

“This Was Not Argentina’s Growth and Productivity Decade”

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Abstract

This paper shows the methodology and main findings of recent revision of Argentina GDP official series by National Accounts Bureau. The research confirms main findings of ARKLEMS+LAND research based on standards national accounts methods and sources: GDP growth is positive bias since 2007 (date of political intervention of official statistics), distortions are important and discretionary on all industries, independent of negative bias of CPI and WPI.

GDP new series change growth region rankings, showing that Argentina was the worst GDP performance of Latin America in the long run. Argentina GDP performance during recent commodity boom cycle was similar to 1990 decade, but there was a productivity slowdown. According to Argentina economic cycle behavior, the paper proposes a methodology to adjust source of growth by short run cyclical effects. Argentina as well as Latin-American region does not take advantage from last commodities boom, showing a negative productivity performance.

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1. INTRODUCTION

Commodities prices boom at the beginning of the 21st century enabled an important GDP recovery of Latin America with respect to the crisis of end of 1990 decade. Positive terms of trade as a consequence of the resources coming from exports allowed improving social and macroeconomic indicators based on prudential and monetary policy.

Argentina was a special regional case. GDP grew at Chinese rates from 2002 to 2007, taking advantage of tail winds from export prices boom and “advantages” from recovery effects from the worst economic crisis of the last century which last from 1998 to 2002. Mega devaluation of domestic currency, important income transference from savers to debtors of financial system and extremely high unemployment and capacity sub utilization allows an important recovery of economic activity but at a high social cost of generating a half of population under poverty line which generate a high institutional instability¹.

Economic policy regime shifted dramatically from trade openness, privatization, deregulation and supply-side policies during the 1990's decade to “competitive real exchange rate” and demand driven policies. But since 2005, demand driven policy and the ambitious to keep in power of the administration generated important economic distortions which impact on high fiscal deficit and current account as the freeze of public utilities tariffs, forbidden meat exports, restrictions on imports, extreme price and exchange-rate controls, and important black market, which drives acceleration of inflation to an annual double-digit rate.

At the beginning of 2007, the administration decided to hide inflation by the intervention of the official Consumer Price Inflation Index (CPI) estimated by the National Statistics Institute (INDEC), which last until the end of administration in 10th December of 2015. Since the beginning of that intervention, several academic and private analysts have estimated that the actual CPI has been considerably higher than the one reported on the official series. The consequences of that rule opened “the Pandora-Box effects” of accumulating very high gaps between the official estimation of inflation and the alternative ones, distorting the measurement of other important economic indicators, such as the poverty rate and income distribution.

The intervention began in January 2007 with CPI, few months later, GDP and wholesale price index (WPI) was also modified, official Household and Employment, Manufacturing and other Surveys; yet the trade statistics. All these interventions had a profound influence on all Argentine macroeconomic and sectoral economic indicators.

¹ After a long period of institutional instability spread by more than 6 military coup d'etat and long episodes of electoral fraud in only 5 decades, the country retrieved the democracy since 1983. During 2002, the peak of the worse economic crises of her modern history, there were 5 constitutional presidents (8 economic ministers) in only few weeks.

Official speech from May 2002 to 2015, taking into account INDEK² indicators spread several myths: Argentina reduced poverty and increased real wages to Nordic European countries levels, an impressive permanent positive trade balance and above all that *“Argentina growth episode is the highest growth acceleration of her history and the growth champion of Latin America”*.

Paradoxically, another consequence of “Pandora Box Effect” was that in spite of alleged official reasons for political intervention of the INDEC indicators was to reduce the amount of the public debt linked by the CPI “to increase public savings”, at the same time, the positive bias on GDP growth has generated substantial “extra payments” of the public debt linked to GDP growth³.

The evidence of manipulation on statistics incentives the revision and alternative estimation of GDP with the purpose of an estimating and analyzing more accurately the growth profile, productivity and competitiveness of Argentina for ARKLEMS database. ARKLEMS +LAND is a research project that is developed on the measurement, analyses and international comparisons of the sources of economic growth, productivity and competitiveness of the Argentinean economy at macro and industry level. The methodology is based on KLEMS framework (Capital, Labor, Energy, Material and Service Inputs) in coordination with WORLDKLEMS Project lead by Pr. Dale Jorgenson (Harvard University), Marcel Timmer (Groningen University) and Bart Van Ark (Conference Board and Groningen University). The ARKLEMS + LAND project is organized by a team of Argentinean academics and researchers from CEP (Centre of Studies of Productivity⁴) of University of Buenos Aires, thanks on fifteen years of experience in KLEMS measurements of sources of growth, national accounts and input output matrix, audit by a prestigious academic committee.

The purpose of this paper is to summarize main findings of GDP revision, following the same traditional sources of information and methodology followed by the Argentine National Accounts System until political intervention of INDEC, showing the distortions induced by the intervention on GDP performance at macroeconomic level and by industry. The paper also summarizes the official revision of GDP made by the new administration; new INDEC, that confirms main findings of ARKLEMS series. The research allows to consistent international comparison of Argentina GDP and Total Factor Productivity during commodity boom.

The paper is structured as follows. First, we present the framework of national account methodology in Argentina previous to the INDEC intervention, data compilation and procedure of replication of GDP growth, last discloses comparisons of reproducible GDP and official figures from INDEK. Section 3 discusses myths and facts on Argentina's economic growth. Section 4 analyses the impact of new facts on Argentina GDP on source of growth and productivity during commodity prices boom and finally, the conclusions.

² INDEK: national statistics institute intervene by Kirchner administration from 2007-2015. The INDEC from new administration after 10th December 2015.

³ See Coremberg and Wierny (2014) and Morgan Stanley Report (2016)

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2. METHODOLOGICAL ISSUES

Problems with official statistics and “Pandora Box effects” of distortions to show political results, mostly on GDP, have been well documented for other countries such as China. Maddison and Wu (2008), for example, have found several biases when they recalculated China’s GDP in comparison to official estimations, including a clear positive bias on official GDP for the period 1993-2003 (mostly due to distortions on the measurement of non-material services, based on inconsistencies of labor input indicators). Jorgenson and Vu (2001) discuss the problems with the official estimates of real GDP and make their own estimates using alternative deflators, showing a lower relative performance. Maddison and Wu (2008), found several biases when they recalculated China’s GDP mostly due to distortions of nonmaterial services based on inconsistencies on labor input indicators. Similar issues arise in other countries and are also well known, especially for the case of Greece. Sturgess (2010), reports distortions related to the measurement of public debt and public finance indicators, to show a fiscal deficit figure below the 3% required to enter the Euro zone. The accumulated consequence of those distortions dramatically impacted later during the European crisis of 2009 up to the present⁵.

There were two well documented cases on CPI in Latin-America during military regimes. Chile and Brazil official CPI were manipulated to “manage” wage bargains with trade unions during high inflation but only during few months as reported by Cortázar and Marshall (1980) (1987) and Streb (2010)⁶. Lula, former president of Brazil, as leader of metallurgic labor union during the 1970’s decade, began its political career by accusing the military regime for political distortion of CPI which was confirmed by World Bank called by Lula’s labor union.

Previous important background on Argentina’s GDP estimation based on several versions of the System of National Accounts (SNA) before the intervention is well documented. Since Alberto Fracchia and Manuel Balboa founded “National Accounts: GDP and Balance of Payments” in the Central Bank of Argentina at the beginning of the 1950s, Argentina was a leader in statistics and National Accounts of Latin America⁷. The National Accounts Bureau, as well as INDEC of Argentina, have been historically subject to several political pressures. It was born as an office of the Central Bank, but moved to the Ministry of the Economy at the beginning of the 1990s, and finally moved to INDEC at the beginning of the 21st century. But, INDEC had the

⁵ International Association of Research in Income and Wealth has just signed a letter to Greek government regarding integrity and independence of official statistics and the prosecution of former head of the Greek national statistical office that. about <http://iariw.org/ScannedLetter11-16-16.pdf>.

⁶ Garcia and Freyhoffer (1970) found underestimations of the official inflation in the period 1964-68, a democratic stage where there were price controls.

⁷ Traditional methodology of official GDP by National Accounts Bureau-INDEC are reported by CEPAL (1991), PNUD-BIRF (1992), SNA Argentina (1999), IO97 Argentina (2001) and its impact on Source of Growth in Coremberg (2002, 2009,2010 2012a).

international reputation of remaining technical free from political pressures until 2007.

INDEC was political intervened by the former administration in 2007. First CPI⁸, then GDP, household and manufacturing and other official surveys. GDP growth began to be questioned after newspapers published main findings of ARKLEMS research as described in academic paper by Coremberg (2014) that official GDP growth was positive distorted. Academics and public opinion began to use non-official estimations; moreover, main official institutions as treasury and central bank ask for the alternative estimations to follow the behavior of Argentine economy. During 2014, congress began to publish an indicator of CPI and later of GDP growth as an average of alternative indicators⁹.

After ARKLEMS publicly issue the ARKLEMS reproducible GDP series by sector during 2013¹⁰, public opinion realized that Government had the chance to wrongly pay GDP Warrants if going on overestimation of GDP growth. GDP warrants is a financial instrument origin from sovereign debt restructuring of 2005 after default of 2002. It pays a coupon if actual real GDP exceeds Base Case GDP (nearly 3% annual growth). According to ARKLEMS estimations, confirmed by GDP revision from new INDEC, Argentina grew less than 2% during 2013; instead of 5% as informed by INDEK. INDEK was ordered by former administration to hide new “discretionary manipulation” by changing the base year of GDP accounts from 1993 to 2004. Former administration published “new INDEK GDP 2004 base year series” in only one week, but it is worth to point out that such statistics restructuring usually takes not less than 2 years. So INDEK quickly revised 5% prior estimation to “new” GDP growth 3% just under the trigger clause of GDP warrant to evade to wrongly pay the warrant but manipulation was going on.

New administration finished the political intervention of INDEC in December 2015. Official revision confirms that the whole Official Statistical System were handled to political speech of the former administration. The following warning have been set by new INDEC about the use of statistical series (<http://www.indec.gob.ar>): *“Warns that the statistical series published since January 2007 and until December 2015 should be considered with reserves, except those that have already been reviewed in 2016 and its diffusion State it expressly. The INDEC, within the framework of the powers conferred by Decree 181/15 and 55/16, ordered the investigations required to establish the regularity of procedures of data collection, processing, development of indicators and dissemination”*. New INDEC from present administration decide to revise and recalculate INDEK GDP series, the only series recalculated from former statistical system manipulation thanks on public and independent elemental

⁸Argentinean CPI distortion has been reported in Cavallo (2012). Another important and methodological consistent alternative estimation have been made by G. Bevaqua, former Director of CPI as CPI GB, which is issue by email distribution. During the political intervention, there were an important involuntary “brain drain” from INDEC. Main consultants and experts has been charge by important fines by government; Argentinean justice has released any penalty only recently after more than eight years of political, trials and judicial conflicts.

⁹ Alternative indicators had been estimated by academic institutions and consultants. Many of them had been punished by prosecution and fines.

¹⁰ See Coremberg (2014).

series that not belong to INDEC¹¹. The rest of official statistics based on main surveys of INDEK as CPI, WPI, Household Survey, Manufacturing and Construction Survey and several other statistics could not be possible revised upon original data has been lost or destroyed.

This section briefly summarizes compilation, methodology and findings of reproducing GDP following traditional methodology that National Accounts in Argentina since its creation, which demonstrate the political manipulation of official GDP by 2004 base year. Main findings are similar as it is reported with high detail of sources and methods in Coremberg (2014) for the former 1993 base year. These findings demonstrate that manipulation was independent of the INDEK GDP base year. The next table summarizes the methodology of GDP growth by industry:

Table 1: Argentina GDP growth: Methodology by Industry					
	Volume Indicators	Commodity Flow	Demand Function*	Employment Indicators	CPI Deflator
Agriculture, hunting, forestry and fishing	X				
Agriculture Services		X			
Mining and quarrying	X				
Electricity, gas and water supply	X				
Construction	X				
Manufacturing	X				
Trade		X			
Transport and storage		X			
Post and communication services		X			
Financial intermediation					X
Renting of m&eq and other business activities		X			
Hotels	X				
Restaurants		X			
Other community, social and personal services			X		
Private households with employed persons				X	
Public admin and defense; compulsory social security				X	
Education				X	
Health and social work				X	
Real estate activities	X				
Rental services of owner-occupied dwellings	X				

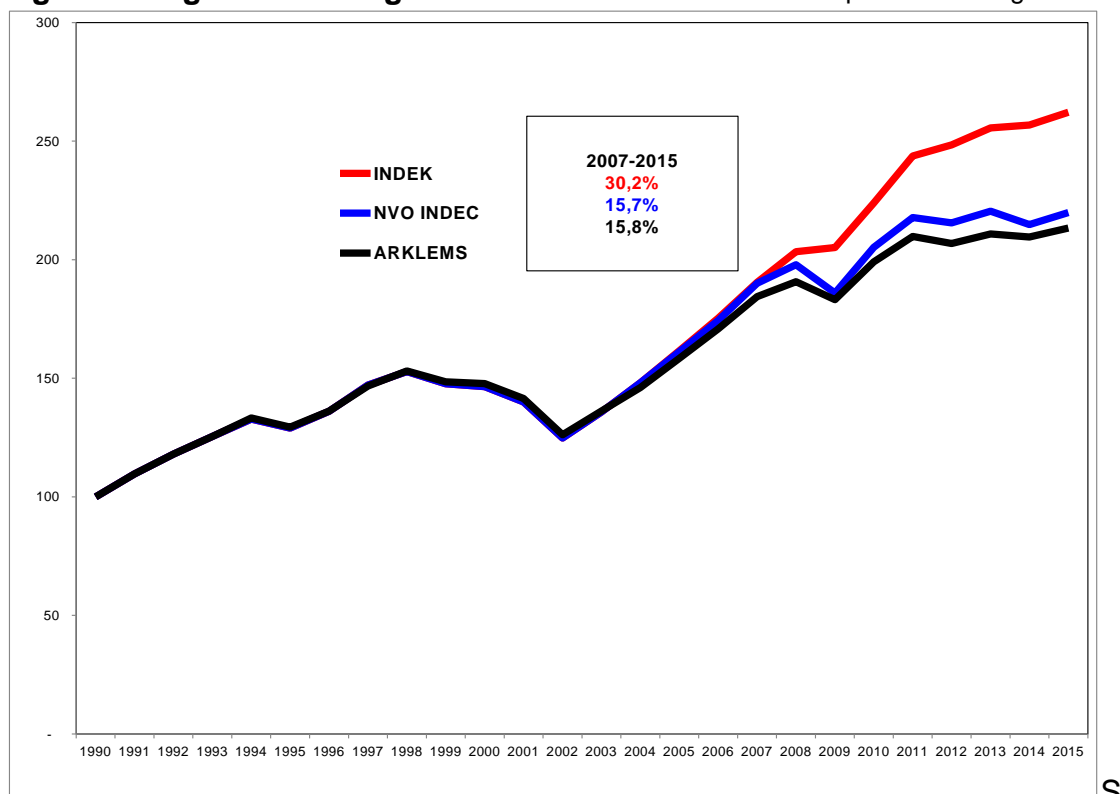
*(only unitary income elasticity) Source: SNA Ar(1999), IO (2001), Coremberg (2014)

¹¹ See SNA Ar (1999) and Coremberg (2014) for detail data sources.

As the table 1 shows, Argentine National Accounts traditional estimate the majority of value added and output of Argentine GDP by volume index instead of deflating values. This methodology was adopted more than three decades ago at high detail ISIC 4-5-digit industry level. Those volume index indicators do not belong to INDEC, but mainly to other more representative public and private surveys carried out by different institutions¹². We reproduce the GDP of Argentina by compiling the same series (published and public) that made up official GDP at 4-5 digits' detail of the ISIC classification from 1990 up to the present.

The main result of this procedure is that ARKLEMS reproducible GDP replicates almost exactly the official Argentine GDP growth from 1993 to 2007. After that year, however, an important gap appears. This gap accumulates a substantial difference that increases every year since then, as is shown in Figure 1.

Figure 1: Argentina GDP growth 1990-2015 1990=100. compound rate of growth.



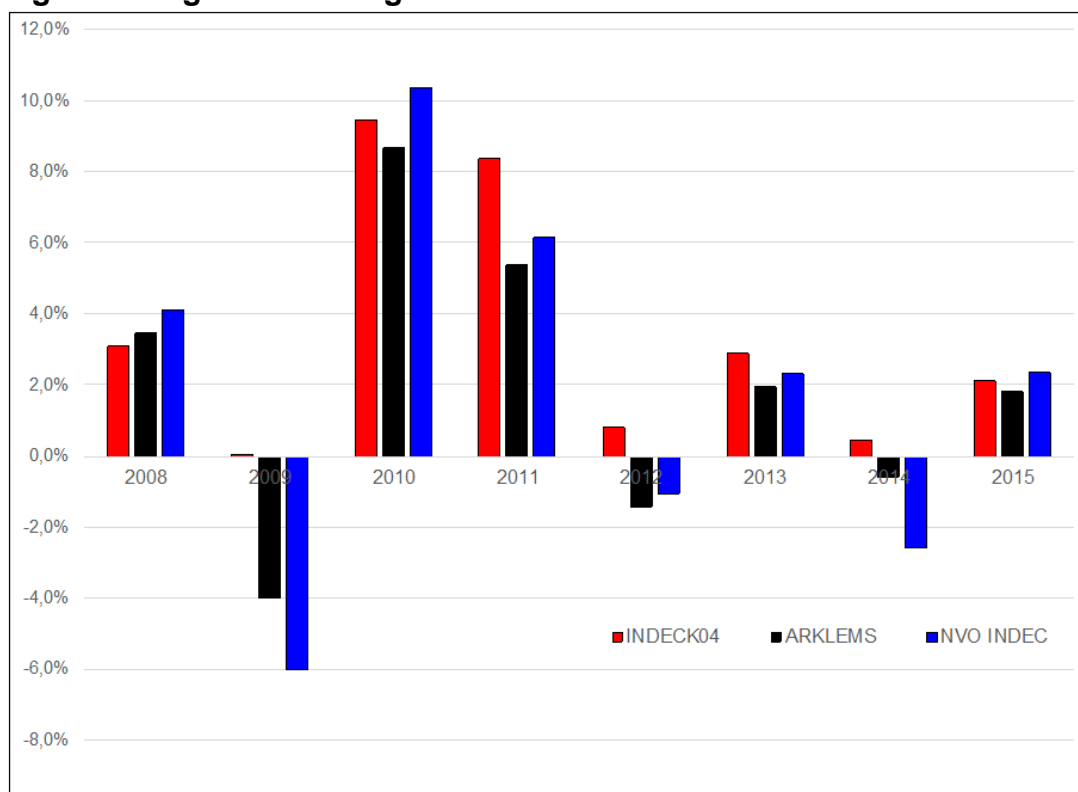
Source: INDEK, new INDEC, ARKLEMS

Official GDP from INDEK shows an important positive level and growth gap at respect to reproducible ARKLEMS GDP. Revision of new INDEC of the new administration verifies the impressive gaps. New INDEC series verifies main findings by ARKLEMS, GDP growth estimate by INDEK duplicate GDP growth for 2007-2015 period. Argentina grew 15,7% compound rate instead of 30,5% by INDEK.

Moreover, official figures change the sign of GDP cycle, a positive rate during the 2009 and 2012 recessions.

¹² See annex Coremberg (2014)

Figure 2: Argentina GDP growth 2007-2015 annual rates



Source: INDEK, new INDEC, ARKLEMS.

The impressive gaps as research by ARKLEMS and then by new INDEC change stylized facts of Argentinean economy during the last commodity boom as it will show in the following section.

3. “DEMYTHIFYING” ARGENTINA GDP GROWTH MYTHS

This “new” stylized facts have several implications for growth and macroeconomic analyses, demystifying several growth myths of Argentina during the commodity prices boom. The myth of Argentinean Growth could be synthesized as:

- i. **ARGENTINA'S RECORD GROWTH OF HER HISTORTY MYTH**
Argentina growth during commodity prices boom was the record growth of their history.
- ii. **ARGENTINA'S GROWTH CHAMPIONSHIP**
Argentina is the country of Latin America which has had the highest growth acceleration of the region during the last decade.

3.1 ARGENTINA'S RECORD GDP GROWTH OF HER HISTORY MYTH

The myth was based on former administration speech spread that Argentina growth during commodity prices boom was the record growth of her history.

One of the stylized facts of the commodity price boom that took place between 2002 and 2015 is that the economic growth of Latin America and Argentina occurred after a deep economic depression during the 1998-2001 period. How much of the economic growth is actually due to the boom and how much is due to a “recovery effect”? By how much did GDP growth accelerate respect with to “Washington Consensus period” at the beginning of the 1990 decade? We conclude that the answers to those questions depend on the consistency of the GDP series used.

The analysis of the GDP cycle is relevant to study whether an economy is recovering from a recession or a previous crisis, and whether it starts again a process of growth acceleration. Besides, for taking into account economic growth, we have to identify long trend: if the economy is growing in the long run, beyond a recovery along the cycle (Rostow 1965 and Hausmann et.al. 2005)¹³. According to Hausman, Prichett and Rodrik (2005), output recovery after a crisis (“the recovery effect”) could be unsustainable in the long run if the post-growth output does not exceed its pre-episode peak. Generally, GDP peaks coincide with an output level near the potential output, where all production factors are fully utilized. In general, the GDP growth between cyclical peaks grows at a lower rate than during a recovery phase, because the former is based on productivity gains based on innovation and other effects which shifts production possibilities frontier instead of changes of utilization of labor or capital inputs as it is explained by Coremberg (2012a) and Jorgenson (2011).

Growth episodes and Source of Growth of Argentina is decomposed by GDP cycle according to above method.

1990-1998: corresponds to the positive initial phase of the convertibility plan was characterized by the Washington consensus reforms applied in Argentina (deregulation, trade openness, privatization and other pro-market reforms), after the 80's lost decade until the end of the Tequila effect and the recovery after the negative shock until 1998. The slump period 1998-2002 is the stagnated period which begins with Brazil devaluation of domestic currency and capital flight to quality until dot.com crisis of the beginning of 21st century. The long depression period was characterized by the so called “drinks effects” (Tequila-Mexico 1995, Vodka -Russia 1998, Caipirinha-Brazil 1998 and Tango-Argentina 2002 effects) which was the deepest drop of Argentina GDP history, more than 1930's crisis. The 2002-2015 (last available year for the present economic cycle) was called populist-inward development regime which was characterized by demand driven policies, imports protection and capital and foreign currency controls. The 1998-2015 enables the peak to peak comparison between the maximum level of GDP of every macroeconomic regime. We also report periods 2002-2007 and

¹³ This is an old and basic approach, sometimes known as “NBER approach”. Its origins date back to a paper by Burns and Mitchell (1945), written more than sixty years ago.

2007-2015, considering that 2007 is the beginning year of political intervention of INDEC. The following table reports GDP growth by INDEK, ARKLEMS and new INDEC series.

Table 2: Argentina GDP growth			
	INDEK	NEW INDEC	ARKLEMS
1990-1998	5,4%	5,4%	5,5%
2002-2015	5,4%	4,5%	4,1%
2002-2007	8,7%	8,8%	7,9%
2007-2015	3,3%	1,8%	1,8%
1998-2015	2,8%	2,2%	2,0%

Source: INDEK, new INDEC, ARKLEMS

Last growth episode from 2002 to 2015 measured by reproducible GDP is similar to the previous positive phase in Argentine history (1990-1998), there was no GDP acceleration during commodity prices boom respect of 1990 Washington consensus era. Likewise, new INDEC series as well as ARKLEMS verified a growth slowdown of nearly 1% annual rate. INDEC GDP estimations show “Chinese rates”, approximately 8% annual growth, only during the period 2002-2007. But after 2007, Argentina suffered an important GDP slowdown for every series. As we will see soon, long run growth, between peaks, was a slightly lower than GDP trend for period 1900-2015, therefore, there had no structural change of GDP long run trend during commodity prices boom.

Another, more formal, approach to qualify an episode as a growth sustainable acceleration is the one proposed by Hausman, Prichett and Rodrik (2005). This approach qualifies growth acceleration episodes and long run growth taking into account GDP per capita instead of GDP, using the following method:

- 1) $gt+n > 3.5$ ppa → Growth is rapid
- 2) $\Delta gt+n > 2.0$ ppa → Growth accelerates
- 3) $yt+n > \max(y_i)$, $i \leq t$ → Post growth output exceeds pre-episode peak
- 4) Relevant time horizon is eight years (i.e., $n = 7$)

The following table shows the corresponding values for g and Δg according to the official and alternative GDP estimations.

Table 3: Argentina GDP per capita growth			
	INDEK	NEW INDEC	ARKLEMS
1990-1998	3,9%	3,9%	3,9%
2002-2015	3,8%	2,9%	2,6%
2002-2007	7,1%	7,2%	6,3%

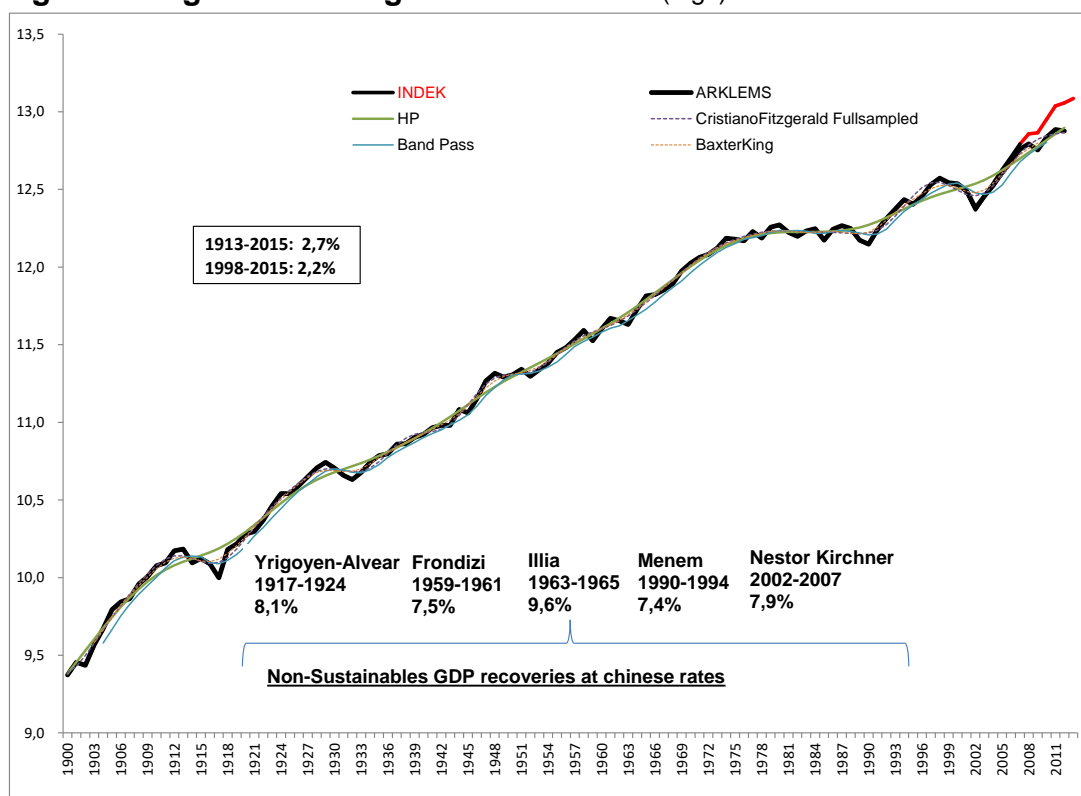
2007-2015	1,8%	0,3%	0,3%
1998-2015	1,3%	0,7%	0,5%

Source: INDEK, new INDEC, ARKLEMS

Hausman, Prichett and Rodrik (2005) method also confirms there was no GDP per capita acceleration for the period 2002-2015 in comparison with the previous positive cycle of 1990-1998. The acceleration occurs only during a period of five years (2002-2007), but it does not fulfill all Hausman et al. (2005)'s rules for qualifying as a sustainable growth episode. Moreover, after 2007, the so-called "Chinese rates" were not sustainable, since both GDP and GDP per capita growth showed a strong slowdown. Peak to peak, GDP per capita only grew at 0.7% annual rate.

ARKLEMS GDP growth long run series (1900-2015)¹⁴ showed that long run trend as estimated between peaks or any econometric filter as Hodrik-Prescott shows that there was no structural break of Argentina long run GDP growth as verified by econometric filters as Hodrik-Prescott, Kalman and others:

Figure 3: Argentina GDP growth 1990-2015 (logs)



Source: INDEK, INDEC, ARKLEMS.

GDP and GDP per capita growth during the last commodity prices boom between peaks, 2.2% and 0.7% was the same rate of the last century. Moreover, spanning the period to the last century, there were several growth recoveries episodes at Chinese rates during different political regimes: former radicalism presidency Yrigoyen-Alvear (1917-1924), Frondizi (1959-1961), Illia

¹⁴ Tornquist index. See Coremberg, Heymann et. al. (2007).

(1963-1965), Menem (1990-1994) and Nestor Kirchner (2002-2007) which reveals their self ex post unsustainable.

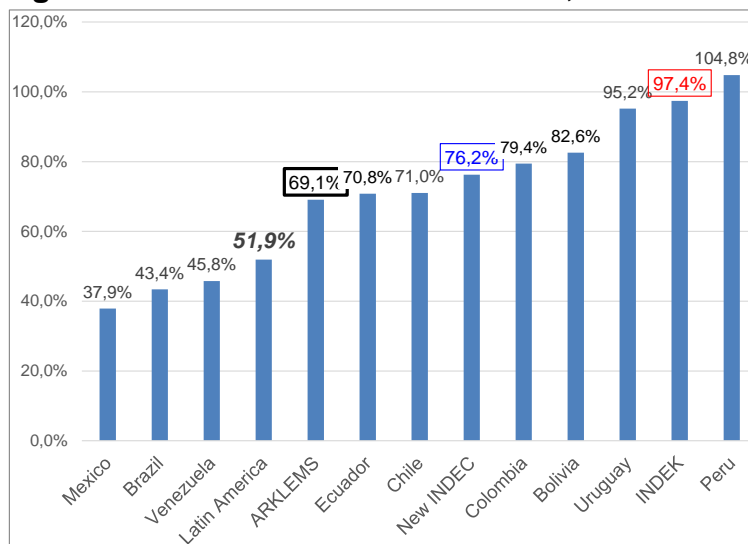
Furthermore, Argentina GDP per capita grew during recent commodity prices boom at the same rate trend for the last century 1913-2015 was approximately 1%; exactly the half of GDP performance of Australia and Canada. This fact demystifies that Argentina during the last decade reach the growth profile of natural resource based developed countries.

The last section of the paper analyses sustainability in terms of source of growth, which is key analyses to determine if commodity prices boom in Argentina were took advantage in terms of productivity gains.

3.2 ARGENTINA'S GROWTH CHAMPIONSHIP

Argentina is the country of Latin America which has had the highest growth acceleration of the region during the last decade. We have already seen that the reproducible ARKLEMS Argentine GDP average annual growth during the recent commodity boom, according to new INDEC and ARKLEMS was 4.7% (60.4% compound rate) and 4.5% (54.9% accumulated growth) respectively. This performance can be compared with the one registered by other Latin American countries, as shown in the next figure:

Figure 4: Latin America GDP Growth, 2002-2015 (compound rate, %)

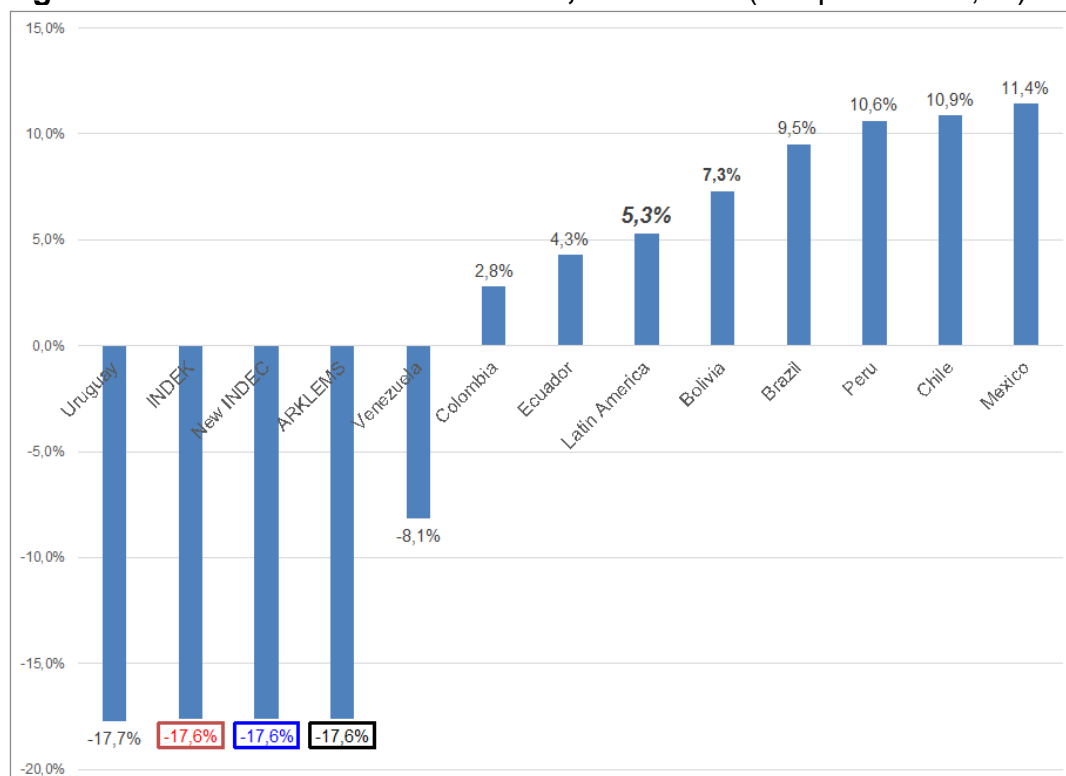


Source: ARKLEMS, TED

Argentina had a moderate GDP growth during commodity boom similar to the rest of Latin-American region, instead of being the growth championship of the region, jointly with Peru following INDEK series.

Although Latin America seems to have experienced a significant economic growth process since 2002, it is important keep in mind that the region was recovering from a previous economic recession. The beginning of the commodity price boom in 2002 coincided with the end of the great economic depression which had affected Latin America and began in 1998 with large devaluations in Brazil and Russia. The crisis was later magnified by so-called “flight to quality” effect during the do.com crises in US, when there was an important capital flight outside Latin America. After the beginning of capital flights, it began a deep economic depression which last from 1998 to 2002, Latin America only grew at an annual rate of 1.3%. However, it is worth to point out that while the rest of the region showed average positive but slower growth rates during that period, Argentina and Uruguay showed an impressive two digit GDP drop (17.6%) only comparable with current Greece figures (25%). Notably, Argentina GDP drop during 1998-2002 was the deepest depression of their modern history, outrunning 1930-decade depression.

Figure 5: Latin America GDP Growth, 1998-2002 (compound rate, %)



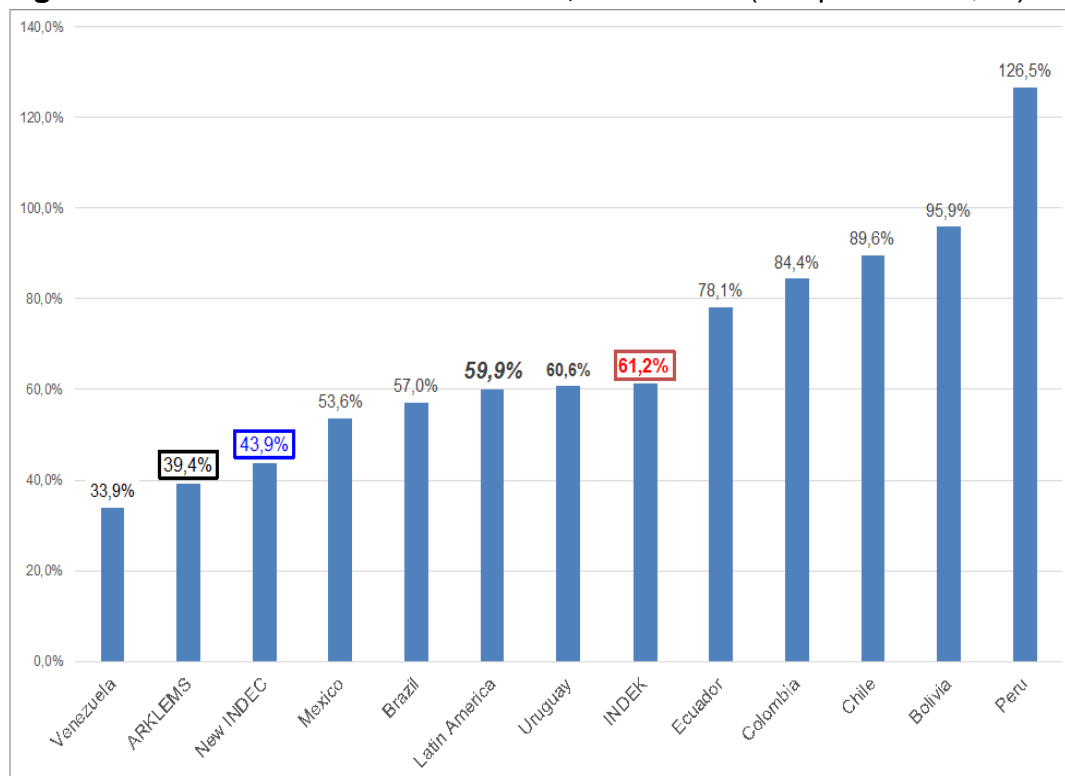
Source: ARKLEMS, TED

Several reasons are under this high impact of external shocks on Argentina at the beginning of XXI century: low resilience of argentine economy as well as macroeconomic inconsistencies as lack of face external shocks due to the strong commitment that the “convertibility law” (the 1 to 1 parity between the Argentine peso and the US dollar). But as it was mentioned above, tail winds from positive terms of trade, allowed Argentina to achieve an important

resurrection after 2002. However, the magnitude of 2002-2007 GDP recovery (Chinese rates) was similar to other recoveries episodes of Argentina economic history as pointed out in figure 3.

According to our definition of long run growth, economic analysis must take into account GDP growth between peaks of GDP cycle. Considering previous period cycle identification, the following figure presents the growth ranking of Latin America for the period 1998-2015:

Figure 6: Latin America GDP Growth, 1998-2015 (compound rate, %).



Source: ARKLEMS, TED

Argentina growth was the worst performance jointly with Venezuela.

The following section will analyze the impact of this new stylized facts on Source of Growth and Productivity of Argentina.

4. THE NEW STILYZED FACTS OF PRODUCTIVITY GROWTH

Argentina has experienced several structural changes during the last two decades in a context of strong economic instability which had an impact on the sustainability of long run growth. Pro market reforms were implemented at the beginning of the 1990 decade: exchange rate convertibility regime and real appreciation of the domestic currency, external trade and financial openness and deregulation and privatizations. During the first half of the 1990's decade, there were impressive recovery of GDP and exports growth, despite initial significant real appreciation of the domestic currency after the adoption of convertibility exchange regime, high foreign capital inflows caused and high

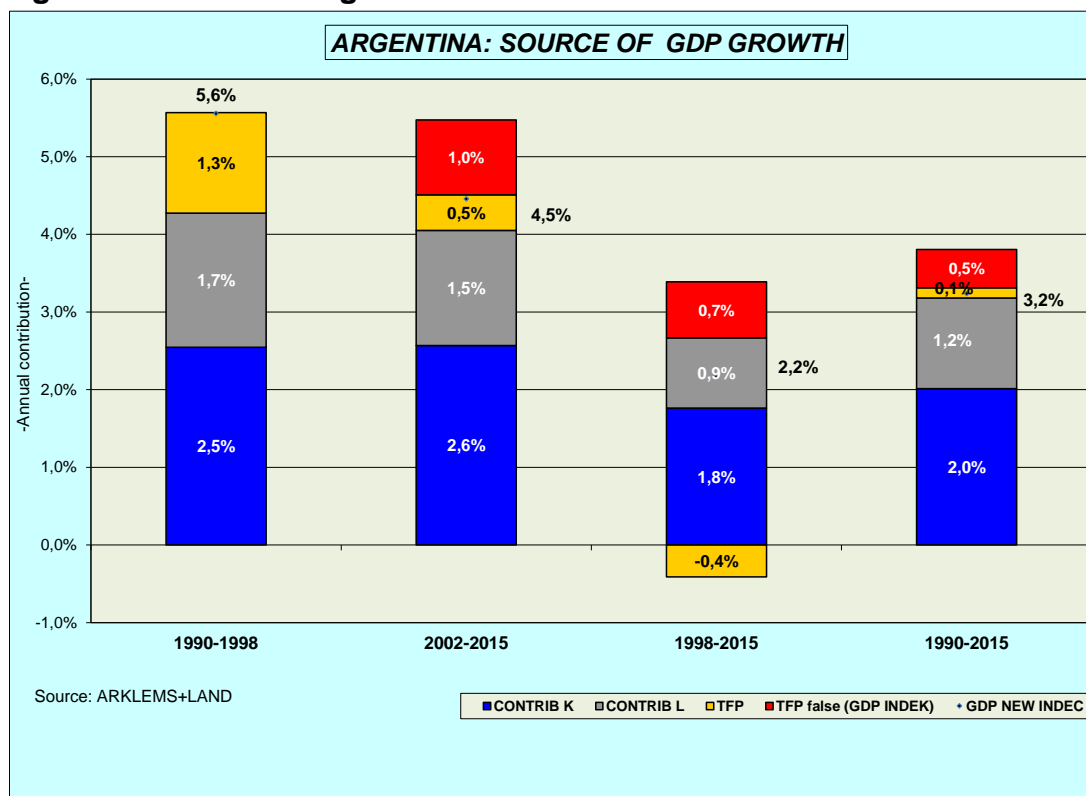
deficit in the current account. It was expected that ICT investment boom, access to imported capital goods, and human capital improvement would generate enough productivity gains to sustain long run growth. However, the macroeconomic regime of the nineties did not achieve the expected results in terms of sustainability of growth. The economic crisis which took place at the beginning of the 21st century showed the internal weakness of the Argentinean economy, caused by the inconsistency of the economic policy: “twin non-sustainable deficits: current and fiscal accounts and a fragile financial system.

The new economic policy regime inherited from the 1998-2002 depression was based on demand driven policies which allows an initial consumption boom. Tail winds from the recovery of agricultural export prices, mainly soybeans, in whose production Argentina has a competitive advantage, and initial high real exchange rate inherited by the previous crisis enable the resurgence of economic growth. Consumption boom base on taking terms of trade as permanent, would be sustainable if it would generate not only important trade surplus, but also permanent productivity gains in the tradable sectors with a significant influence in the productivity of the whole economy. World financial collapse of 2008-2009 and the ex-post world economy growth slowdown and terms of trade reversion casts doubt on whether the Argentinean structural productive profile is sustainable in the long run. Several distortions as price and exchange rate controls, high tariffs on imports, fiscal deficit and inflation to postpone a balance of payment crisis began to provoke an stagnation that going on at present.

The context of high instability of Argentine economy is a challenge to define sustainability of economic growth. The key variable that explains the sustainability of economic growth is productivity. Following and expand Solow (1957) and Jorgenson and Grilliches (1967) milestone research, EUKLEMS, OECD stipulate that Source of Growth allows to account for the contribution of inputs: capital, labor services and labor quality to GDP growth. Total factor productivity (TFP) represents GDP growth resulting from gains provided by efficiency, innovation, externalities, returns to scale, and any other output growth attributed to non-factorial phenomena. Accounting for growth could stipulate that an economy is sustainable in the long run, based on contribution of TFP to growth. TFP is also a synonym of structural competitiveness because TFP is the dual of long run efficiency gains beyond short run cost savings due to inputs substitution based on changes in relative prices TFP also represents long run living standards as embodies any long run income per capita growth of a country. So, TFP is the key variable that could sustain not only economic growth but also competitiveness and welfare of a Nation in the long run.

This section analyses the sustainability of economic growth of Argentina during commodity prices boom taking into account new stylized facts on GDP growth. Economic growth theory teaches us that small numbers matter: one point of difference of GDP growth measurement accumulates at compound rate, distorting the analyses of productivity. According to the following figure the overestimation of GDP growth by INDEK generates a false TFP growth:

Figure 7: Source of Argentine GDP Growth-1990-2015



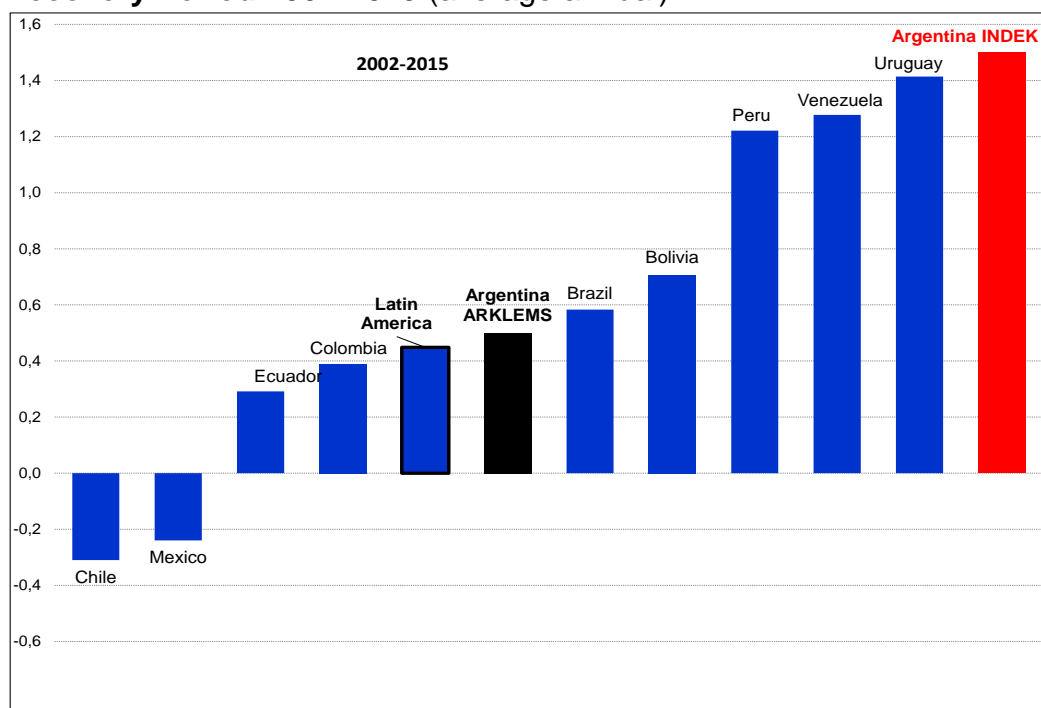
Source: INDEK, new INDEC, ARKLEMS

TFP based on GDP INDEK gains duplicate TFP true as measured by GDP of new INDEC (similar to GDP ARKLEMS) during the period of former administration from 2002 to 2015. If the myth of INDEK is applied, Argentina showed an intensive growth profile, analogous to Washington Consensus Era. But new GDP stylized facts thanks to new INDEC data confirm main findings of ARKLEMS research, an extensive growth profile based on factor accumulation. GDP growth during commodity prices boom was moderate and it did not translate on productivity gains. Likewise, there was a productivity slowdown during the recovery of commodity prices boom. Most of productivity gains during recoveries are due to utilization effects, which does not keep in the long run. Short run utilization effects took advantage from high unemployment and capacity sub utilization during recessions of high amplitude as characteristics of GDP cycle of Argentina¹⁵. Moreover, focusing on long run growth, instead of TFP false gains due to GDP overestimation by INDEK, there were TFP losses between cyclical peaks.

Indeed, an important outcome of this research is that how to measure GDP is a critical issue in countries where the credibility and reputation of official statistics are been questioned before measuring and qualifying the sustainability of growth. Like the GDP case, Argentina had a TFP slowdown during the recent commodity boom instead of been productivity championship, as it is shown in the following figure:

¹⁵ See Coremberg (2008) for more detail of source of growth of Argentina for period previous of intervention.

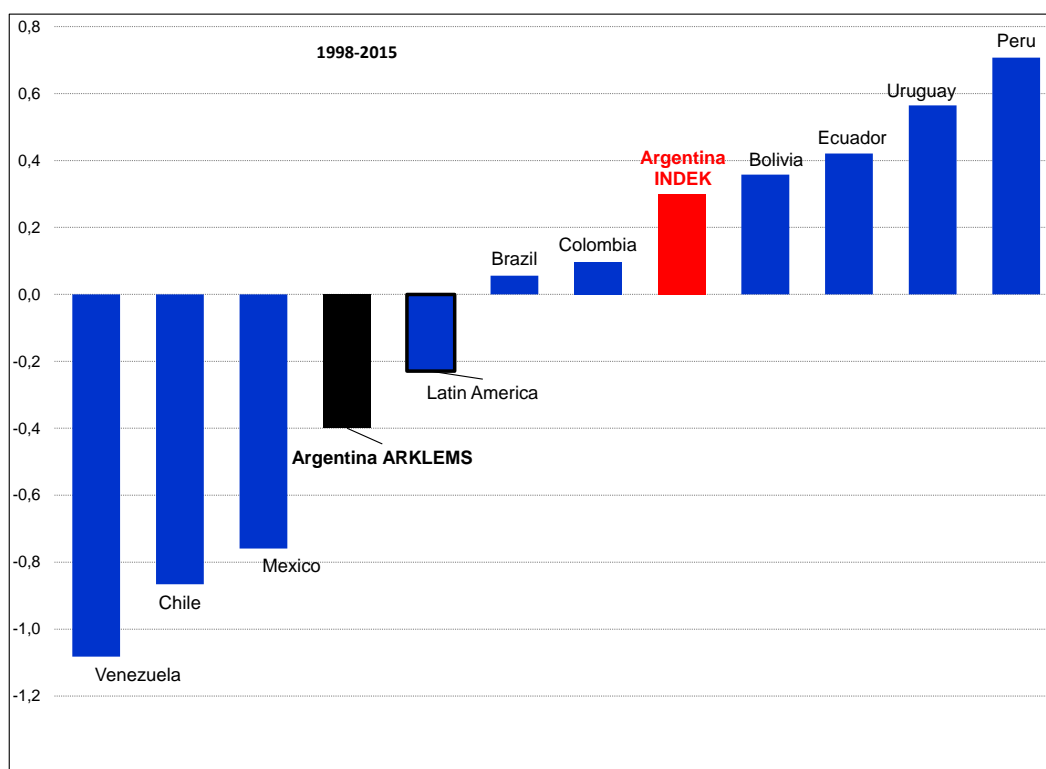
Figure 8: Total Factor Productivity (TFP) growth of Latin America Recovery Period 2002-2015 (average annual).



Source: INDEK, new INDEC, ARKLEMS, Total Economy Database

Furthermore, focus on long run growth, Argentina had a negative TFP performance taking a long run instead of TFP gains.

Figure 9: Total Factor Productivity (TFP) growth of Latin America Long Run 1998-2015 (average annual)



Source: INDEK, new INDEC, ARKLEMS, Total Economy Database

5. CONCLUSIONS

Argentine National Statistics Institute was political intervened from 2007 to 2015. This paper shows main findings of ARKLEMS+LAND research on reproducing GDP figures following traditional data sources and methods of National Accounts in Argentina. New INDEC has recently published a revision and estimation of GDP growth that confirm previous ARKLEMS measurement, changing completely GDP myths as issued by former administration.

Argentina showed a moderate recovery of GDP during recent commodity prices boom after 2002. There was not structural change on GDP growth and its profile. Recent growth episode was similar to 1990 decade. The country was not the growth championship of Latin America, far away from the performance of natural resource based developed countries as Australia and Canada. Moreover, Argentina was the worst GDP performance of Latin America in the long run, jointly with Venezuela.

Applying NBER-Rostow and Hausmann et. al. methodology, Argentina GDP recovery at Chinese rates from 2002 to 2007 was not sustainable.

Source of GDP growth also demonstrate that Argentina growth profile was not sustainable during recent commodity prices boom. GDP moderate growth during commodity prices boom did not translate on productivity gains. Furthermore, instead of TFP false gains due to GDP overestimation by INDEC, there were TFP loss between cyclical peaks. Argentina had a TFP slowdown

during commodity boom similar to the rest of Latin-American region, instead of been productivity championship of the region as INDEK GDP.

Credibility and reputation of official statistics is a key issue for not only academics, but mainly for public policies that directly affect the GDP performance and Welfare of Nations. Actual stylized facts reject the myths of manipulated statistics. Argentina had not a structural change of her growth profile. In spite of tail winds from commodity price booms, Argentina could not escape from its development failure of decades of low productivity and growth.

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