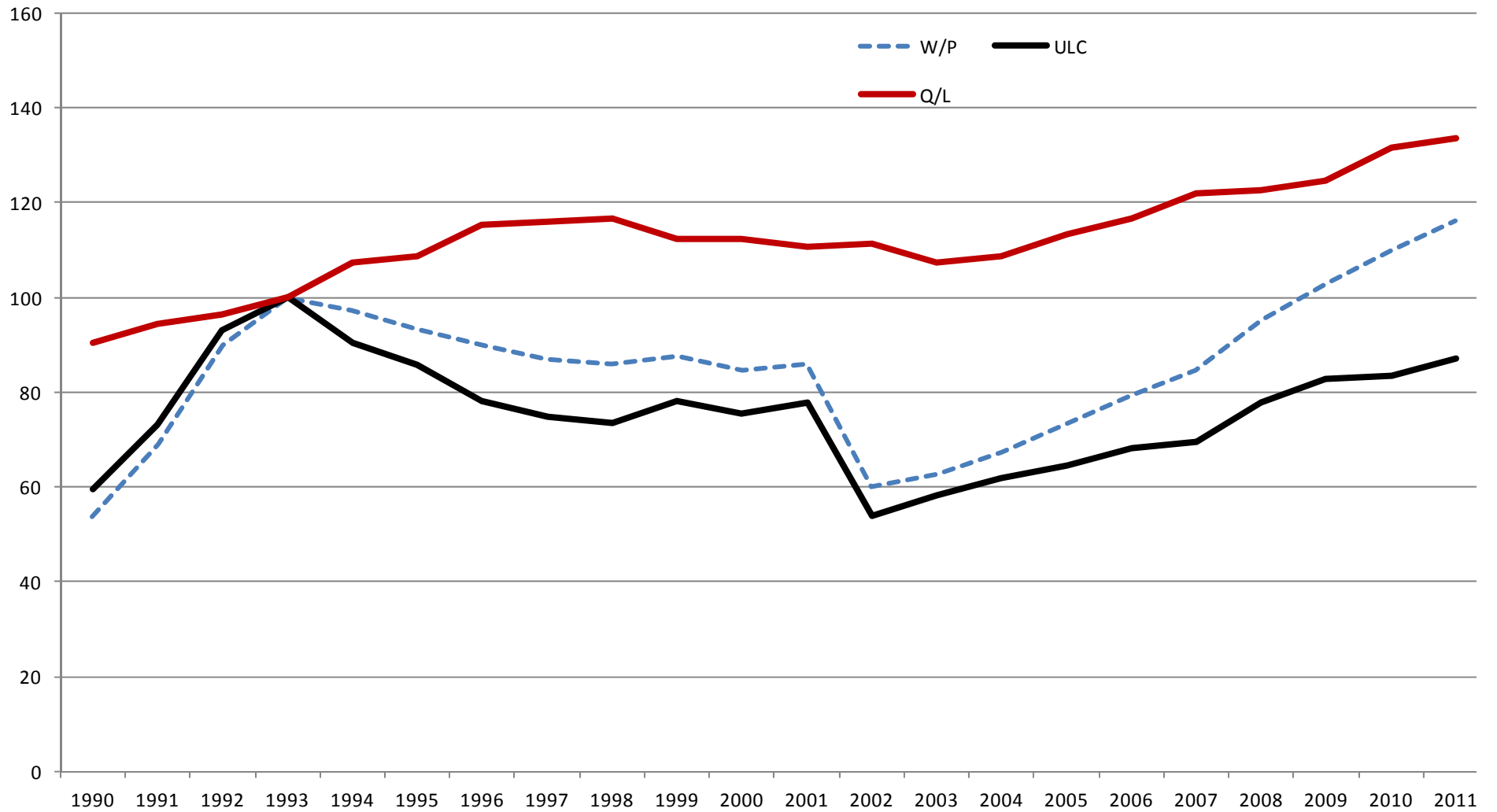
REAL EXCHANGE RATE ARGENTINA

Bilateral with u\$s and Multilateral 2001=100
1990-2011



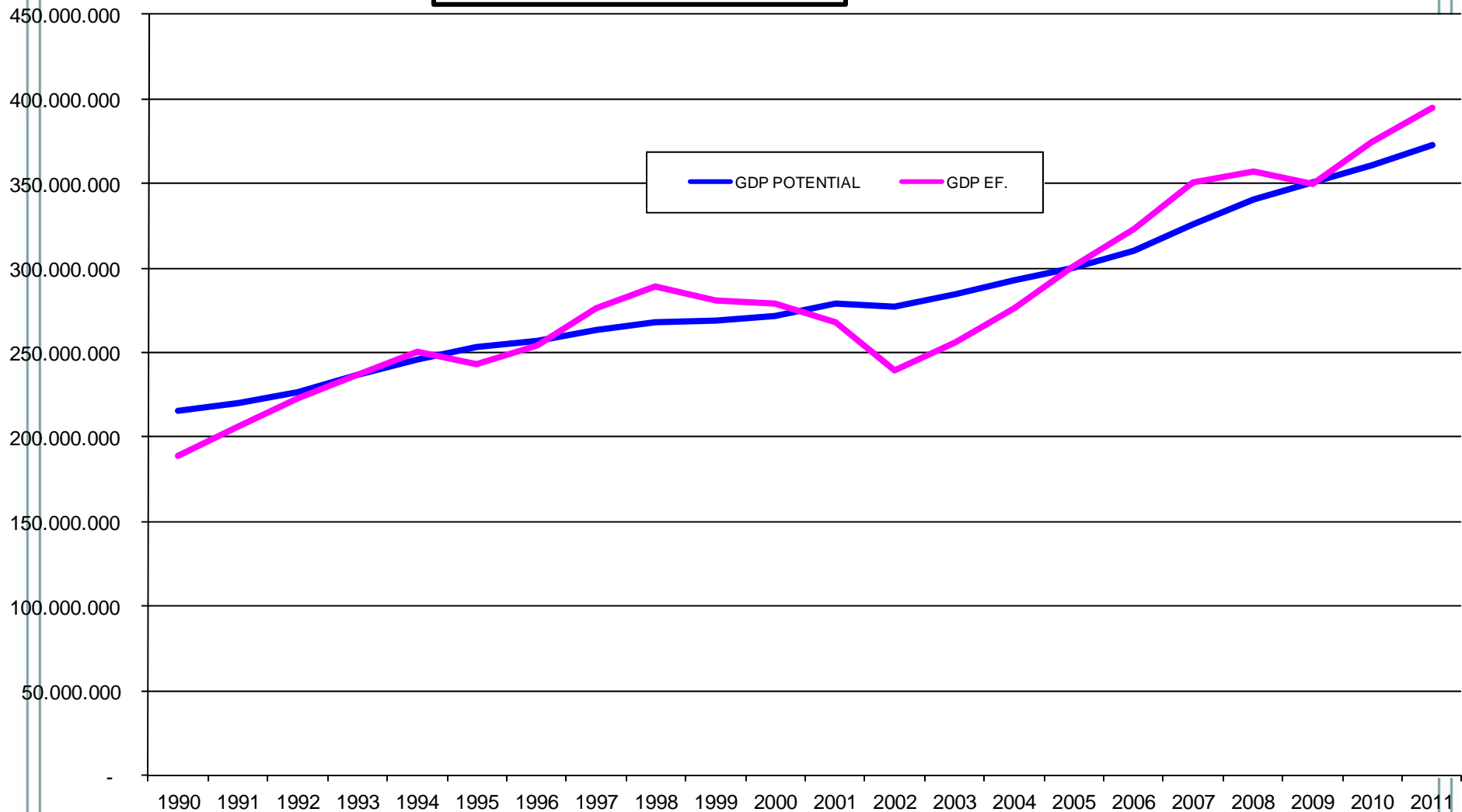
Source: ARKLEMS based on Central Bank and alternative sources

LABOR COST IN ARGENTINA 1990-2011



Fuente: ARKLEMS

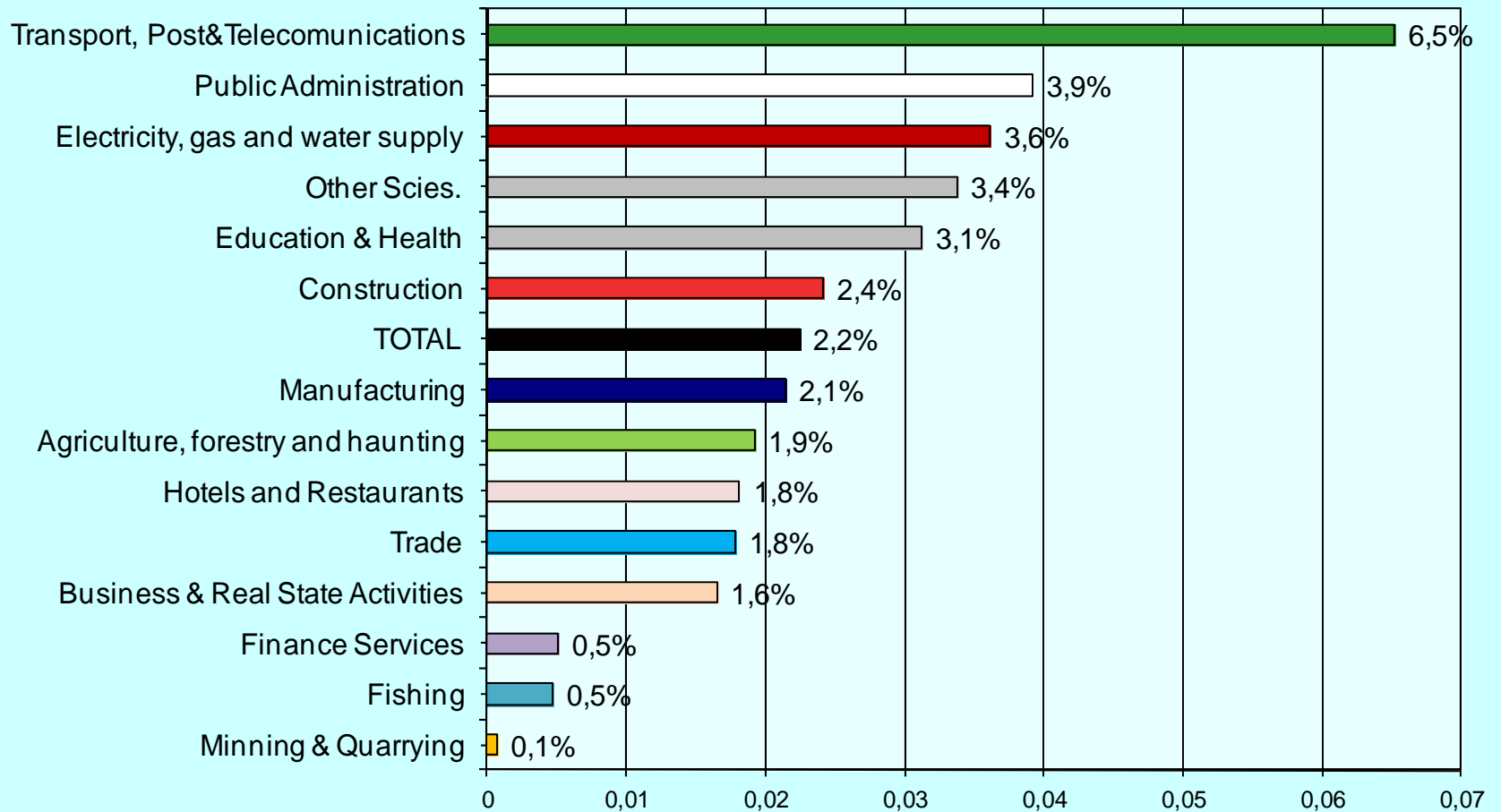
OUTPUT GAP ARGENTINA



Source: ARKLEMS 1st draft estimation (93 prices, vol. index Tonquist)

GDP GROWTH BY INDUSTRY IN ARGENTINA 1998-2010

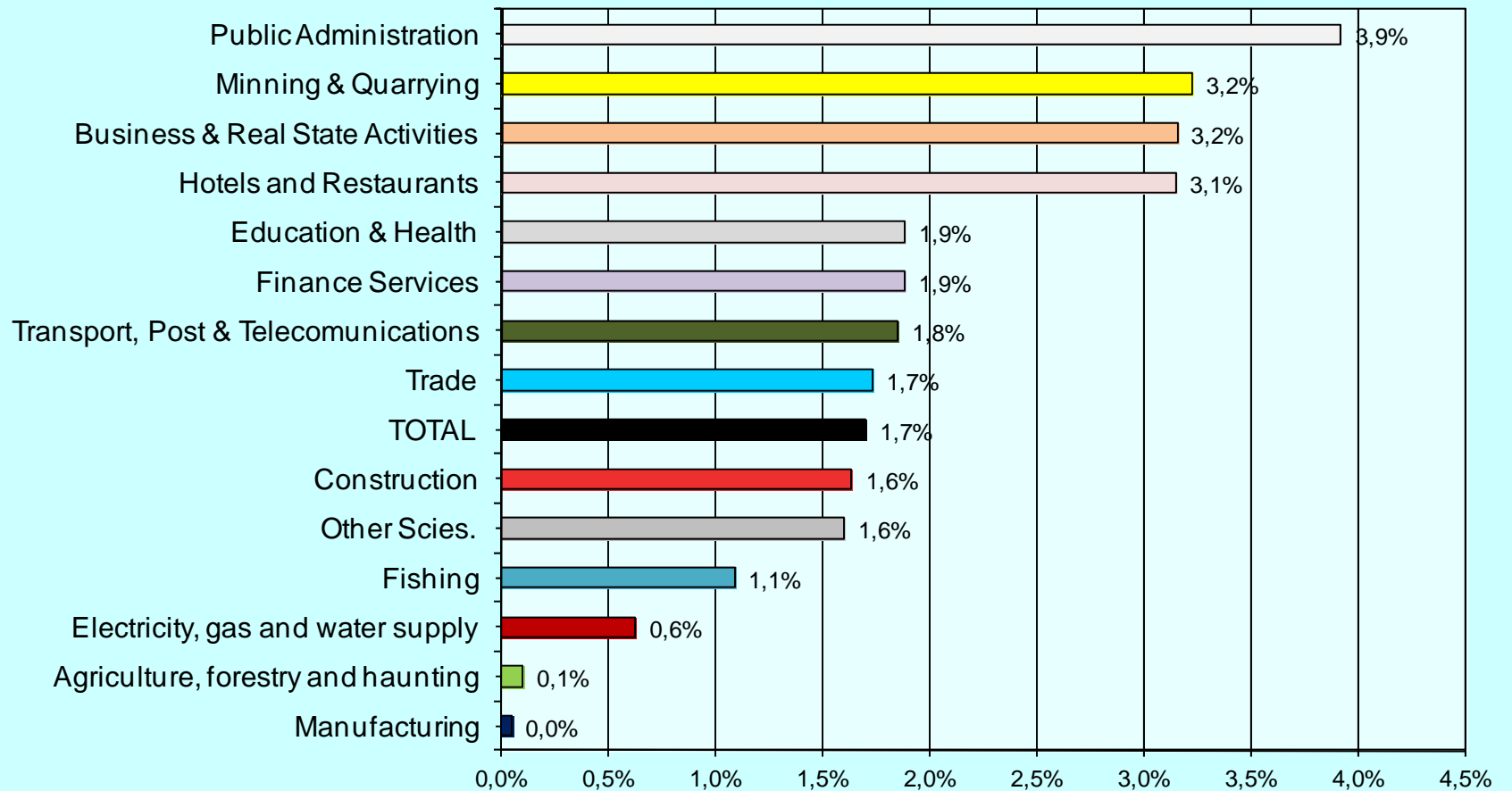
-Annual Growth-



Source: ARKLEMS+LAND

LABOR INPUT BY INDUSTRY IN ARGENTINA 1998-2010

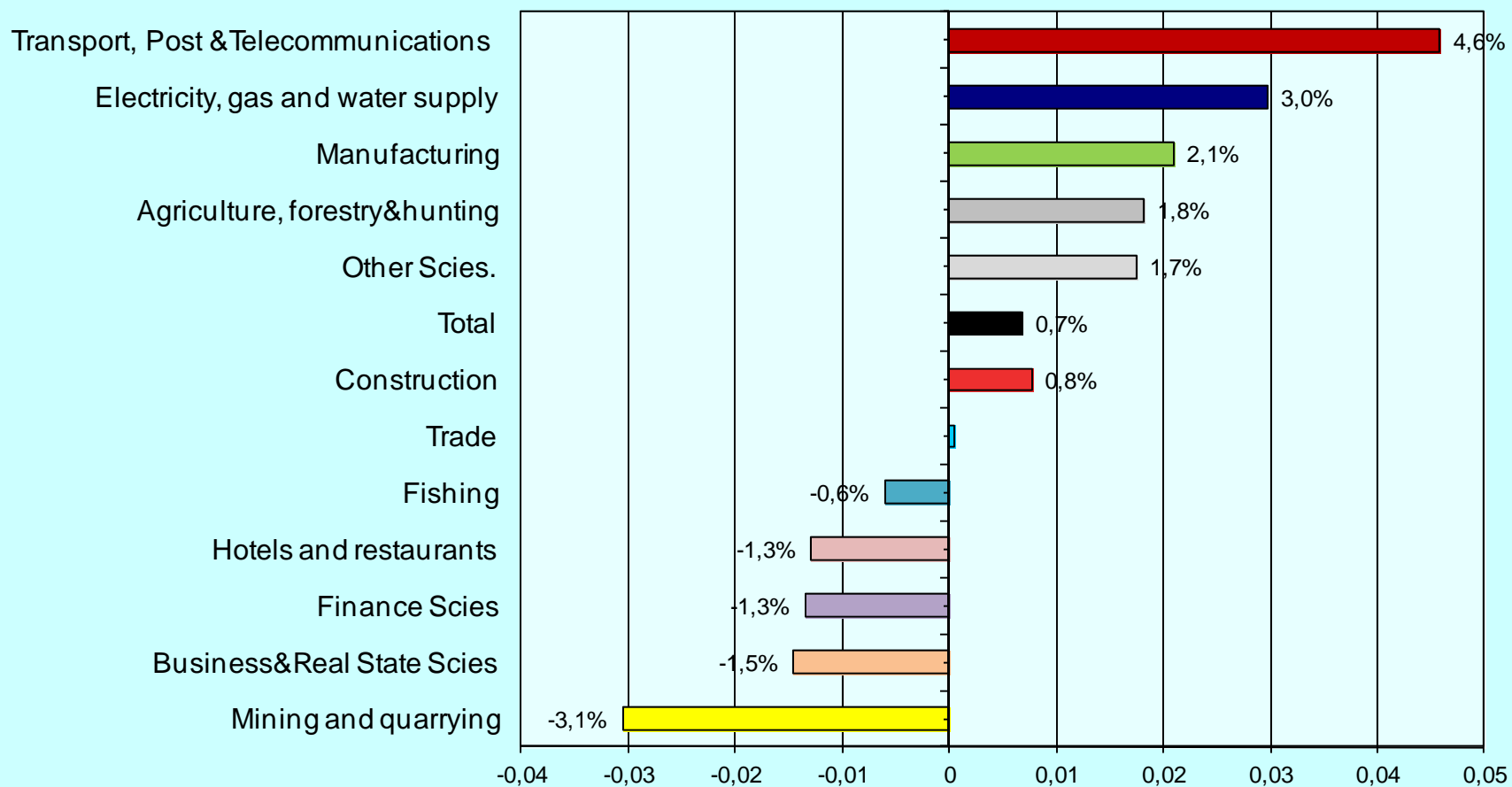
-Annual Growth-



Source: ARKLEMS+LAND

LABOR PRODUCTIVITY BY INDUSTRY 1998-2010

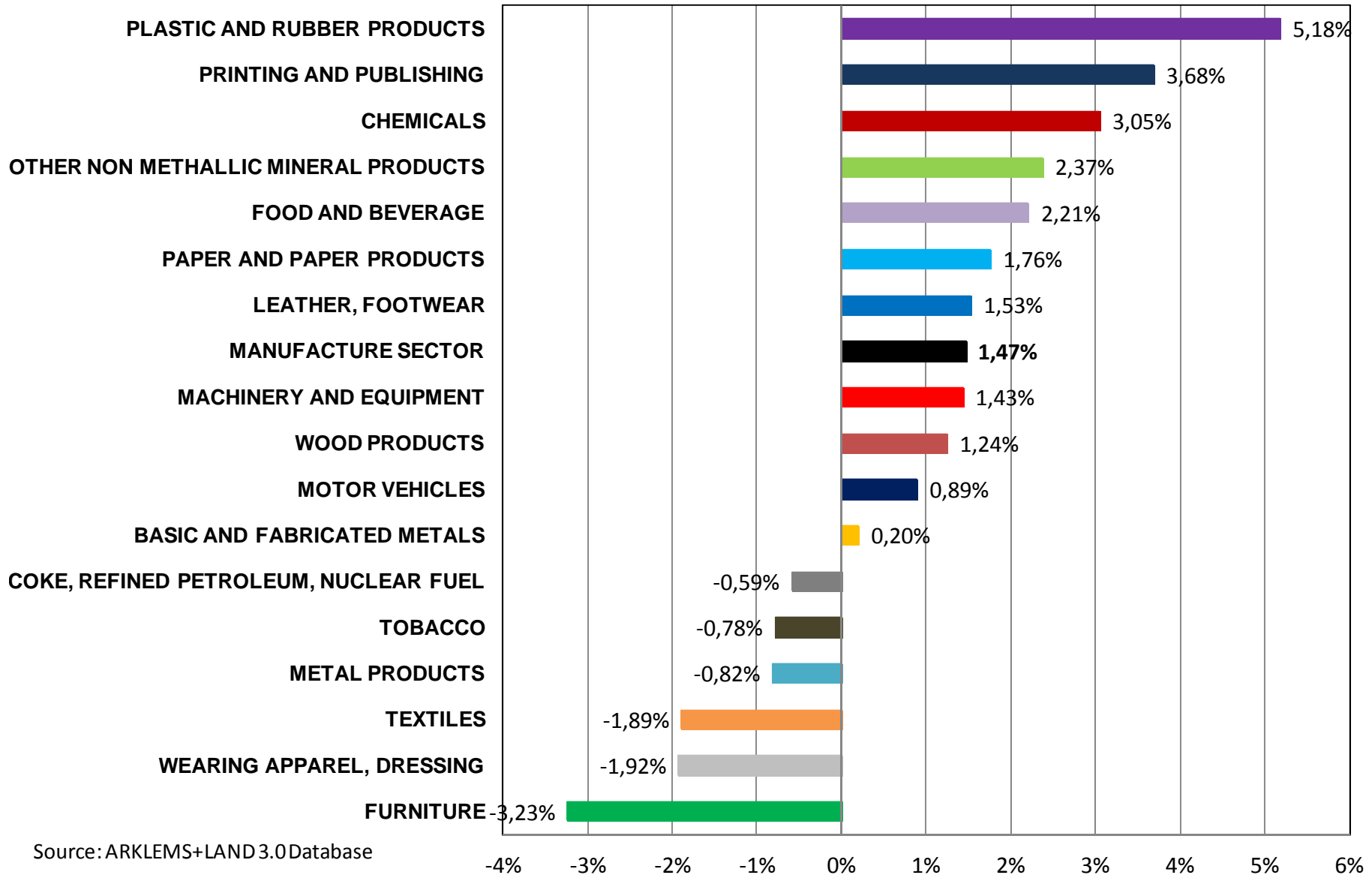
-Annual Growth-



Source: ARKLEMS+LAND

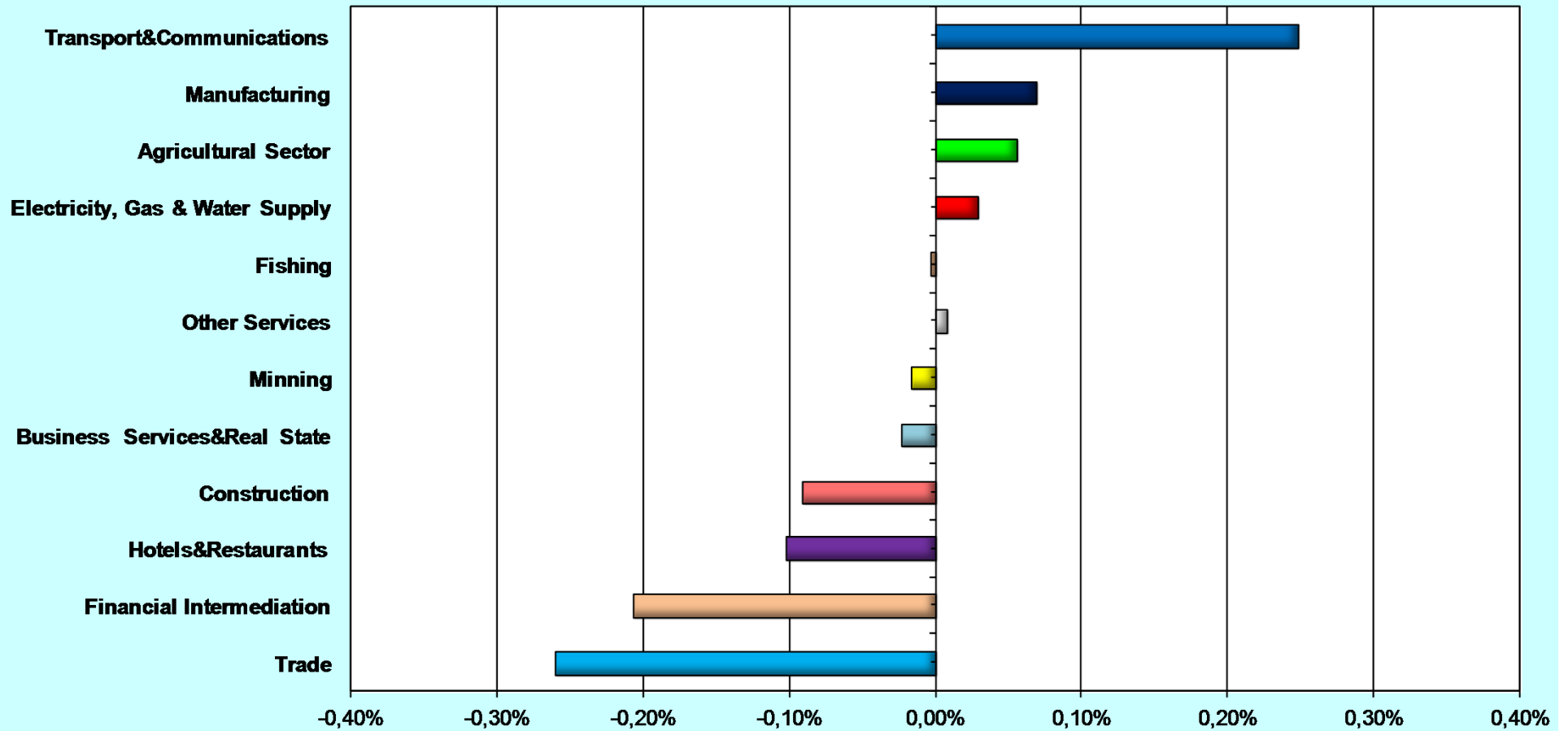
Manufacturing Labor Productivity Growth in Argentina

1998-2010 (Average Annual Rate)



Source: ARKLEMS+LAND3.0Database

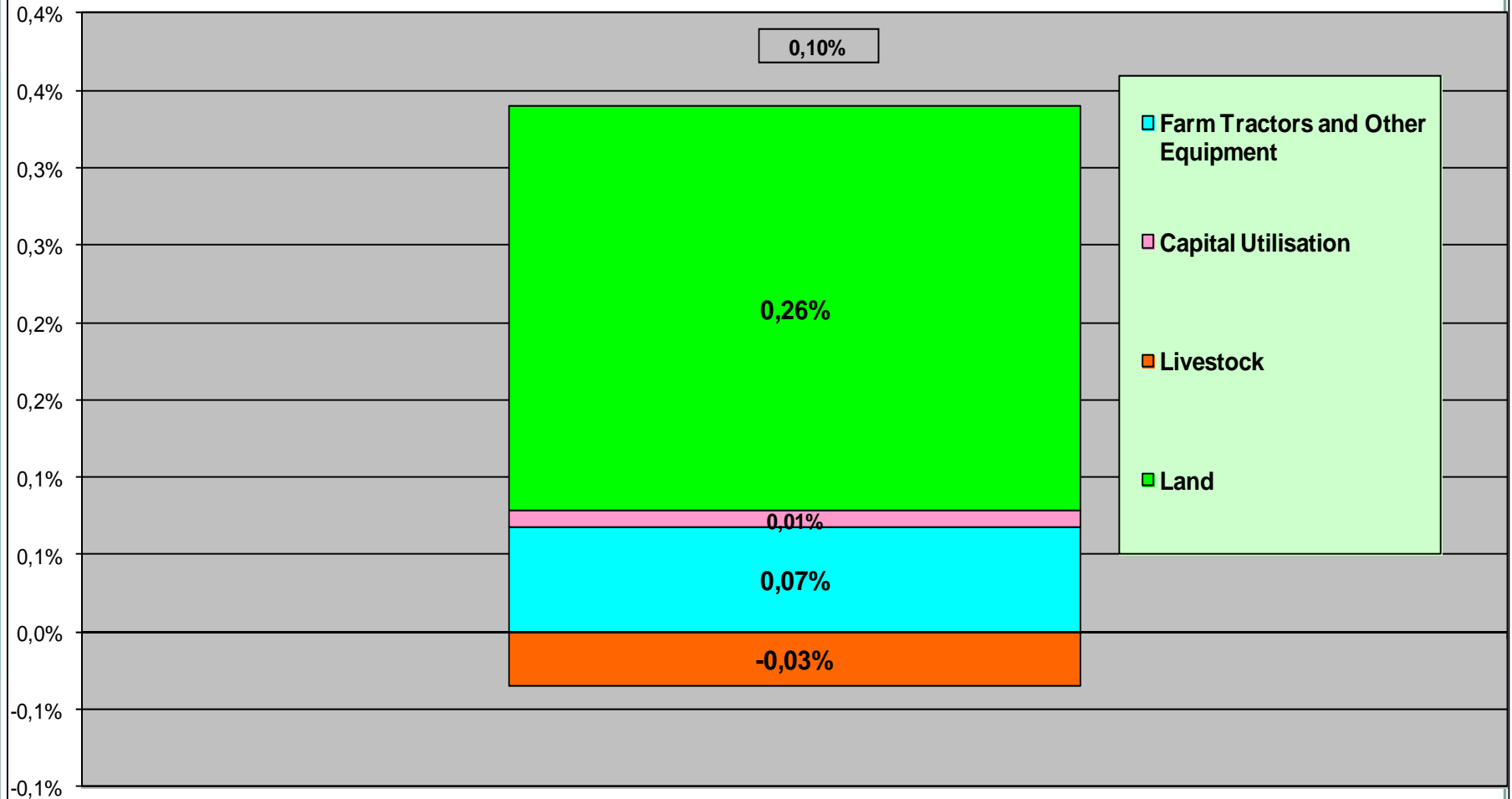
Industry Origins of TFP Slowdown of Argentina



Source: ARKLEMS+LAND

CAPITAL SERVICES CONTRIBUTION TO AGRICULTURAL OUTPUT GROWTH BY TYPE OF ASSET IN ARGENTINA

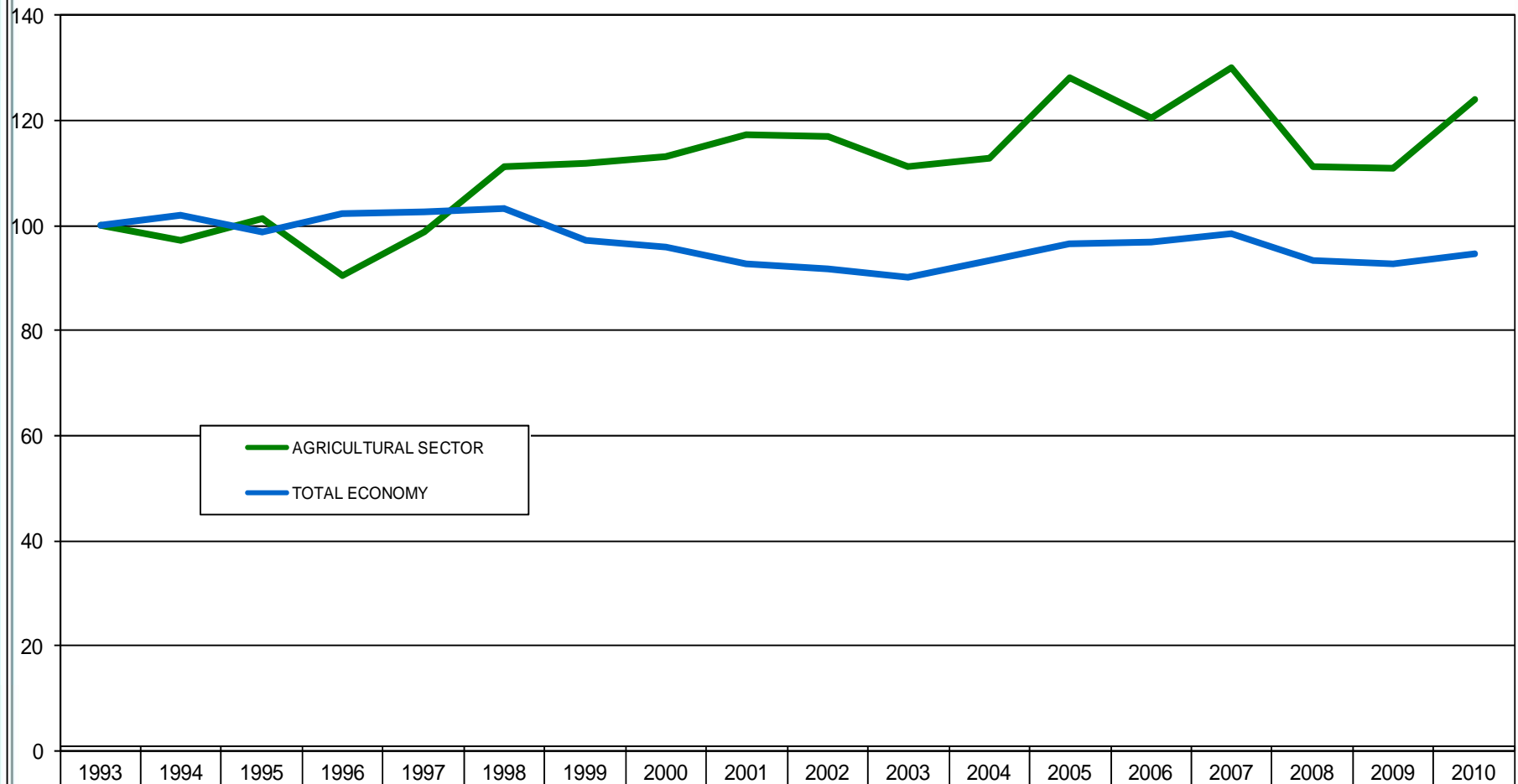
-Annual Average Contribution -



1993-2010

Source: ARKLEMS+LAND-AGRIKLEMS-ARGENTINA USDA-ERS BSAS GRAIN EXCHANGE-Ball, Coremberg, Costa

TOTAL FACTOR PRODUCTIVITY OF AGRICULTURAL SECTOR IN ARGENTINA



Source: ARKLEMS+LAND-AGRIKLEMS-ARGENTINA USDA-ERS BSAS GRAIN EXCHANGE-Ball, Coremberg, Costa

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

- **LACK OF MACROSPILLOVERS FROM SPECIAL INPUTS (ICT+Natural Resource)**
- **PERSISTENT JOB CREATION FROM INFORMAL AND LOWER PRODUCTIVITY SECTOR**
- **ONLY SHORT RUN CYCLICAL PRODUCTIVITY GAINS**

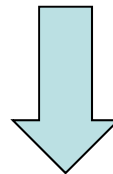
UNSUSTAINABLE GROWTH IN THE LONG RUN

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**

SCENARIO 1: DECOUPLING OLD DILEMMA OF THE ARGENTINEAN ECONOMY

- **Distributional Conflict of Export Led Growth based on Traditional Competitiveness Advantage from Agricultural Sector=wage goods + Brazil Dependence**



- **+ X diversification**
- **Important and Sustainable Within Productivity gains + Coordination and Complementarities is the key variable which allows for an increase in production in both markets: domestic and exports, generating external and social sustainability, without generating inflation**

SCENARIO 2: RECOUPLING

- **Going on Crisis in Europe + Brazil Devaluation**
- **Risk of Dollar Appreciation (length as a function of institutional difficulties in the EU), transitory but dangerous in the short run for AR and LAC**
- **Risk of End of Financialization of commodities^{U9} (+ soft in agriculture) , impact in China-India**
- **LAC and AR must generate positive external surplus with Shock in X quantities, not Prices:**
PRODUCTIVITY

U9

Ver Grafico con Commodities

Usuario, 5/14/2012

GROWTH STRATEGIES AFTER GLOBAL FINANCIAL CRISIS

- **“Get Prices Right” or “peaking the leader” is not enough**
- **Change focus of Public Policy (Pro-Productivity) tending to increase competitiveness without resorting to a sudden devaluation**

THANK YOU!!!