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**Where is The Wealth of Argentina?
The National Balance Sheet of Unstable Natural Resource Rich Economies**

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**INTERNATIONAL ASSOCIATION FOR RESEARCH
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Session 6D: Income and Wealth: Theory and Practice II**

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1. INTRODUCTION.....	4
2. NATIONAL WEALTH AND BALANCE SHEET: METHODOLOGICAL ISSUES	7
2.1. Introduction.....	7
2.2. Scope and Classification of Assets in National Wealth	8
2.3. From National Wealth to Sectoral Balance Sheet. From Sectoral Balance Sheet to National Wealth...	12
2.4. Valuation Criteria	14
2.4.1. Introduction.....	14
2.4.2. Valuation Criteria of Tangible Non Financial Assets	15
2.4.3. Valuation Criteria of Intangible Non Financial Assets	18
2.4.4. Valuation Criteria of financial assets and liabilities.....	20
3. NATIONAL WEALTH OF ARGENTINA	22
3.1. Introduction.....	22
3.2. Methodology for Unstable Land Rich Economies	22
3.3. The National Wealth of Argentina.....	27
3.2.1 The Changing Wealth of Argentina	27
3.2.2 Macroeconomic Consistency	30
3.2.3 International Comparison.....	31
3.2.4 Asset Composition of National Wealth.....	32
4. THE NATIONAL BALANCE SHEET OF ARGENTINA	37
4.1. Introduction.....	37
4.2. Data Sources and Compilation.....	38
4.3. Issues on National Balance Sheet in Land Rich Economies.....	39
4.4. The National Balance Sheet of Argentina	45
5. CONCLUSIONS	53
6. REFERENCES	56

Abstract

The aim of this paper is to present the methodology and estimation of the Wealth and National Balance Sheet of Argentina. The main objective of this research is to study the magnitude, dynamism, origins and allocation of the Wealth of Argentina through an exhaustive estimation of the National Balance Sheet by asset and liabilities type for institutional sectors.

Taking into account the unstable behavior of the Argentine economy during the period analyzed, it can be inferred that the measurement of the Wealth and the National Balance Sheet of this emergent economy is an important methodological challenge, and it can be taken as an example to analyze the current financial crisis in developed countries.

Argentina, one of the main commodity exporters to BRIC countries, presents a historical record of highly unstable political situations and a vulnerable economic behavior that led to capital flight, variable relative prices, debt defaults, bank runs and wealth effects that could be consistently captured thanks to the national balance sheet estimations.

In the case of tangible capital, this paper takes into account Coremberg (2004) (2009) and OECD (2008) recommendations, including also an estimation of the natural capital as in World Bank (2011), adapted to a land rich economy as Argentina and considering the market value of agricultural land.

As discussed in Hall (2001), Landefeld and Lawson (2001) and Hausmann and Sturzenegger (2006), the paper examines the challenge of including purchased goodwill and hidden assets in wealth, as well as the net foreign assets position at market value.

Following the economic literature on Intangible assets by Hall (2001), Hulten, Corrado and Sichel (2005) and World Bank (2006), this measurement includes Human Capital estimations for Argentina (Coremberg (2010)) following Jorgenson-Fraumeni's approach (1992), (1996).

This focus is compatible with the broader and consistent view of new architecture of national accounts by Jorgenson, Landefeld and Nordhauss (2006) in order to include any non-market activities and capital that could impact in output sustainability and welfare, as Stiglitz, Sen and Fitoussi (2009) suggested.

Mainly based on methodological recommendations of SNA08, IMF and OECD, this paper analyses several proposals about the treatment of non-performing loans, considering IMF balance sheet vulnerability approach and recommendations from OECD and UN EDG financial discussion groups, by Frecault (2002), Allen (2004), Bloem and Porter (2002), Harrison (2006).

The measurement of Argentina's National Balance Sheet shows the negative impact of unstable political and economic behavior during the 2002's crisis and the present natural resources boom on the magnitude and composition of Wealth:

Argentina's current wealth is lower than developed countries, but with an important Human Capital stock.

Low financial deepening, reflected by low leverage of balance sheet of households and private corporations, and the propensity of saving in external assets was magnified by 2002 crisis.

After the crisis, corporate and government sector reduced their leverage ratios although they kept showing nominal negative financial positions; but after taking into account real assets revaluation, the balance sheet of institutional sectors demonstrated an important positive wealth effects reflected in their positive net worth.

The post crisis economic resurgence was explained not only by the bailout of corporate sector but mainly the impact of commodities' prices boom on revaluation of natural capital and wealth.

1. Introduction¹

The main objective of public policy should be to achieve economic progress of the nation and the well-being of its population.

GDP per capita has been usually taken into account to try to capture and compare the living standards and development of a country.

However, as it has been long recognized by economic literature, GDP does not capture several economic phenomena that impact on well-being and economic progress: non-market activities, investment in human capital, economic depletion of natural resource and above all wealth effects due to changes in assets prices.

The exclusion of these subjects could distort the analyses of sustainability of the well-being and economic development of a nation in the long run.

The wealth of a nation represents the set of assets that a society has in order to sustain its well-being and economic progress of the present and future generations.

The measurement of wealth of a nation could help to assess the effects of the political economy on the economic growth profile and living standards of an economy.

Furthermore, the composition of wealth in terms of assets, liabilities and institutional sectors is a key issue to assess the solvency and sustainability of an economy.

The National Balance Sheet is the instrument that allows analyzing the wealth of a nation as well as its composition in terms of asset types and institutional sectors.

Several issues appeared in order to measure the wealth of a nation in a consistent way with the balance sheet of the institutional sectors of an economy: the asset boundary, the valuation criteria of the several assets and debt instruments, the macroeconomic consistency and exhaustiveness of the measurement.

Recent financial crises in several developed countries could bring light on the vulnerability of financial analyses based on national balance sheet. The national balance sheet constitutes a key instrument in order to consider wealth effects of currency, maturity and other mismatches that economic crises usually generates.

The experience of historical instability of several emergent economies, especially Argentina, could bring light on the analyses of present financial crises in developed countries.

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Moreover, the proposition of a methodology and measurement of the national wealth and balance sheet is a challenge taking into account the structural heterogeneity of Latin-American economies as Argentina, their natural resource dependence and unstable economic behavior.

Argentina's economy has shown a poor long run economic performance, as a consequence of the historical record of political and macroeconomic instability.

The instability of its political and economic cycle has generated legal uncertainty, and lowered the credibility of the economic policy, acting as a barrier of investment, despite of the fact that some of these policies were pro-investment orientated.

As a consequence of the lack of a foreseeable long term horizon, investment performed poorly, generating a low capitalization, below the figures of other emerging economies.

The frequent economic crises and unstable behavior of the Argentinean economy have impacted in a more fragile composition of the net worth of private sector.

Assets and liabilities are mostly in foreign currency, invested abroad and at short term maturity. Moreover, Argentinean Assets holding abroad of the private sector is equivalent to the public debt: capital stock could increase a third of its current magnitude.

The measurement of National Balance Sheet could bring light on the effect of historical economic instability and recent economic crises on the balance sheet of the main institutional sectors.

The crisis of 2002 marked a transition from a Pro Market macroeconomic regime to the present Inward Development of Argentina.

Brazil devaluation and the dot.com crisis at the end of XXth century showed that Argentina could not sustain economic growth based on the currency board rule.

The Convertibility Plan revealed its macroeconomic inconsistency, provoking bank runs, defaults and mega devaluation which generate important wealth effects on the net worth of institutional sectors.

The bailout of the non financial corporation's banking loans and mortgage credit borrowers, implied important wealth transfers against savers and future generations (tax payers).

But after the 2002 crises, there was an economic resurgence of several natural resource dependent economies, mainly Argentina, due to the boom of commodities prices, thanks on China development and dollar depreciation.

This phenomenon generates important positive wealth effects on the economy which helps the recovery of the economic growth, demonstrating that the post crisis economic resurgence of the Argentine economy could not only be due to the financial bailout.

The real devaluation of domestic currency and mainly the recovery of the prices of commodities allowed improving the expectations about permanent income. Those

effects have triggered an impressive appreciation of non-financial assets holdings and income redistribution towards nonfinancial corporate sector which allowed the financing of investment with retained earnings in a context of lesser leverage capacity after the financial crises.

This research has the challenge to suggest a methodology for measurement of the National Balance Sheet of Argentina so as to analyze the macroeconomic sustainability and financial vulnerability of the country before and after the crisis.

The paper takes into account not only financial assets and liabilities by type and sector but also real assets composition by institutional sector and at national level.

The paper is structured as follows.

The second chapter presents a discussion on the definition, scope and valuation criteria suggested in the economic literature for measuring national wealth. Several methodological issues are discussed considering problems of valuation of fixed assets, natural capital, intangible assets and financial assets and liabilities in the search of common criteria that allows estimating national balance sheet compatible with the net worth of institutional sectors.

The third chapter describes the methodology suggested in this research for measuring National Wealth of Argentina taking into account natural resources dependence and the unstable economic behavior of the last decades.

The chapter describes the main results of the estimation of national wealth through asset consolidation of 11 groups of non-financial assets besides net foreign assets: machines, transport material, dwellings units, non residential private construction, public construction, livestock, other agricultural and cultivated assets, agricultural land, subsoil assets, inventories and human capital. This section also presents an analysis of wealth effects caused by the 2002'crisis and devaluation and posterior economic resurgence based on the boom on commodity prices.

The fourth chapter presents the methodology and estimations of National Balance Sheet for Argentina through the consolidation of the balance sheet of seven institutional sectors: Government, Central Bank, financial corporations, pension funds, non-financial corporations, households and rest of the world.

The estimation shows results for the financial assets and liabilities allocated to every institutional sector of 11 types: reserves, monetary base, external assets and liabilities, deposits, loans, public and private, pension's funds, debt securities, equity, foreign direct investment, other financial assets, besides the allocation of real assets.

This section also presents an analysis of the change in financial position, liquidity and solvency of the institutional sectors before and after the economic crises; it encompasses the change in real assets with the change in financial and liabilities in every sector.

The final chapter presents main conclusions of this research.

2. National Wealth and Balance Sheet: Methodological Issues

2.1. Introduction

The main objective of public policy should be to promote economic growth of the nation and increase the well-being of its inhabitants.

There are several indicators and variables that try to capture the change of well being and economic growth.

GDP per capita has been usually cited as a preliminary proxy variable that tries to capture and compare the level and change of living standards and economic growth of a country.

But as it has long been recognized by economic literature: World Bank (2006) (2011), Hamilton and Ley (2010), Stiglitz, Sen and Fitoussi (2009), Nordhaus, Jorgenson and Landefeld (2006), official GDP based indicators do not capture several economic phenomena that impact on well-being and economic progress: non-market activities, investment in human capital, capital services, economic depletion of natural resource and above all wealth effects or holding losses/gains due to changes in assets prices.

The exclusion of these topics could distort the analyses of sustainability of the present level of well-being and economic growth of a nation in the long run.

The wealth of a nation represents the set of assets that a society has in order to sustain the well-being of present and future generations.

Moreover, as we will see in following sections, most of the change in the wealth of a nation is due to holding gains rather than savings, so the estimation of the balance sheet is a key point so as to assess the solvency of a firm, sector or an economy.

According to the SNA08², the balance sheet is a statement, drawn up with regard to a particular point in time, of the values of assets owned and of the liabilities owed by an institutional unit or group of units. A balance sheet may be drawn up for institutional units, institutional sectors and the total economy.

The financial and non-financial resources at disposal of an institutional unit or sector shown in the balance sheet provide an indicator of economic status. These resources are summarized in the balancing item, net worth. Net worth is defined as the value of all the assets owned by an institutional unit or sector less the value of all its outstanding liabilities.

At the same time, the Wealth of a nation represents the sum of non-financial assets³ and net claims on the rest of the world (international investment position, IIP⁴)

² SNA08, paragraph 13.2, 13.4

³ Taking into account that assets and liabilities between residents are cancelled at national level.

⁴ IIP represents the stock levels of assets and liabilities originated in the total economy held by nonresidents and of foreign assets and liabilities held by residents.

The balance sheet of an economy is useful to analyze the real and financial health of an economy not only at national level but also at institutional sector level.

Taking into account recent financial crises in several developed countries and the experience of historical instability of several emergent economies, the national balance sheet constitutes a key instrument in order to consider wealth effects of currency and maturity mismatches that economic crises usually generate.

Several issues should be considered in order to measure the wealth of a nation in a consistent way with the balance sheet of the institutional sectors in the economy.

First, the limits or scope of the assets and liabilities that must be included in the national balance sheet should be defined.

Second, the most difficult task of obtaining common valuation criteria of the value of National Wealth compatible with the sum of the net worth of every institutional sector should be specified.

The coverage issue is directly related to the definition and classification of the universe of the assets (and liabilities) of an economy.

The key objective of this paper is to find common valuation criteria of wealth for an emergent economy as Argentina, which has structural heterogeneity as other Latin-American countries and historical record of economic crises.

During the crises of 2002, the important bailout of banking, corporate and households sectors by the government implied important wealth transfers usually against the public sector implying a charge to future generations (tax payers).

At the same time, economic resurgence of several natural resources dependent economies by the end of XXth century caused by the boom of commodities prices (demand of China + devaluation of dollar), has generated important positive wealth effects on the economy helping to post economic growth recovery.

The main purpose to the estimation of national balance sheet of Argentina is to evaluate how the crisis and ex post economic resurgence has changed the level and composition of the net worth and national wealth

This section presents a brief summary of the main issues related to the scope and valuation criteria of the main financial and non financial assets of an economy, which are applied to obtain national wealth and national balance sheet.

At the end of this section, a general methodology on how to measure and assess national wealth in a consistent way in every institutional sector is presented.

2.2. Scope and Classification of Assets in National Wealth

It is of the utmost importance to identify the asset boundary that defines the measurement of wealth.

Following Hulten (2004 and 2005a,b), in order to measure capital, the discussion should distinguish “what should be measured” from “how it should be measured” in order to avoid what Koopmans called “measurement without theory”.

SNA08 adopts a perspective of ownership rights: the coverage of the assets is limited to those that are subject to property rights and those in which the owners can obtain profit by holding or using them in an economic activity.

The classification of assets in SNA08 distinguishes firstly among financial and non financial assets (produced and not produced). Most of non financial assets have a double purpose. They are primordially objects used in the economic activity and, at the same time, they are used as deposits of value. Financial assets are directly deposits of value, even when they can have other functions (see Figure 1)⁵.

SNA08 and OECD (2009) include the traditional capital assets in the asset boundary: tangible capital assets (machinery, constructions, cattle for reproduction, etc), intangible assets (software, goodwill, patents, etc) and natural resources (subsoil assets, agricultural land).

It is worth mentioning that SNA08 focuses on the asset boundary compatible with hicksian income definition: “the maximum amount which can be spent during a period of time if there is to be an expectation of maintaining intact the capital value of prospective returns” ...; it equals Consumption plus Capital accumulation.”⁶

This criterion excludes a particular set of assets because they are not subject to economic transactions or do not provide profit. The set includes durable goods, human capital, and natural resources that are not subject to property rights (ecosystems, biodiversity, etc)⁷.

Nevertheless, other authors expand the asset frontier to a more exhaustive criterion.

Jorgenson (1995a) considers investment “as the commitment of current resources in the expectation of future returns, implying that these returns can be internalized by the investor”.

Hulten et. Al. (2005, 2006) considers “all expenses in postponed consumption as investment. In other words, investment is any use of resources that reduces present consumption in order to increase it in the future”.

From this discussion emerges the need to include non financial intangible assets in the estimation of investment and capital, since generally these expenses are made to seek higher consumption or returns in the future, as it is recognized by SNA08: for example, software, brands, patents, mining and oil exploration, and purchase goodwill.

However, SNA08 excludes an important group of assets from the asset boundary: “the coverage of assets is limited to those assets used in economic activity

⁵ The groups of assets included in the estimation are highlighted in light blue.

⁶ Hicks (1939), Jorgenson, Nordhaus, Landefeld (2006)

⁷ Regarding the last exception, non economic natural assets may appear in the universe of economic assets when there is transfer from natural resources to economic uses. For example, the transfer of land and terrains to economic uses, proved increases in mineral reserves, the conversion of wild forests into agricultural land or the conversion of the natural reserve of fish into a reserve under economic control.

and that are subject to ownership rights; thus for example, consumer durables and human capital, as well as natural resources that are not owned, are excluded⁸.

If the Fisherian (or utility-based) national income is adopted, we need to include the assets that are excluded by the ownership principle. Fisherian national income definition is the maximum amount that a nation can consume while ensuring that members of all current and future generations can have expected lifetime consumption or utility that is at least as high as current consumption or utility. Put simply, Fisherian income is the maximum sustainable level of consumption.

As pointed out by Hamilton and others (1999) (2005) (2010) and World Bank (2006) (2011), from a perspective of sustainable development, the depletion of natural resource and environmental capital must be recognized.

Jorgenson, Landefeld and Nordhaus (2006)⁹ suggested a more exhaustively and consistent national accounts system which include human capital and the output of education as other non-market sectors assets and activities which have a key role in economic growth and in environmental and welfare economics.

In that sense as pointed out by Weitzman (1976) and Nordhaus (2000), the output-sustainability correspondence principle, finds that under idealized conditions Hicksian and Fisherian income are identical.

This principle is underlined by Jorgenson, Landefeld Nordhaus (2006) proposition: national accounts must include all market and non-market stocks of capital and other dynamic features that affect production when capital stocks are valued at the appropriate scarcity prices.

This paper follows fisherian income principle by measuring human capital, natural resource and goodwill in national wealth, as well as at sectoral level.

As we will see in the following sections, the estimation of the national balance sheet demands general valuation criteria in order to aggregate all the assets through sectoral balance sheet in a consistent way.

⁸ SNA08, paragraph 3.46

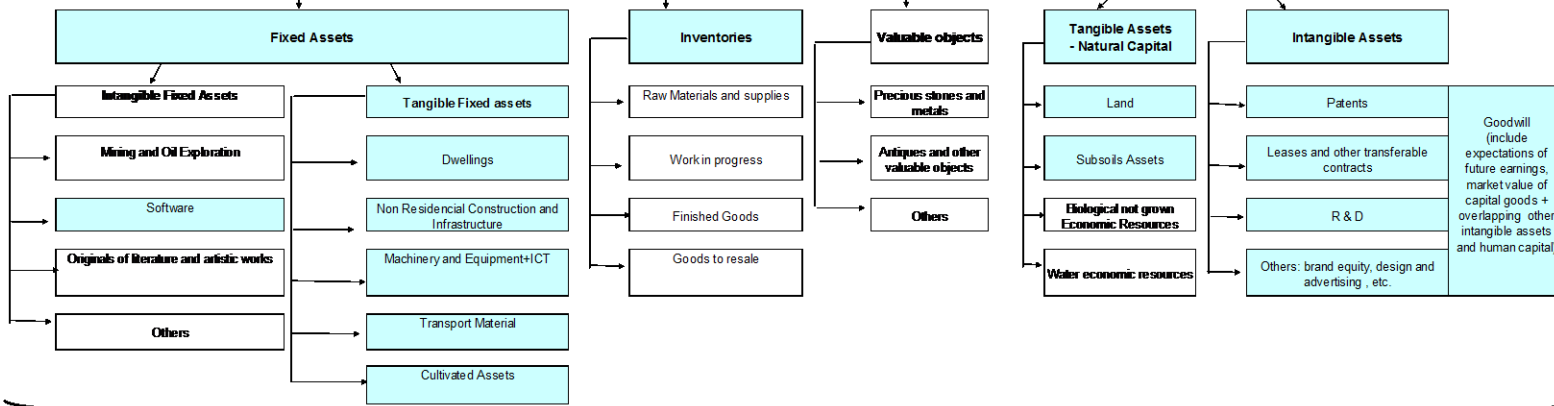
⁹ See also Jorgenson (2009)

ASSET BOUNDARY SNA 08

NON FINANCIAL ASSETS

PRODUCED ASSETS

NON PRODUCED ASSETS



$$\text{NATIONAL WEALTH} = \text{NON FINANCIAL ASSETS} + \text{IIP}$$

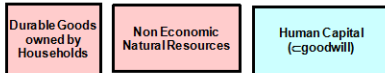
$$+ \text{NET FINANCIAL ASSETS/LIABILITIES AMONG RESIDENTS} = 0$$



BY INSTITUCIONAL SECTOR:
 FINANCIAL CORPORATIONS
 NON FINANCIAL CORP
 HOUSEHOLDS
 GOVERNMENT
 REST OF THE WORLD

NATIONAL WEALTH

Other Assets Outside Wealth SNA boundary



Included in this research
 Excluded by SNA08 but included by Jorgenson, Landefeld, Nordhaus (2008) and Stiglitz, Sen, Fitoussi (2009)

Figure 1 Asset Boundary Source: SNA 08, Jorgenson, Nordhaus, Landefeld (2006), Stiglitz, Sen, Fitoussi (2009)

2.3. From National Wealth to Sectoral Balance Sheet. From Sectoral Balance Sheet to National Wealth

As it has been described above, the National Wealth is the result of the consolidated sum of the net worth of the different institutional sectors of an economy¹⁰.

So the non financial assets and the financial assets and liabilities that make up the net worth of the economic units should be taken into account¹¹.

National balance sheet is the ideal instrument that allows obtaining National Wealth through a consolidation of the net worth of the institutional sectors.

Theoretically, the consolidation could be done since the financial assets of one sector are simultaneously financial liabilities of other sectors.

However, the consolidation of the assets at macroeconomic level needs a consistent and compatible criterion for the valuation of assets and liabilities between institutional sectors¹².

Analytically, we could obtain National Wealth in two different ways which must be theoretically compatible:

- a) Asset Consolidation
- b) Sectoral Consolidation

Asset consolidation allows obtaining National Wealth by adding non financial assets at macroeconomic level plus the IIP, given that the economy as a whole can be a net debtor or lender with the rest of the world.

Analytically,

$$W = NFA + IIP \quad (1)$$

W: National Wealth

NFA=Non Financial Assets

IIP: International Investment Position (Net External Assets)

This approach allows obtaining national wealth without estimating the net worth of each institutional sector¹³.

¹⁰ Institutional Sectors are Government, Financial Corporations, Non-Financial Corporations, Households, etc.

¹¹ The classification of the components of the national balance by asset type and institutional sector can be thought as a double input matrix with the classification of the assets and liabilities by type and by institutional sector. This is presented in Tables 6 and 7 in section 4.

¹² As it is analyzed below, a common valuation criteria needs to give up some sectoral specific criteria in order to obtain sectoral balance sheet consistent with national wealth.

¹³ This assumes that the valuation criteria of financial instruments in every institutional sector is homogeneous, and therefore consistent with the aggregation at national level.

But national wealth could be estimated by the sectoral consolidation method as the sum of net worth of the institutional sectors:

Analytically,

$$\sum_j nw_j = \sum_i \sum_j (a_{i,j} - l_{i,j}) \quad (2)$$

where

$$a_{i,j} = fa_{i,j} + nfa_{i,j}$$

nw_j : net worth of sector j

$a_{i,j}$: type i assets of sector j

fa_{ij} : type i financial assets of sector j

nfa_{ij} : type i non financial assets of sector j

$l_{i,j}$: type i liabilities of sector j

But, given that assets and liabilities among residents can be theoretically consolidated,

$$\sum_i \sum_j (af_{i,j} - l_{i,j}) = 0 \quad \forall j \neq k \quad (3)$$

$j \neq k$: resident sectors

k : External sector

The expression (2) therefore results in:

$$\sum_j nw = \sum_i \sum_j nfa_{i,j} + \sum_i (a_{i,k} - l_{i,k}) \quad (4)$$

So adding up net worth for all sectors, this is equivalent to equation (1) given (3):

$$W = \sum_j nw = \sum_i \sum_j nfa_{i,j} + \sum_i (a_{i,k} - l_{i,k}) = NFA + IIP$$

Where $NFA = \sum_i \sum_j nfa_{i,j}$ and $IIP = \sum_i a_{i,k} - l_{i,k}$

So if a consistent valuation criterion is adopted, the estimation of National Wealth is the result of both the asset consolidation and the sectoral consolidation

This ensures that level, changes and composition of sectoral balance sheet are consistent at macroeconomic level.

The consolidation of assets and liabilities from sectoral balance sheet to national level assumes that the valuation criteria of components of sectoral net worth are compatible in order to allow the cancellation of financial rights between resident sectors.

As it has been pointed out before, the consolidation procedure demands applying a common, consistent and compatible valuation approach for all instruments and institutional sectors, giving up some sectoral specific criteria in order to obtain sectoral balance sheet consistent with national wealth.

The challenge in the estimation of National Balance Sheet is suggesting general valuation criteria consistent with economic analysis that allows the estimation of National Wealth compatible with sectoral balance sheets.

The following section shows a brief survey of the different valuation criteria generally adopted according to asset type and institutional sector. Furthermore, at the end of the section, a common general valuation criterion for all assets and sectors is introduced.

2.4. Valuation Criteria

2.4.1. Introduction

According to Figure 1, assets that make up the national balance sheet are very heterogeneous: real assets, financial assets, external assets, etc. The valuation of such assets is not homogeneous by type of instrument or holder.

Commercial accounting practices usually value fixed assets by their books value: fixed or real assets at historical prices (or adjusted by inflation), financial assets at market values¹⁴ and liabilities at amortized acquisition value (as well as intangible assets).

But generally, notwithstanding the respect of a uniform accounting criteria, the imputation of values of assets and liabilities in private sector might be subject to certain accountant's discretion: indexes used to update costs, valuation of public securities, how much of the financial assets are held to maturity, methods of depreciation and revaluation fixed assets, etc.

This disparity of criteria among companies and sectors may be even due to the legal framework in the country. For example, the Central Bank of Argentina during the 2002 crisis, ruled that banks can value their public bonds holdings at the nominal residual value, instead of their lower market values, aiming at avoiding banks bankruptcy.

As it will be mentioned in the following paragraphs, commercial accounting assigns different values to financial assets whether they appear as assets or liabilities: negotiable securities are accounted for by the issuer at nominal amortized acquisition cost but at the same time they are valued at market prices in the asset side of the holder's balance sheet (if it is considered a short term investment).

¹⁴ Except financial investments held to maturity, for which the general criteria is amortized acquisition cost.

Given that the estimation of the companies' and sectors' balance sheets are subject to these disparities in accounting criteria, the macroeconomic consistency cannot be assured, unless an homogeneous valuation criterion is adopted for the balance sheets of the different sectors.

This implies that, in order to obtain national wealth compatible with the sectors' net worth, a series of assets must be aggregated with homogeneous valuation criteria in order to ensure aggregate consistency.

As it will be seen in the next sections, SNA08 is the coherent and comprehensive analytical framework which shed light on how to measure national balance sheet consistent with sectoral accounts, compatible with economic analyses.

The Next subsections present a brief summary of common valuation criteria in economic analyses, not always followed by business accounting, of the several assets types and liabilities.

Finally, we present a general valuation criterion for all assets (financial and non financial) and liabilities, based on SNA08 that allows to estimate National Balance Sheet compatible with sectoral accounts and consistent with macroeconomic analyses.

2.4.2. Valuation Criteria of Tangible Non Financial Assets

According to Diewert (2003), "the fundamental problem of accountancy lies in determining the value of capital goods used by firms for longer than one accounting period".

The valuation of fixed assets in business accounting by their book value implies adding a bias in the value of firm's assets, given that the fixed tangible assets present a replacement value given by their market value that is generally different from the historical cost.

The gap between the historical cost and the replacement cost arises generally when companies resort to accounting practices that may distort the economic value of fixed assets and make it different from the replacement value. For instance, the acceleration of depreciations using investment tax incentives or company policy to reduce the exposure to profit taxes or to reduce the payment of dividends, as well as technical revaluation of fixed assets at discretionary time in order to correct the value of these previously depreciated goods.

Even when asset book value is adjusted by inflation, the performance of capital goods' prices presents an idiosyncratic trend, thus making it incorrect to rely on the adjustment made with the general price level.

Given these problems with the valuation of balances and the lack of availability of information for a relevant set of companies, the fixed capital stock is estimated through exhaustive statistical sources, independently of the companies' balances and taking into account the current cost or replacement value.

At first glance, tangible non financial assets have usually had market prices. However, that is only the case for investment flows or purchases of new capital goods. This leaves us the problem of how to value the capital stock that is just in place or in production.

According to Diewert (2003), the value of a capital goods is defined by:

1. Purchaser's price: the value of a capital good is given by its purchaser's price. According to the OECD (2001, 2009), the purchaser's price is the price of the asset paid by the purchaser.
2. Net realizable value (or exit value): it is the maximum price at which an installed capital good can be sold on the market, after netting transaction costs.
3. Replacement cost (or entry value): it is the minimum cost of purchasing an asset in order to replace an installed capital asset in the stock
4. The present value of cash-flows.

These definitions of capital goods' value are mutually equivalent under the principle of existence and efficiency of second-hand capital goods market, without asymmetric information problems.

It is assumed that the age-price profile of assets on the second-hand capital goods' market reflects the present net value of cash-flows and future benefits that the capital good will provide to the user or purchaser along its service life, in line with its entry value after deducting transaction costs.

Notwithstanding, not all typologies of new and installed capital goods have second-hand goods markets which reflect the value on the market of prices by attributes such as model, age, etc. Therefore, their empirical approximation may imply a discrepancy between values according to the definition adopted. Whenever any of the principles listed above are not met, various problems emerge in relation to concepts 2 and 3:

- Non-existence of markets: there are no second-hand goods' markets for all types and models of capital goods
- Non-additive value: Diewert (2003) sustains that the existent assets of a firm may be difficult to value separately as they create greater value for the firm above their individual cost, due to their use in common for producing different final goods. Even when it is possible to determine the entry and net realizable value of the assets in use, the operation of the capital goods in the production line can generate value over the replacement cost.
- Non-reproducibility: concept 4 stems from a prospective and/or subjective calculation by the capital good purchaser or user. In order for the present value of future cash-flows to be equivalent to exit and entry value, it is not only necessary to assume the condition of efficient markets but also the representative agent assumption. For example, two accountants may assign different values to the same asset of a business simply because they differ in determining the future

cash-flow to be generated by this asset or because they disagree on the discount rate.

- Lemons market: second-hand goods markets present problems of asymmetric information (lemons market)¹⁵ and, as a result, it is not possible to ensure that the age-efficiency profile of the capital good is compatible with its age-price profile.

Given the absence of information concerning the vector of relative prices of second-hand goods for certain categories of capital goods, the common practice is the application of standard depreciation methods to the prices of new capital goods. But, if not all the models of capital goods are traded presently in the market it is necessary to estimate their price.

To value capital stock, the SNA 08 recommends approaching criteria 2, 3 and 4 with specific indices by model and age¹⁶, with the provision that relative prices by attribute should be updated frequently, including the appearance of new goods in the list of goods surveyed in the index, and verifying the stability of the age-price profile¹⁷.

The previous discussion on how to value capital stock is directly linked to non-produced assets. Natural Resources must be valued at market prices in order to add to national wealth.

But not all natural capital stocks have market prices, as for example subsoil assets. In this case, the valuation criteria are similar to produced stocks: one should value natural resources using the net present value of expected revenue, net of extraction cost.

The revaluation of fixed assets at current cost has important consequence on the balance sheet of the user sectors. The asset side and net worth of the balance sheet of a firm, sector or country increase by the amount of the of the difference between the current cost of fixed assets and their book's value.

An important case is the consequence of current cost valuation on the International Investment Position (IIP)¹⁸.

The revaluation of fixed assets at current cost of the companies with foreign direct investment change the net worth of foreign owned assets abroad and the foreign owned assets in the country that could change the magnitude and sign of the IIP, as it is shown for US case by Landefeld and Lawson (1991) and Nguyen (2011).

The following section presents a brief discussion on valuation of intangible assets. This is another case in which the application of economic principles based on SNA

¹⁵ See Hedonic Valuation section.

¹⁶ Note that paragraph 10.13 of the SNA 93 assumes the consistency of these concepts, although paragraph 6.189 implicitly assumes that it can be resolved through the use of specific price indices by type and age.

¹⁷ This is the methodology followed by the BEA (Bureau of Economic Analysis) and discussed in the OECD Canberra Group II-On the Measurement On Non-Financial Assets, adopted for this study.

¹⁸ As well as the revaluation of fixed assets at current costs

instead of business accounting makes national balance sheet consistent with macroeconomic analyses.

2.4.3. Valuation Criteria of Intangible Non Financial Assets

As we presented in section 2.1, intangible assets have been recognized by SNA08 as an important group of assets that have been included on the asset boundary.

According to Hulten et.al. (2005) (2006), however, most of these assets have particular characteristics that prevent their accounting and valuation: the lack of verifiability of intangible assets that are not acquired through market transactions; lack of visibility after their acquisition that complicates efforts to track past vintages; non-rivalness characteristic and the lack of appropriability of the returns from some of them.

Example of intangible assets are software, patents, brand equity, design and R&D, advertising, on the job training and other human capital formation, cost of organizational change, and other marketing assets; which make up the so called "goodwill".

The Goodwill reflects the market value of a firm in excess of the individual value of its assets and liabilities; moreover it represents the extra value of the assets of a firm when all individual assets are combined used in the production.

Empirically, goodwill could be measured as a residual between the market value of the firm and the valuation of net assets in the balance sheet. Of course, the purchaser of a firm is ready to pay the premium over the book value of the net assets so as to own the extra value of intangible assets that are included in the goodwill¹⁹.

Notwithstanding the difficulties of direct valuation, the influence of intangible assets on the value of a firm, corporate sector and national wealth is undeniable²⁰; moreover intangible assets could explain the main part of the value of a firm and as it is shown in the following sections the wealth of country.

According to economic literature there are some methods that try to indirectly capture the value of intangibles, using an analogy with capital theory based on tangible assets.

1) Capitalization of the Expenditure on Intangible assets: Corrado, Hulten and Sichel (2005a, 2005b) have suggested the capitalization of the flows of expenditures on intangible goods that are declared in the balance sheets, similarly to the permanent inventory method, making assumptions about useful life, type of depreciation, etc.

¹⁹ As it is defined, goodwill also includes the difference between the current (replacement) cost of the assets and its book value.

²⁰ Besides, the market price of the corporation also reflects expectations of the future performance of the economy of the country, the sector to which the firm belongs and the individual situation of the firm, that are not captured in the current costs of fixed assets.

2) Stock Market Value Method: Hall (2000, 2001a, 2001b) has suggested to obtain the value of intangible assets as the difference between the market price of the²¹ firm that is quoted in the stock market and their book value. This method allows implicitly the inclusion of the revaluation of fixed assets at current costs, the market value of patents and trademarks, and other intangible assets in the goodwill. This criterion ensures exhaustiveness, by capturing the universe of assets directly through the stock market value of companies' assets in the stock market²².

3) Consumption Present Value Method. World Bank (2006) (2011) has suggested to obtain the total value of wealth as the net present value of consumption flows, following implicitly permanent income approach. This method makes assumptions about the social discount rate and extrapolates expectations about consumption flows; World Bank-Hamilton approach derives the value of intangible capital as the residual difference between the capitalized value of consumption and individual estimation of tangible non financial assets.

The valuation of intangible assets at market value by any of the cited methods impacts as a revaluation of the asset side and the equity side of the balance sheet²³.

An important example is the consequence of market valuation on IIP of a country. As in the case of current cost revaluation, market revaluation of the equity of IIP could change the net worth of foreign owned companies as well as the foreign direct investment abroad of residents of a country under analyses.

As it is shown in the case of US by Landefeld and Lawson (1991) and Nguyen (2011), this adjustment changes the magnitude and sign of the IIP.

This issue is fundamental in macroeconomic analyses. Hausman and Sturzenegger (2006) have named this issue as the "dark matter" The difference between the official measurement of FDI at book value and their market value could explain why global imbalances, as measured in official figures of IIP and current account, do not translate in a major adjustment of the dollar or a large rebalancing of the global economy. As the authors demonstrated, the US FDI valuation at book value ignores its role as a net provider of knowledge, liquidity and insurance.

As it will be shown, the usual analyses of solvency of firms, sectors or countries changes dramatically once the adjustment of net worth by fixed current cost or market value of assets is taken into account.

²¹ Equivalent to the sum of equity and liabilities of the balance sheet of a firm.

²² And imputing, according to main characteristics, the same value to the companies that do not quote their equity in the stock market.

²³ See Landefeld and Lawson (1991) for an example.

2.4.4. Valuation Criteria of financial assets and liabilities.

From the macroeconomic point of view, business accounting presents some asymmetries when the national balance sheet is being analyzed.

The recording of holdings gain-losses presents an important difference between business accounting and macroeconomic-SNA approach.

Commercial accounting focuses on one firm or sector at a time so any transaction is register twice due to double-entry in the balance sheet of the entity.

But from macroeconomic point of view, each transaction must be record not only in both sides of the balance sheet of an economic entity but also by the other sectors that are involved (quadruple principle).

The macroeconomic analysis imposes the rule of symmetry. Any holding loss of a sector is a gain of other resident sector, except for the case of transactions with non-residents.

A crisis event generates a redistribution of wealth between institutional sectors instead of value destruction.

As it is pointed out by Frecault (2002), financial crises could generate banking losses but at the same time a profit –a reduction in the volume of the banking debts of corporations and debtor households at the same time. From this approach, a financial crisis is a zero-game sum between residents sectors.

However, financial crisis could also have intertemporal effects on future generations. If a bailout of the banking system is implemented by the government, the losses will be paid by future taxpayers if the country could not asses a sustainable growth path.

Hence, the National Balance Sheet annual series is revealed as the only instrument that allows registering these wealth effects through time thanks to its accuracy and consistent estimation.

Another difference of criteria between commercial accounting and national accounts is the valuation of financial assets according to holder sector.

According to the established business accounting criteria for non financial companies and the banking system²⁴, the valuation of financial instruments depends on the side of the balance sheet in which these instruments appear.

From the point of view of the debtor, liabilities must be valued always by their nominal residual value. But the same instrument is registered at market value in the balance sheet of creditor²⁵.

²⁴ International Accounting Standards Board (IASB), for example.

²⁵ When they are held as an investment by short term. If the investment is held till maturity the registry must be valued at nominal value.

Therefore, according to standard business accounting practice, at the firm or sectoral level the value of the financial instrument will depend on whether this is an asset or a liability and on the subjective intent of holding the asset, either short term or long term.

This accounting criterion is not compatible with the SNA08 criteria. From macroeconomic point of view, it implies inconsistencies between the accounts of debtors and creditors. In other words, it does not achieve a consistent national balance sheet with the net worth and financial positions of the different sectors of the economy.

As SNA08 pointed out, the macroeconomic consistency of National Accounts demands a homogenous valuation of all financial instruments, independently of their position as assets or liabilities through the market value principle.

But as Bloem and Porter (2002) analyzed, the application of this principle is not exempted from difficulties: not all liabilities have market value. Not all banking loans have secondary markets.

So in the case of a crisis, the national balance sheet, as SNA08 recommended, must value all debts at market value in the case of securities and loans with secondary markets. But other banking loans are registered at book value.

Only when the impairment or debt rescheduling is recognized by both sides, the loss will be recorded in the balance sheet of both sides. In the case of a country, SNA08 register this effect in the other change in volume of assets accounts, as an extraordinary event.

As Bloem et.al. (2002) and Harrison (2006) analyzed, provisions for the risk of bad loans are not recorded in national accounts, leaving the impairment of non traded loans, once it materializes, on other change in volume of assets accounts.

However, if a macroeconomic view is applied, the focus on the accuracy and macroeconomic consistency of measurement of the components of national balance sheet allows capturing indirectly the market value of non-traded assets.

General marketability principle of SNA must be applied to every component of the national balance sheet, not only liabilities and financial assets but also non-financial assets, including intangible, mainly goodwill.

As this research recommends, , the national balance sheet must include fixed assets at current costs and any other intangible asset that explain the market value of the firms of a country at market price (goodwill).

Prices of real assets and the value of firms quoted in the stock market presents a pro-cyclical behavior.

Any increase on the risk of loss in non-traded loans during a crisis event is implicitly captured by the market price of the shares quoted in the stock market and by the current-cost of fixed assets.

Therefore, SNA08 market valuation criteria applied to financial holdings and non financial assets allows the indirect record of the “reproduced market price” of non-traded loans through the market value of intangibles and the current costs of fixed assets.

3. National Wealth of Argentina

3.1. Introduction

This chapter presents the main results of the national wealth estimation by the asset consolidation approach for Argentina for 2001 and 2004.

The next section describes the main sources of the database utilized in this estimation. The following section shows the adaptation of the valuation criteria by type of asset, introduced in the previous chapter, considering the particularities of the Argentinean case as well as the availability, quality, exhaustiveness and consistency of the data. Finally, main findings of the estimation are shown.

3.2. Methodology for Unstable Land Rich Economies

According to section 2, non-financial assets must be valued at market price, following the recommendations of SNA08.

This paper adopts the estimation of capital stock, produced and natural capital, from the ARKLEMS project, which is consistent with the recommendation of valuing capital in SNA08 and OECD (2008)²⁶.

ARKLEMS presents capital stock by type of asset and user industry for two concepts: capital services and wealth or net capital stock.

This research takes into account the ARKLEMS wealth capital series which are consistent with the objective of measurement wealth, instead of taking into account capital services as an input contribution to economic growth.

ARKLEMS natural capital is estimated searching their market value.

Agricultural Land is estimated using a consistent database of market prices of more than 100 counties of Argentina²⁷.

Subsoil Assets do not have market price, so their value is obtained following a present value approach net of extraction costs. the internal rate of return of capital stock at macroeconomic level is considered as the rate of discount.

²⁶ See Coremberg (2008) (2009) (2011), www.arklems.org

²⁷ Thanks on ARKLEMS database this research could directly measure the market price of land as in the first best method. World Bank (2006) (2009) measured by reproducing market value with the capitalization of rents of agricultural products. The ARKLEMS estimation based on market prices is more direct and evades the assumptions of capitalization of rents method, taking into account that the recent cycle shows that land prices increased more than the price and rents of agricultural commodities.

ARKLEMS value of produced fixed assets is obtained by the current cost approach, using the econometric estimation of the age price profile from the market of capital goods and updating it with specific price indices by asset type.

Nevertheless, this approach does not include the value of urban land that explains mostly the market value of the real estate assets (residential and non-residential buildings), as World Bank (2011) recommends.

There are three alternatives methodologies with the purpose of measuring the urban land. World Bank (2006) (2011) includes urban land as a fixed proportion of the value of physical stock. Another alternative is to measure urban land implicitly as a non-explicit part of goodwill by Hall market value of firm method.

All the cited methods are second-best alternative in the case of not having available data on market prices and cost for real estate assets.

According to available statistics in Argentina, this research has adopted the first best alternative to capture explicitly the urban land by the Tobin Q, ratio between market price and cost per-square meter of real state by year instead of fixed proportion, applied on the ARKLEMS real state capital stock current cost value series.

As it has been analyzed in previous section, there are other intangible assets that must be measured as wealth; however, the application of these methods for the Argentinean case presents several problems.

1) Capitalization of the Expenditure on Intangible assets: On the one hand, this method makes a series of assumptions with a reduced empirical validation, such as the stipulation of the useful life, rate of discount, expectation process, and others. On the other hand, in Argentina as well as in other developing countries, software and other intangibles' expenditure are reported in a biased way on balance sheets and registers and surveys, looking to evade taxes. This could bias the estimation of investment and stocks of these assets.

2) Stock Market Value Method: the value of the firms quoted in the stock market could distort the estimation of goodwill and other intangible assets implicitly included, given the low capital deepening of Argentina and its unstable behavior. Only a very small fraction of companies are present in the stock market. They are not representative of the majority of SME's and other big companies outside the stock market.

3) Consumption Present Value Method: reproducing one of the main assumptions of permanent income hypothesis, the value of intangibles measured is subject to the lack objectivity of assumptions about the discount rate and future consumption expectations. But one benefit of this method is to allow an estimation of wealth independent of the estimation of its tangible components. As World Bank (2006) (2011) does, the national wealth is obtained as a residual between the capitalization of consumption flows and the components of wealth explicitly estimated.

However, the assumptions made by the researcher could not constitute an objective estimation criterion: the non-reproducibility problem as it is cited before.

Several economic issues of developing countries as credit rationing, high risk aversion, inflation long memory, misperceived wealth expectations and other phenomena could explain why the assumption of linking present value of consumption flows to wealth as permanent income hypothesis is not valid.

Besides, there are more objections (share by stock market value approach).

Several intangible assets present overlapping values between each other. This is known as the non-additive problem. Moreover, intangible assets of a firm could represent an externality from human capital accumulation at macroeconomic level.

The value of the specific know-how of the firm could be captured by the value of human capital and also by the market goodwill. If the value of firm increased its value based on brand name, the value of their human capital could also increase. If the value of a firm increased due to outside research and development, this could impact on the specific human capital of the firm as an externality.

Taking into account the lack of deepening in financial and stock markets of Argentina and the non-additive and non-reproducibility problems, this leaves a second best option to be considered: trying to capture the goodwill of the companies through a specific estimation of the value of one of the main assets that creates value of companies: human capital.

This research considers that the stock of human capital constitutes a fundamental asset of the firms and even of the public sector. It represents the main intangible asset of firms and it explains a great proportion of the goodwill and the firms' market value. Therefore, the valuation of human capital is extremely relevant to complete the outlook of the Argentinean assets. Moreover, this approach has put the human capital stock in the same line as capital stock in wealth as well as inputs in a comprehensive national accounts system, as Jorgenson-Nordhaus-Landefeld (2006) suggested.

The compatible concept of human capital for this research is the wealth-human capital as it is measured by Jorgenson-Fraumeni approach. This method estimates the present value of the wages taking into account gender, age and education of the labor force adjusted by the probability of unemployment and changing education level.

In the case of Argentina, this research adopt the Wealth Human Capital estimations from Coremberg (2010), which follows Jorgenson-Fraumeni approach but taking into account the magnitude of non-observed economy by the adjustment of non-reported employment and income²⁸.

²⁸ For details, see Coremberg (2010). Following the same approach as in the case of subsoil assets, present value of labor income takes into account the internal rate of return of fixed asset as the rate of discount which is higher than other alternative measures as the social rate of discount or alternative exogenous rate of discount of public bonds. This alternative allows the inclusion of sovereign risks plus specific risk of sunk costs in private investment in Argentina which is not usually captured through interest rates according to several capital controls and credit rationing and other financial distortions. Besides, the measurement adjusts present value of labor income by economic cycle thanks to weighting by the probability of unemployment for labor group categories.

In summary, the sequence of the consolidated estimation of national wealth for Argentina was the following²⁹ (see also figure 2):

- 1) Revaluation of capital stock at market prices: revaluation of real state assets according to their market value.
- 2) Valuation of assets or non produced resources: land for agricultural use at market prices and sub soil assets (oil and gas) at the net present value of their revenue.
- 3) Valuation of Human Capital
- 4) Addition of International Investment Position
- 5) National Wealth

²⁹ See the following figure.

SEQUENCE OF ESTIMATION OF NATIONAL WEALTH OF ARGENTINA (asset consolidation)						
					INTERNATIONAL INVESTMENT POSITION ***	NATIONAL WEALTH
				INTANGIBLE NON FINANCIAL ASSETS (HUMAN CAPITAL)	NON FINANCIAL ASSETS	
		FARMING LAND (MV) SUBSOIL ASSETS (NPV)	NATURAL CAPITAL	TANGIBLE NON FINANCIAL ASSETS		
		TANGIBLE PRODUCED ASSETS MV	TANGIBLE PRODUCED ASSETS MV			
CAPITAL STOCK	URBAN LAND	TANGIBLE CAPITAL STOCK CC				
Machinery and Equipment*	RC					
Transport Vehicules**	RC					
Residential Construction	RC					
Private Non residential Construction	RC					
Public Construction	RC					
Other agricultural construction	RC					
Capital Livestock	MV					
Agricultural cultivated assets	NPV					
Inventories	MV					

Figure 2 Sequence of Estimation of National Wealth of Argentina by asset consolidation

Source: own estimation based on ARKLEMS Database, Coremberg (2009) and Coremberg (2010)

Notes:

RC: equivalent replacement cost

MV: Market Value

NPV: net present Value

* Except for tractor and farming machinery valued at market prices

** Except for Automotive transport equipment and airlines at market prices

*** IIP bonds, stocks and other securities at market value

3.3. The National Wealth of Argentina

This section presents the estimation of National Wealth of Argentina according to the methodology suggested above, taking into account international recommendations but also the main characteristics of the Argentinean economy: natural resource dependence and unstable economic behavior.

A second objective of the research is the measurement of national balance sheet with the aim to analyze how the wealth of Argentina changed after the big crisis of 2002.

As it was analyzed before, the Argentinean economy dramatically changed during the last two decades.

The exit of Convertibility Plan and Pro market Reforms Regime at the beginning of the XXI century, the crisis of 2002, the posterior economic resurgence under new “Real Exchange Rate Competitiveness Regime” and the commodity prices boom, caused significant wealth effects in the Argentinean economy and wealth transfers between institutional sectors.

The estimation of the balance sheet of Argentina in 2001 and 2004 is the key instrument to compare the situation of the economy under the two different macroeconomic regimes.

3.2.1 The Changing Wealth of Argentina

National Wealth of Argentina, was u\$s 1300 billion in 2004. Wealth per-capita was u\$s 35.000, whereas GDP per capita was about u\$s 4.000.

TABLE 1			
NATIONAL WEALTH OF ARGENTINA			
	2001	2004	%
National Wealth (\$billion)	1.746	3.967	127,2
National Wealth (1993 constant pesos)	1.746	2.661	52,4
National Wealth (u\$s billion)	1.746	1.322	-24,3
GDP (\$billion)	269	448	66,6
NW per-capita (u\$s)	46.995	35.255	-25,0
GDP per-capita (u\$s)	7.232	3.977	-45,0

Source: A. Coremberg based on ARKLEMS database and Central Bank

NW: National Wealth (equation 1).

GDP: Gross Domestic Product.

According to the turmoil period that we are analyzing, the change of macroeconomic regime and commodity prices boom after the 2002' crisis caused important wealth effects.

The main result of the crisis of Pro Market Macroeconomic Regime was the end of the Convertibility Plan in 2002 through a mega devaluation (250%) of the domestic currency (pesos) after ten years of a currency board regime (1\$ to 1u\$s).

Due to the prevailing economic depression, characterized by high unemployment rates and low capacity utilization, the devaluation was not initially completely passed through to domestic prices: cpi and gdp deflator index grew less than 60% between 2001 and 2004.

After 2002 crisis, the increase of real exchange rate, the improvement of terms of trade thanks on commodities prices boom and the bailout of corporate sector originated an important economic resurgence of the Argentinean economy.

The recovery of the economy caused a positive change in expectations of the economic agents: asset prices in domestic currency reacted faster to economic recovery than the prices of production.

Hence, National wealth increased 130% in current pesos between 2001 and 2004.

But the average prices of real assets in foreign currency in 2004 was lower than previous crisis level, therefore the national wealth yet showed a 25% lower level in foreign currency.

Besides, devaluation had less impact on national wealth in foreign currency than on GDP: GDP per capita in foreign currency decreased -45% between 2001 and 2004, but the drop of wealth per capita in foreign currency was smaller: -25%.

The impact of the boom of export commodity prices on the value of natural assets is the key variable that explains the economic resurgence during the post crisis period.

According to our estimations in domestic currency, natural resources was the only component of the national wealth (until 2004) that grew more than the exchange rate devaluation, explaining why wealth grew more than GDP in domestic currency.³⁰

Until 2004, real estate assets (residential and non-residential buildings) grew little bit less than the exchange rate³¹.

³⁰ The research is now updating by ARKLEMS research team. Preliminary estimations shows that now national wealth per capita (more than gdp) in foreign currency is now higher than 2004 and 2001, thanks on full impact of commodity prices boom on the prices of real estate and land.

³¹ According to our updating research, after 2004, the Argentinean economy showed an important real domestic currency appreciation, some kind of “dutch disease” and inflation, translating in an improvement of prices of real estate asset and agricultural land that surpassed 1990 decade levels.

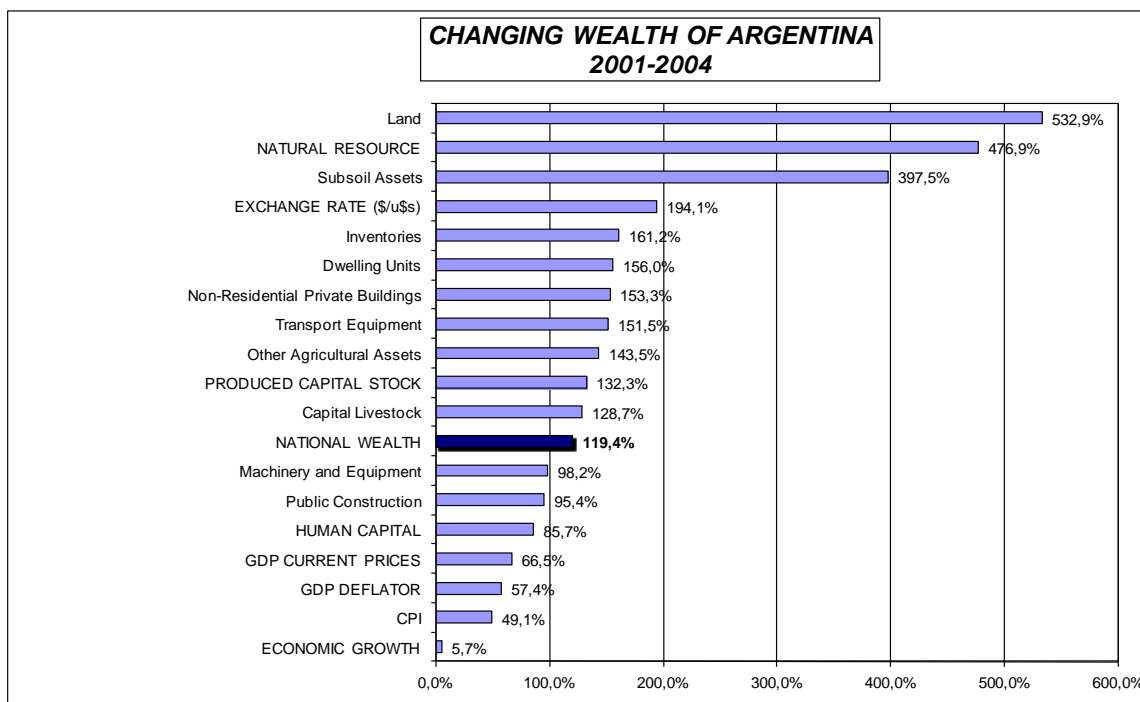


Figure 3 Changing Wealth of Argentina 2001-2004

Source: ARKLEMS Database

Another important striking feature of this estimation is the importance of the revaluation component in the explanation of the changing wealth of Argentina.

A primary approximation is the comparison of the nominal change of the national wealth during the period analyzed with the flows of macroeconomic savings³².

Δ Wealth	2.221.669	100%
Δ Domestic Savings	264.311	12%
Revaluation	1.957.357	88%
$\Delta W/\Delta GDP$		12.4

The revaluation component from 2001 and 2004 explain nearly 90% of the change of wealth of Argentina. This component is 12 times above the change of GDP at current prices³³.

Thus, this important finding justified the measurement of wealth as a proxy of the change of welfare and economic progress of a nation.

³² The purpose of analyzing the revaluation and operation or flows component of the change of wealth should ideally be captured by a measurement of a matrix flow of funds.

³³ This impressive different impact on the change of wealth by the revaluation component vs. operation flows (savings) is similar to other developed countries measurement, see sources cited in table 4.

3.2.2 Macroeconomic Consistency

The following table shows several ratios of wealth to main macroeconomic aggregates.

TABLE 3			
NATIONAL WEALTH OF ARGENTINA			
MACROECONOMIC RATIOS			
	2001	2004	%
W/GDP	6,50	8,87	36,4%
W/GDI	45,83	46,24	0,9%
W/GOS	13,17	15,36	16,6%

Source: A. Coremberg based on ARKLEMS database and Central Bank

W: National Wealth

GDP: Gross Domestic Product.

GDI: Gross Domestic Investment

GOS: Gross Operating Surplus

Wealth is almost 8 times the GDP in 2004 (6 in 2001)³⁴. This growth is caused fundamentally by the increase of the asset prices above the general price level due to the improvements in expectations about the future of the economy³⁵.

The Wealth/GDI ratio is remarkably important, given that it reflects the number of years required to double the wealth stock. Argentina would require 46 years of gross investment in order to double the stock of wealth³⁶.

Another important ratio is the Wealth/GOS. Conceptually, this ratio is similar to the P/E (price/earnings) indicator that is normally used in stock market analysis. This ratio expresses the number of years that the investor needs to recover the capital when buying an asset, if the company keeps the level of current earnings. The greater the risk and uncertainty, greater is the required yield of the investors in order to compensate the risk, hence lowering this ratio.

The P/E ratio of the main corporation in Argentina was 4 for 2004, according to the information of Buenos Aires Stock Exchange Market, almost the double of the value in 2001 (2,65), reflecting the improvements in the economic perspectives after 2002.

However, the level of the P/E ratio is very low when compared to other developed countries (nearly 20), expressing differences in perceived risk and uncertainty.

³⁴ The fixed capital stock to GDP ratio (K/GDP) (at replacement costs) is 2,84 at current prices in 2004 (3.16 with urban land at market prices). W/GDP ratio is three times higher than K/GDP due to market value of agricultural land and urban land, the value of oil and gas reserves and human capital.

³⁵ Excluding human capital, the dynamism of this ratio is even greater, given that is almost doubles: 2,4 (2001); 4,3 (2004).

³⁶ If wealth is circumscribed only to tangible capital goods, excluding non renewable resources and human capital, the amount of years of gross investment needs to double wealth is only 16.

The measurement proxy variable of P/E in this research is the ratio between national wealth and the gross operation surplus which is more representative of the structure of the Argentinean economy: this measure includes the returns of not only big companies that quote in the stock market but the returns of the assets of all industries and public and private resources.

As it is expected, as in the case of P/E ratio for stocks, macro W/GOS ratio shows also an improvement after the crisis.

3.2.3 International Comparison

The following table shows a homogeneous comparison of some official wealth figures from different countries measurement experience.

According to Table 4, Argentina presents a Tangible Wealth to GDP ratio that is relatively lower than those obtained in the rest of the developed countries in the sample.

TABLE 4			
NATIONAL WEALTH OF ARGENTINA* INTERNATIONAL COMPARISON			
	Wealth/GDP	Financial Deepening	
		Total Assets/GDP	Finanacial /Tangible Assets
Argentina (2001)	2,40	4.36	0,67
Australia (2001)	4,11	5,2	
Canada (2004)	3,29	10	1,93
Spain (2000)	7,00	13,9	0,92
France (2001)	4,53	14,5	2,32
USA (1990)	2,68	7,5	1,89

Source: A. Coremberg based on ARKLEMS database and Central Bank

*Examples of comparable estimations consistent with methodological recommendations are only available for United States (FRS 1990), Australia (ABS, 2001), Canada (2004), Spain (Naredo-Carpintero, 2000) and France (2001). In the case of the United States, it corresponds to a publication by the Federal Reserve and includes only the fixed capital stock, excluding natural resource. Australia does not disaggregate financial assets. In all cases, human capital is not accounted for³⁷.

As it is analyzed in next section, national wealth estimated through sectoral consolidation allows making international comparisons of the size of financial deepening.

The lower capitalization of Argentina is also confirmed by the ratio of total assets to GDP³⁸ and the financial/tangible ratio³⁹: despite of economic recovery after crisis, the

³⁷ To ensure the comparison, the relative prices of Argentina must be similar to the ones of the other countries in the sample, hence the use of the prices of 2001 (given that in 2004 the ratios are influenced by the changes in relative prices caused by the devaluation).

³⁸ Without netting the financial relationships among residents.

³⁹ This indicator shows the capacity of increasing the value of firms through leverage.

Argentinean economy showed a lower development of the capital market and the banking system.

3.2.4 Asset Composition of National Wealth

The composition of National Wealth in 2004 was: Human Capital (52%), Produced Capital Stock (36%) and Natural Resources (12%).

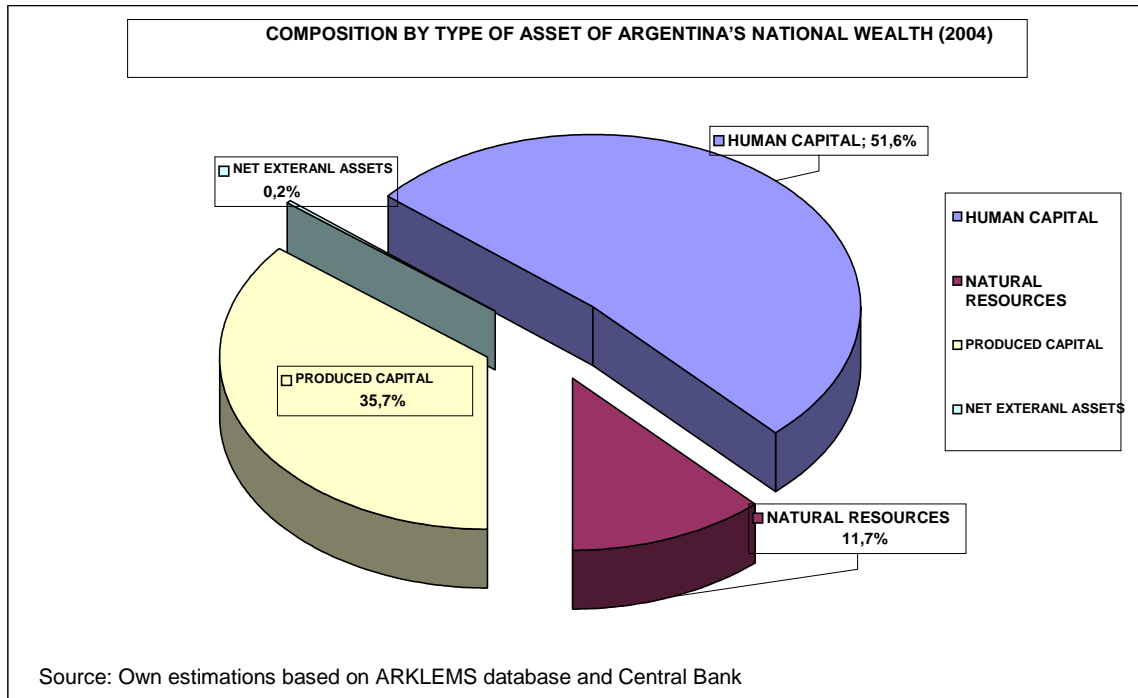


Figure 4 National Wealth Composition by asset type. 2004

Source: Own estimations based on ARKLEMS database and Central Bank

As it has been shown before, the value of human capital estimation corresponds to wealth human capital, as it is applied in Coremberg (2010) following the Jorgenson-Fraumeni approach.

The following table shows that the value of wealth human capital in Argentina is higher than the value of fixed capital stock. This result was also obtained in other estimations following the same methodology⁴⁰. Argentina shows a lower level of wealth human capital compared to developed countries.

⁴⁰ Besides, it is worth to mention that human capital share in national wealth in Argentina is similar to the share of labor compensation in total income

TABLE 5					
WEALTH HUMAN CAPITAL IN ARGENTINA. INTERNATIONAL COMPARISON					
	Period	Reference Population	Wealth Human Capital / Fixed Capital Stock	Wealth Human Capital/ GDP	Fixed Capital Stock / GDP
Argentina	2001	Labor force	1,8	4,1	2,5
	2004	Labor force	1,6	4,5	2,4
Australia	2001	Labor force	3,1	6,3	2,5
Spain	1995	Labor force	3,8	10,7	2,8
United States	1986	Population	6,7	19,6	2,9
New Zealand	1996	Population	2,1	7,4	3,3

Source: Coremberg (2010), Jorgenson and Fraumeni (1989), Thrih, et.al. (2004), ABS (2004), Serrano and Pastor (2002)

The outstanding impact of human capital on national wealth stresses an additional effect of education policy: improvement of the education and experience of the labor force could impact not only in living standards but also on the wealth of nations and therefore on the sustainability of economic growth.

Focusing on the composition of non financial tangible assets, the following figure shows that produced capital is the main component of tangible wealth (74,1%).

Natural resources represent a quarter of the total: 16% by market value of agricultural land and 9% by subsoil assets.

Focusing on the composition of non financial tangible assets, the following figure shows that produced capital is the main component of tangible wealth (74,1%).

Natural resources shares a 25% of the total: 16% by market value of agricultural land and 9% by subsoil assets.

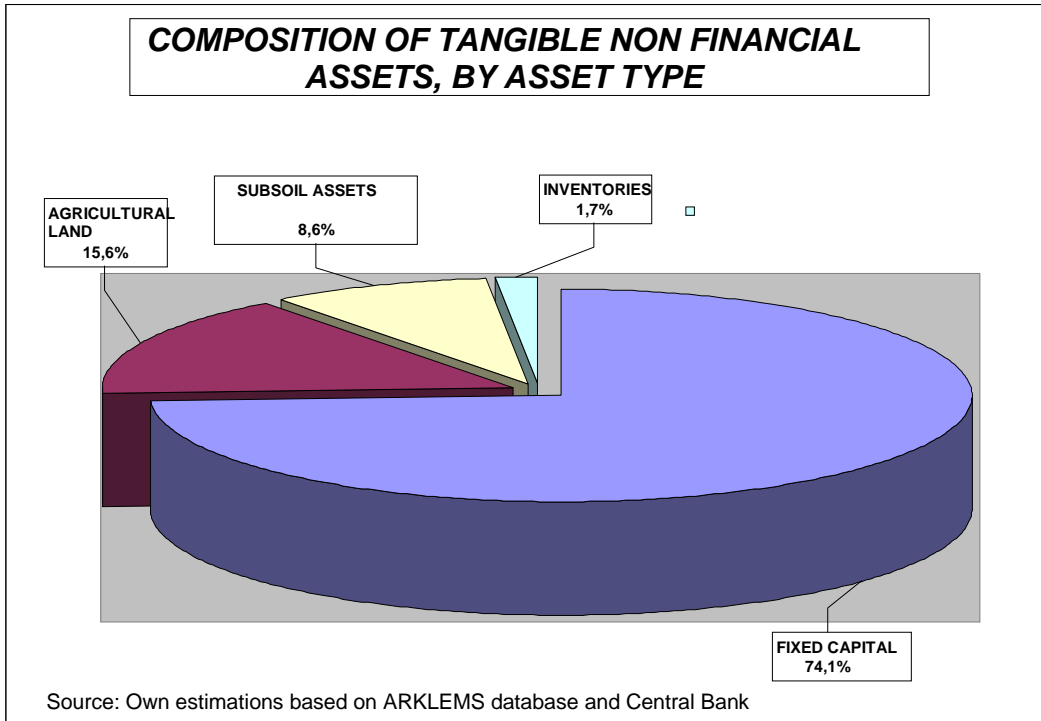


Figure 5 Tangible Non Financial Stocks by asset type

Source: ARKLEMS database

The composition of the produced capital presents a more heterogeneous distribution. Dwellings units represent 38% of the total, private non residential construction accounts for 20,4%, public construction (16,4%), machinery and equipment (15,4%), transport material (6%) and, lastly, cultivated assets and agricultural constructions (2,2%).

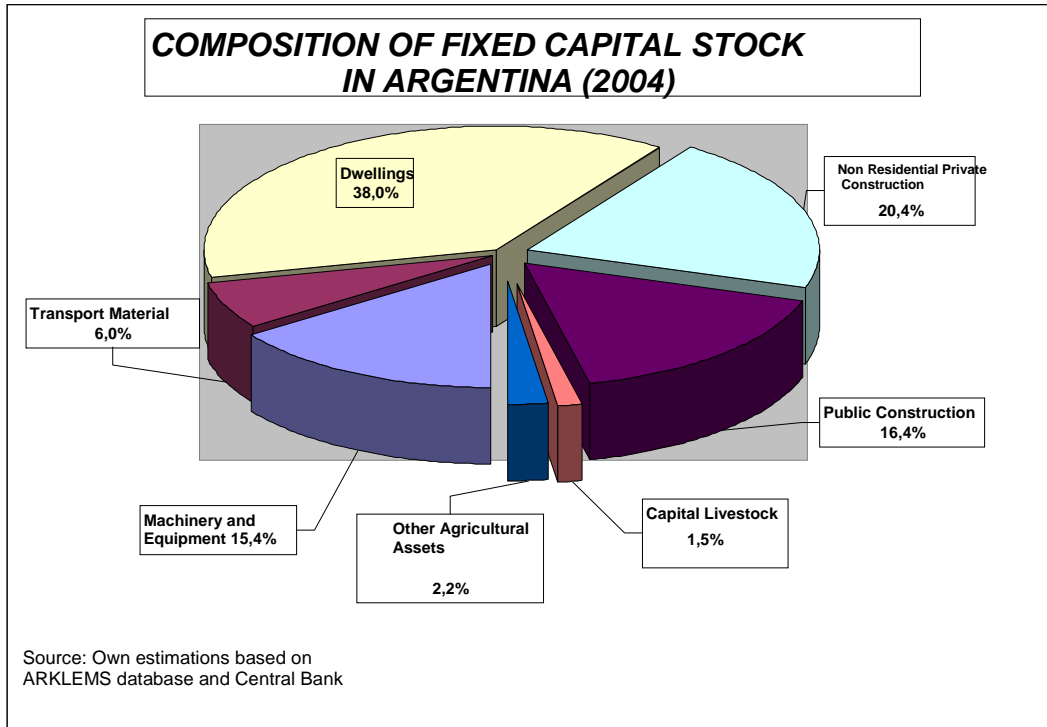


Figure 6 Produced Capital Stock by asset type

Source: ARKLEMS database

Despite the various changes in macroeconomic regimes during the last two decades, the structure of the Argentinean economy maintains the same characteristics as in the last century: a primary goods export base, with a high reliance on terms of trade and foreign capital inflows.

Furthermore, the natural resources sector, mainly agricultural, played a substantial role in exports dynamics and fiscal revenues, but at the same time had a low share of production and employment.

Moreover, our estimation of natural capital shows also a low share in total wealth: 4,4%, while the share of natural resources intensive sectors in the Argentinean GDP was 7%.

Furthermore, one of the particular characteristics that caused many distributional conflicts in the Argentinean society is that exports are made out of land-intensive goods or “wage goods” (55% of total exports, more than 60% of consumer basket).

However, a devaluation of the domestic currency necessarily produces a drop in purchasing power of wages, causing the typical distributional conflicts in this type of economy (firstly analyzed by Díaz Alejandro (1963) and Braun and Joy (1968),) which constitute other channels through which a devaluation could have contraction effects (Krugman and Taylor (1979)).

Comparing these estimations with the composition of wealth by income groups from World Bank (2006)⁴¹, Argentina presents at the beginning of the XXI th century a share of natural capital similar to developed countries⁴².

However, the comparison must take into account the phase of the cycle of the asset prices.

If the comparison is made for 2004, after the impact of devaluation and positive terms of trade effects, the composition is very different. Natural capital was 12% of national wealth⁴³, nearly the share of natural capital in wealth of middle income group.

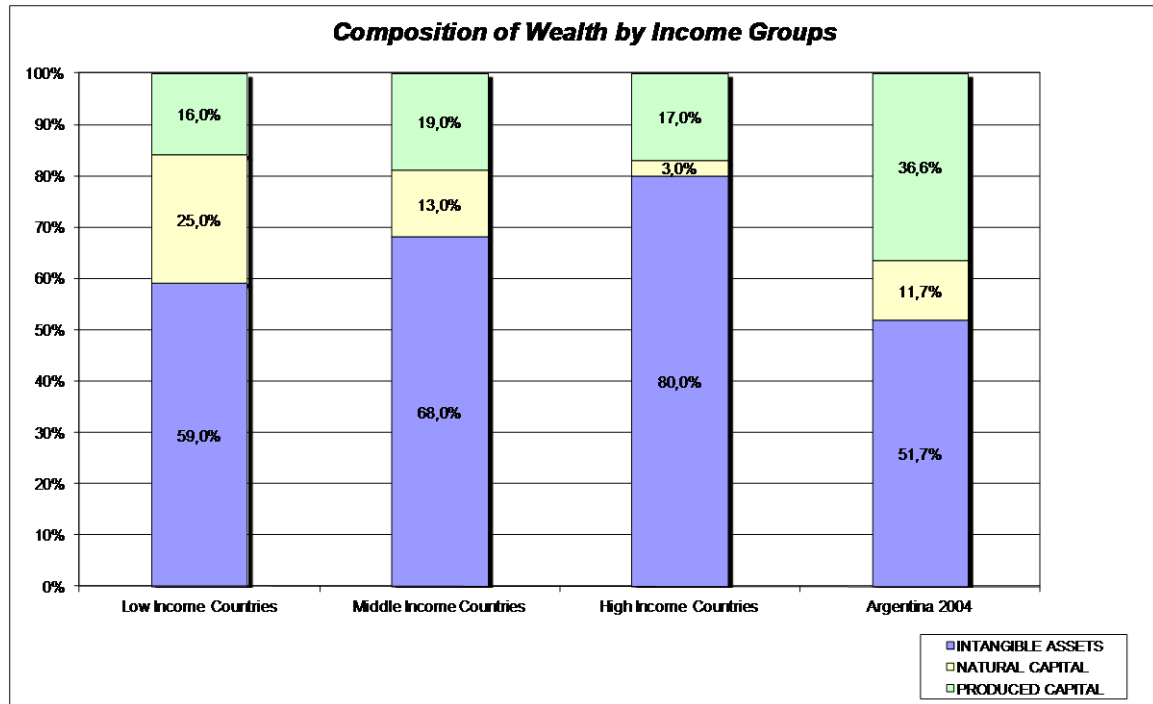


Figure 7 Composition of Wealth by Income Countries Group

Source: World Bank (2006) (2011) and ARKLEMS database for Argentina

Hence, a devaluation of domestic currency and an improvement in terms of trade generates one additional channel of increasing social inequality not only through its impact on wages but also through wealth effects.

⁴¹ Leaving aside some difference in the methodology.

⁴² With a lower share of human capital than developed countries, as we analyzed before,

⁴³ And the share of natural resource intensive sectors in GDP grew from 7% in 2001 to 14% in 2004.

4. The National Balance Sheet of Argentina

4.1. Introduction

This section presents an analysis of the main findings of the estimation of National Balance Sheet of Argentina.

As it has been described above, the National Wealth is the result of the consolidated sum of the net worth of the different institutional sectors of an economy.

So the non financial assets and the financial assets and liabilities that make up the net worth of the economic units should be taken into account⁴⁴.

National balance sheet is the ideal instrument that allows obtaining National Wealth through a consolidation of the net worth of the institutional sectors.

The national balance sheet shows the composition of national wealth by institutional sectors (besides real asset type) thanks on sectoral consolidation of assets and liabilities holdings.

Taking into account the unstable behavior of argentine economy, important methodological issues must be taken into account in the estimation of national balance sheet.

As it is analyzed in next sections, one of the main challenge of this research was the compilation of data from very different information sources, find a consistent criteria to allocate financial and real assets between sectors and the valuation of financial assets compatible with the real side of the balance sheet.

Thanks to this estimation we can analyze how the crisis of 2002 change the Wealth of the institutional sectors of Argentina, taking into accounts not only financial positions but also real assets holdings. Some questions arise:

Which are the sectors with the greater share of the national wealth of Argentina?

In which financial and real assets do the main sectors save?

What were the balance sheet effects of the 2002 crisis?

How did the financial position and net worth of non-financial corporation's sector change after the bailout of their loans at the end of 2002?

What were the balance sheet effects of the economic resurgence of the argentine economy post crisis caused by due to the boom on commodities prices on the financial position and net worth of the main institutional sectors?

⁴⁴ The classification of the components of the national balance by asset type and institutional sector can be thought as a double input matrix with the classification of the assets and liabilities by type and by institutional sector as it is presented in Tables 6 and 7 in section 4.

The next subsection analyses the issue of data sources and compilation of series. The following subsection treats the adaptation of SNA08 general valuation criteria used in this research for financial holdings to the available and reliability financial statistics of Argentina. Finally, the last subsection presents the key findings of this research.

4.2. Data Sources and Compilation

The national balance sheet is divided in seven institutional sectors, eleven financial instruments categories and twelve non-financial assets types.

The institutional sectors are Government, Central Bank, financial corporations, pension funds, non-financial corporations, households and rest of the world

Financial holdings categories are: reserves, monetary base, external assets and liabilities, deposits, loans, pension's funds, debt securities, free-float stocks holdings, foreign direct investment and other financial assets.

Non-financial assets are: machines, transport material, dwellings units, non residential private construction, public construction, livestock, other agricultural and cultivated assets, agricultural land, subsoil assets, inventories and human capital.

All the information that was used for the construction of the national balance sheets came from publicly accessible primary sources that generally present the sectoral allocation of financial instruments as a side information.

Government holdings data come from fiscal bulletin of the Ministry of Economy. Central Bank balance sheet and banking assets and liabilities holdings of private sector through banking system corresponds to Central Bank statistics.

Pension funds holdings come from statistics of Superintendency of Retirement and Pension Funds⁴⁵.

Non financial corporation's balance sheet take into account previous research on capital stock estimation taking into account Survey of Corporations⁴⁶, which comprises balance sheet information of more than 300 corporations, apart from those quoted in Buenos Aires Stock Exchange.

The rest of world sector records of assets and debts holdings by non-residents that make up the International Investment Position (IIP) were obtained from the Bureau of External Accounts. The balance sheet of this sector is presented with opposite sign in

⁴⁵ Following SNA08 criteria, it is worth mentioning that assets of these funds belong ultimately to households. So, the net worth of this sector equal to zero in the context of national balance sheet. In other words, the assets administered by the pension funds have as a counterpart an equivalent liability constituted by the unit shares of the mentioned funds in the hands of household sector. Notwithstanding this fact, the presentation in a separate form allows the distinction between invested assets in a direct way by the families from those that are invested through this institutional sector.

⁴⁶ See Coremberg (2003) (2009).

order to be consistent with the total national balance sheet. It is worth mentioning that thanks to the national balance sheet estimation, the IIP could also be obtained as the sum of financial position of every resident sector.

The balance sheet of household sector was obtained as the residual of several financial holdings of the other sectors, as it is usual in this type of estimation⁴⁷.

4.3. Issues on National Balance Sheet of Unstable Land Rich Economies

The challenge faced by this research is to obtain the national wealth by sectoral consolidation compatible with the estimation through asset consolidation as it is described in previous sections.

Two main issues are crucial at this point: the valuation criteria by financial asset type and sectoral holdings and the sectoral allocation of the financial and real asset holdings.

According to the methodology presented in section 2, we adopted the general SNA08 criteria of symmetric valuation of the financial instruments at market price at the same value in the debtor's as well as the creditor's balance sheets.

So the symmetric criteria force a revaluation of liabilities of the institutional sectors at market prices.

According to this research, the value of debt securities issued by debtors must be the same market value at which creditor sectors register their financial holdings.

However, loans do not usually have secondary markets where one can get market prices. This fact reflects the complexities to reach a common valuation criteria to register loans, above all non-performing loans, at an homogeneous and economic value in both sides of every sectoral balance sheet.

The case of nonperforming loans and debt rescheduling, as it was discussed by Bloemm and Gorter (2002) and Harrison (2006), the adoption of marketable criteria of SNA force to adopt an all-or-nothing approach: the loss of the full claim is entered as other change in the volume of assets accounts, if and only if the creditor recognizes that the claim can no longer be collected.⁴⁸

Although provisions and the risk of bad loans are not registered in the liability side of the national balance sheet, the probability of default of a private or public debt is captured through their impact on the stocks through the goodwill or in the market value of fixed assets.

⁴⁷ This residual includes also the non-profit institutions and small and medium business that are not formal corporations.

⁴⁸ Provisions are not registered in the SNA. Moreover, those authors pointed out a side important effect: the output and value added of the banking sector could be overestimated.

As we cited before, Hall (2001) suggests that the value of a firm is represented by the market price of its equity but also of its debt securities issued.

The case of the financial 2002 crisis of Argentina is a clear example.

The default of government debt, the mega devaluation of the domestic currency and the depression of the economy caused a drop of the value of private debt securities issued by the non-financial sector but also the market price of their equity which globally represented a drop on the value of the total asset of the sector, including (and mainly) represented by their goodwill.

The bailout of the banking debt of the corporate sector was made by a conversion of their banking loans denominated in foreign currency at an exchange rate lower than the market rate (“asymmetric pesification”). This rule helps to wipe out the liability of the non-financial sector.

At the same time, the foreign currency deposits formally kept at market exchange rate. The banking sector was helped by the government because the public treasury issued new compensation bonds for banks and allowed to register them at nominal value, in spite of market quotation at an important discount.

This research assumes that those effects, even when they are not specifically registered on the liability side, are indirectly captured by the market value of securities and also in the asset side through the changes in the value of goodwill-intangible capital and fixed assets at current costs.

The second issue is the sectoral allocation of the assets.

All the data sources present additional information about the allocation of assets and liabilities held by institutional sector. In some cases, some specific criteria based on third sources and assumptions had to be made.

The following table shows a survey of the sectoral allocation criteria by financial instrument.

TABLE 6		
SECTORAL ALLOCATION OF FINANCIAL HOLDINGS		
	ASSET	LIABILITY
Reserves	BCRA Assets –RWernal sector Liabilities	
Monetary Base	Availability of ENF according to SBSC + H residually.	BCRA Liabilities: Cash + deposits of F on the BCRA
External Assets and Liabilities	Investments in portfolio, deposits and assets without coupon accrual according to data from IIP and SBSC	Debts with International organizations, securities, etc. According to IIP.
Banking Deposits	G: deposits in F, BCRA and RW F: own deposits in F, RW and BCRA ENF: current accounts, deposit accounts, savings accounts and time deposits greater than \$1.000.000 (discounting data from institutional investors) H: deposit accounts, savings accounts and time deposits lower than \$1.000.000 FJP: according to balances RW: IIP	F: Total deposits of the institutional sectors, and own deposits in the BCRA
Banking Loans	BCRA: loans to F	G: Loans to the government sector

TABLE 6		
SECTORAL ALLOCATION OF FINANCIAL HOLDINGS		
	F: total loans granted by F + Use of unified funds and accrued resources over loans	from F + Use of unified funds and accrued resources over loans. F: Loans from BCRA to F+ Own Loans from F + RWernal Liabilities ("lines of credit" of RW ENF: loans to companies+10% mortgage loans H: 90% mortgage loans+ pledge backed, personals and credit cards
FJP	According to FJP Balance sheets	According to FJP Balance sheets
Public Bonds and Securities	F: according to BCRA FJP: according to balance sheets BCRA: according to BCRA ENF: according to SBSC H: Residually between the total and sector level assignment. RW: according to IIP	G: National public securities and emitted by state entities + Securities own by BCRA (sources of creation of BM- oficial sector) + Public Titles in the hands of financial entities + Holdings of ENF according to SBSC BCRA: includes securities emitted by BCRA
Private Securities	F: according to BCRA H: residually according to Baer (2005) FJP: according to Balance sheets RW: according to IIP	ENF: according to SBSC F: according to BCRA y IIP
Other Assets and Liabilities	These includes different concepts of the different mentioned statistics: compensation to Banks, other sources of base money creation, net fiscal credits and debits, secured loans, trust funds, direct loans to suppliers and households, etc.	
Foreign Direct Investment	F and ENF: according to IIP H: Real state investments outsider Argentina according to IIP	F and ENF: according to IIP
Stock (free float)	FJP: according to balances H: according to Baer (2005) RW: according to IIP	Stock Market Capitalization of Domestic companies adjusted by Free Float

G: Government

BCRA: Central Bank of Argentina.

F: Financial Corporations

FJP: Retirement and Pension Funds.

ENF: Non Financial Corporations

H: Households

RW: Rest of the World

SBSC: Survey of Balance Sheet of corporations, Coremberg (2004), Coremberg (2009)

PII: International investment position according

Non-financial assets were allocated by institutional sector. The general allocation criterion was the industry user allocation criterion, from the companies' perspective point of view. Residential construction is allocated to households. Fixed private assets: equipment, other agricultural assets and natural resource are assigned to corporate sector and public construction to government sector. It is worth to point out that in the case of human capital, these criteria is analogous to a source of growth approach. Corporate and government sectors demand human capital services to produce goods⁴⁹.

⁴⁹ Of course, another alternative criterion could be the owner approach. In that case, all the human capital stock must be assigned to the household sector. See next subsection, footnote 47.

The National Balance Sheet of Argentina for 2001 and 2004 is presented in the following tables at nominal domestic currency value⁵⁰, allowing the analyses of the wealth effects of the crisis of 2002 on the sectoral balance sheets. One should remember that the devaluation of domestic currency was partially passed through to prices during the first years after crisis⁵¹.

⁵⁰ The research also allows the presentation of the balance sheet in current dollars, in constant pesos and classification of human capital by owner point of view, those balance sheet could be obtained under requirement on the author.

⁵¹ The exchange rate devaluation was nearly 250% at the beginning of 2002 but inflation accumulated till 2004 was only 60%. After 2006, the inflation has increased to two digit index, erasing today any competitiveness advantage of initial devaluation. The updating of this research up to present is a working progress project by the ARKLEMS+LAND project.

TABLE 7

NATIONAL BALANCE SHEET OF THE ARGENTINEAN ECONOMY YEAR 2001

-in millions of current pesos-

	TOTAL		GOVERNMENT		CENTAL BANK		FINANCIAL CORPORATIONS		RETIREMENT AND PENSION FUNDS		NON FINANCIAL CORPORATIONS		HOUSEHOLD		REST OF THE WORLD	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Reserves	14.913	0	0	0	14.913	0	0	0	0	0	0	0	0	0	0	14.913
Monetary Base	11.964	11.964	0	0	0	11.964	2.891	0	0	0	1.202	0	7.871	0	0	0
External Assets and Liabilities	88.262	67.260	1.576	23.548	1.160	15.186	2.650	504	383	0	4.556	28.022	77.938	0	67.263	88.265
Banking Deposits	70.763	71.983	10.377	0	0	4.388	296	67.595	2.264	0	16.615	0	41.211	0	1.221	0
Banking Loans	84.252	91.680	0	24.026	4.888	0	79.365	15.249	0	0	0	25.765	0	26.641	7.428	0
Pension and retirement funds	20.322	20.322	0	0	0	0	0	0	20.322	0	0	0	20.322	0	0	0
Bonds and Public Bonds	26.132	48.690	0	48.690	6.331	0	5.705	0	2.210	0	577	0	11.309	0	22.558	0
Private Bonds	6.668	16.168	0	0	0	0	4.410	2.660	1.009	0	0	13.508	1.249	0	9.500	0
Other Assets and Liabilities	114.170	108.098	26.163	47.651	16.549	9.878	26.965	18.939	12.328	0	32.165	24.137	0	7.493	2.253	8.325
Foreign Direct Investment	21.282	79.503	0	0	0	0	1.720	7.012	0	0	13.305	72.491	6.257	0	79.503	21.282
Free Float stocks holdings	9.656	11.862	0	0	0	0	0	365	2.128	0	0	11.497	7.528	0	2.206	0
FINANCIAL ASSETS AND LIABILITIES OF RESIDENTS	468.385	527.531	38.116	143.914	43.840	41.417	124.002	112.323	20.322	20.322	68.419	175.420	173.685	34.134	191.932	132.785
FINANCIAL BALANCE		-59.146		-105.798		2.423		11.679		0		-107.001		139.551		59.147
Machinery and Equipment	109.867	-	-	-	-	-	865	-	-	-	109.002	-	-	-	-	-
Transport Equipment	34.039	-	-	-	-	-	-	-	-	-	34.039	-	-	-	-	-
Dwellings Units	210.503	-	-	-	-	-	-	-	-	-	-	-	210.503	-	-	-
Private Non Residential Construction	114.281	-	-	-	-	-	4.324	-	-	-	109.958	-	-	-	-	-
Public Construction	118.846	-	118.846	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Livestock	9.379	-	-	-	-	-	-	-	-	-	9.379	-	-	-	-	-
Other Agricultural Assets	12.838	-	-	-	-	-	-	-	-	-	12.838	-	-	-	-	-
Agricultural Land	47.048	-	-	-	-	-	-	-	-	-	47.048	-	-	-	-	-
Subsoil assets	33.144	-	-	-	-	-	-	-	-	-	33.144	-	-	-	-	-
Inventories	12.129	-	-	-	-	-	-	-	-	-	12.129	-	-	-	-	-
TANGIBLE NON FINANCIAL ASSETS	702.075	-	118.846	-	-	-	5.188	-	-	-	367.538	-	210.503	-	-	-
HUMAN CAPITAL	1.103.227	-	209.056	-	-	-	40.053	-	-	-	824.508	-	29.609	-	-	-
NON FINANCIAL ASSETS	1.805.303	-	327.902	-	-	-	45.242	-	-	-	1.192.046	-	240.113	-	-	-
ASSETS AND LIABILITIES OF RESIDENTS	2.273.687	527.531	366.018	143.914	43.840	41.417	169.244	112.323	20.322	20.322	1.260.465	175.420	413.798	34.134	191.932	132.785
NATIONAL WEALTH		1.746.156		222.104		2.423		56.921		0		1.085.045		379.663		59.147

Source: Own estimations based on ARKLEMS database, Central Bank, Ministry of Economy and other datasources.

TABLE 8

NATIONAL BALANCE SHEET OF THE ARGENTINEAN ECONOMY YEAR 2004

-in millions of current pesos-

	TOTAL		GOVERNMENT		CENTRAL BANK		FINANCIAL CORPORATIONS		RETIREMENT AND PENSION FUNDS		NON FINANCIAL CORPORATIONS		HOUSEHOLD		REST OF THE WORLD		
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	
Reserves	58.938	0	0	0	58.938	0	0	0	0	0	0	0	0	0	0	58.938	0
Monetary Base	52.940	52.940	0	0	0	52.940	18.789	0	0	0	1.555	0	32.596	0	0	0	0
External Assets and Liabilities	314.654	177.198	4.674	72.927	2.646	43.233	4.373	732	5.651	0	29.105	60.306	268.204	0	177.198	314.654	0
Banking Deposits	119.233	119.641	34.929	0	0	610	953	119.031	3.426	0	35.108	0	44.817	0	408	0	0
Banking Loans	98.833	107.893	0	33.731	21.644	0	77.188	33.002	0	0	0	23.665	0	17.495	9.060	0	0
Pension and retirement funds	53.745	53.745	0	0	0	0	0	0	53.745	0	0	0	53.745	0	0	0	0
Bonds and Public Bonds	156.390	224.220	0	202.211	8.580	22.009	71.782	0	30.963	0	1.352	0	43.714	0	67.830	0	0
Private Bonds	10.894	44.554	0	0	0	0	6.360	5.574	2.087	0	0	38.980	2.448	0	33.660	0	0
Other Assets and Liabilities	214.424	198.670	58.517	84.742	70.957	26.874	32.149	31.726	4.683	0	48.118	54.176	0	1.152	3.084	18.838	0
Foreign Direct Investment	64.428	150.840	0	0	0	0	3.987	7.308	0	0	41.589	143.532	18.852	0	150.840	64.428	0
Free Float stocks holdings	13.446	20.559	0	0	0	0	0	1.974	6.935	0	0	18.585	6.511	0	7.113	0	0
FINANCIAL ASSETS AND LIABILITIES OF RESIDENTS	1.157.925	1.150.260	98.119	393.611	162.765	145.666	215.581	199.347	53.745	53.745	156.827	339.245	470.887	18.646	449.193	456.858	0
FINANCIAL BALANCE		7.665		-295.492		17.099		16.234		0		-182.417		452.241		-7.665	
Machinery and Equipment	217.750	-	-	-	-	-	1.414	-	-	-	216.336	-	-	-	-	-	-
Transport Equipment	85.620	-	-	-	-	-	-	-	-	-	85.620	-	-	-	-	-	-
Dwellings Units	538.832	-	-	-	-	-	-	-	-	-	-	-	538.832	-	-	-	-
Private Non Residential Construction	289.528	-	-	-	-	-	7.070	-	-	-	282.458	-	-	-	-	-	-
Public Construction	232.177	-	232.177	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Livestock	21.454	-	-	-	-	-	-	-	-	-	21.454	-	-	-	-	-	-
Other Agricultural Assets	31.259	-	-	-	-	-	-	-	-	-	31.259	-	-	-	-	-	-
Agricultural Land	297.753	-	-	-	-	-	-	-	-	-	297.753	-	-	-	-	-	-
Subsoil assets	164.881	-	-	-	-	-	-	-	-	-	164.881	-	-	-	-	-	-
Inventories	31.681	-	-	-	-	-	-	-	-	-	31.681	-	-	-	-	-	-
TANGIBLE NON FINANCIAL ASSETS	1.910.933	-	232.177	-	-	-	8.484	-	-	-	1.131.440	-	538.832	-	-	-	-
HUMAN CAPITAL	2.049.227	-	293.022	-	-	-	46.036	-	-	-	1.673.996	-	36.173	-	-	-	-
NON FINANCIAL ASSETS	3.960.160	-	525.199	-	-	-	54.520	-	-	-	2.805.436	-	575.005	-	-	-	-
ASSETS AND LIABILITIES OF RESIDENTS	5.118.085	1.150.260	623.318	393.611	162.765	145.666	270.101	199.347	53.745	53.745	2.962.264	339.245	1.045.892	18.646	449.193	456.858	0
NATIONAL WEALTH		3.967.825		229.707		17.099		70.754		0		2.623.019		1.027.246		-7.665	

Source: Own estimations based on ARKLEMS database, Central Bank, Ministry of Economy and other datasources.

4.4. The National Balance Sheet of Argentina

The methodology of valuation of the real and financial assets recommended in this research allows studying in which assets the argentines mostly invest.

The asset side of national balance sheet of Argentina reveals that non financial assets are the most important resource in which Argentina invests: nearly 40% is represented by wealth human capital stock and 37% by the produced assets. Financial Assets represent nearly a quarter share of the total assets, 40% of this total are external assets (deposits, foreign direct investment, etc.)

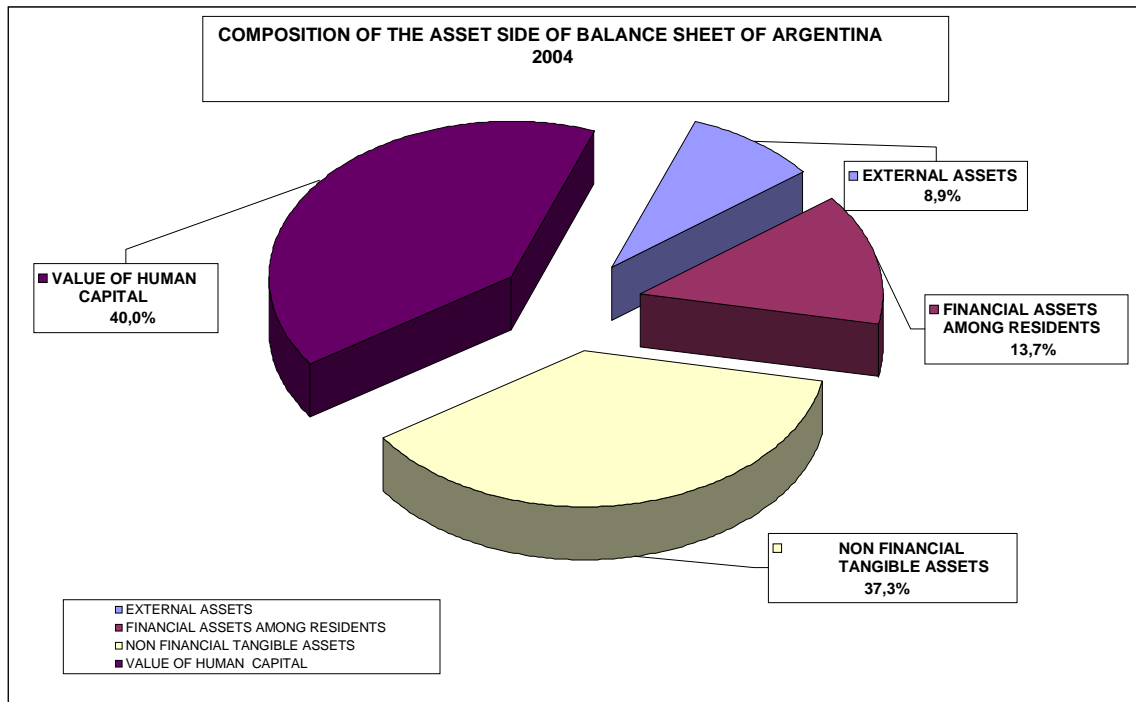


Figure 8 Composition of the asset side of balance sheet of Argentina
Source: Own estimations based on ARKLEMS database and Central Bank

We can analyze the sectoral composition of National Wealth thanks to the sector consolidated estimation: Non-financial Corporations have the greatest share: 66% of the total followed by Households, 26%, Government, 5, 8%, Financial Corporations 1,8% and the Central Bank, 0,4% ⁵².

⁵² This composition shows the allocation of human capital stock following the industry allocation of labor force. Following the source of growth approach, the contribution of human capital services to GDP growth is provided from human capital stock according to methodology section. If an owner focus is adopted, household sector shares the highest proportion of national wealth: 77%.

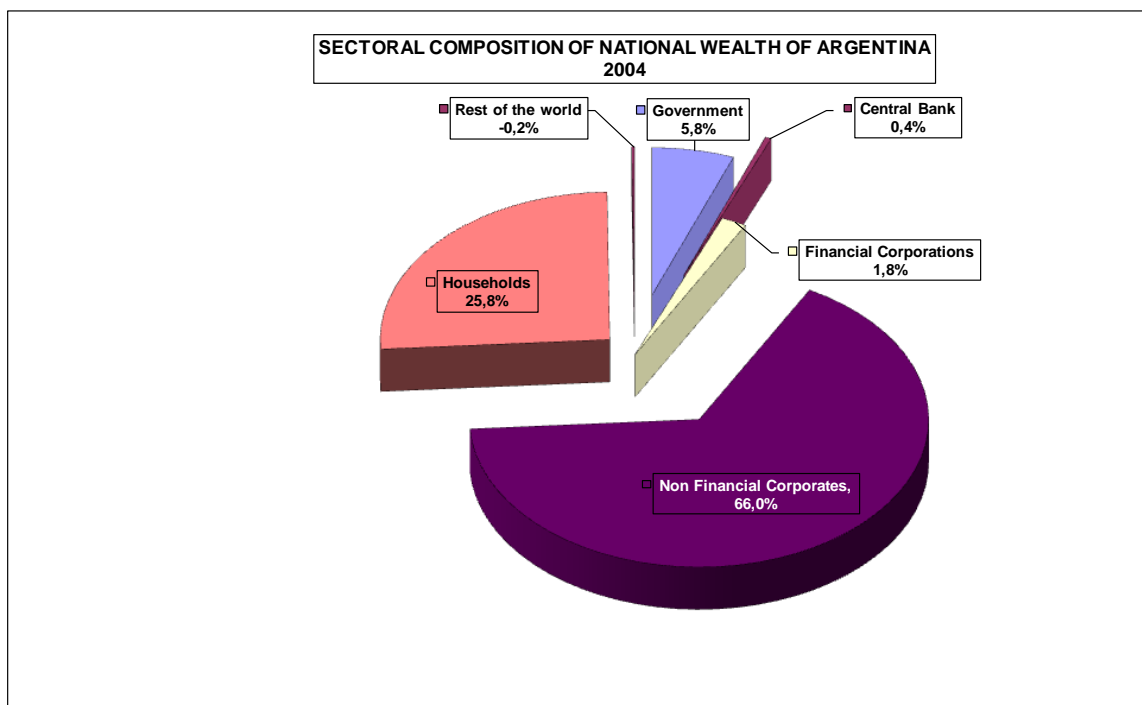


Figure 9 Sectoral Composition of National Wealth of Argentina

Source: Own estimations based on ARKLEMS database and Central Bank

One of the main issues that the National Balance Sheet highlights is the financial position by institutional sectors.

The estimation of the financial stocks of the institutional sectors, their composition and performance is an important topic to facilitate the identification of the allocation of financial savings. This point is crucial in the making of economic policy and financial regulation so as to generate the mobilization of savings to finance economic growth.

The composition of financial assets by sector reveals that the household sector is the main holder of financial assets in Argentina, followed by Banks, 18,6%, Central Bank 14,1%, Government, 8,5% and Retirement and Pension Funds, 4,6%:

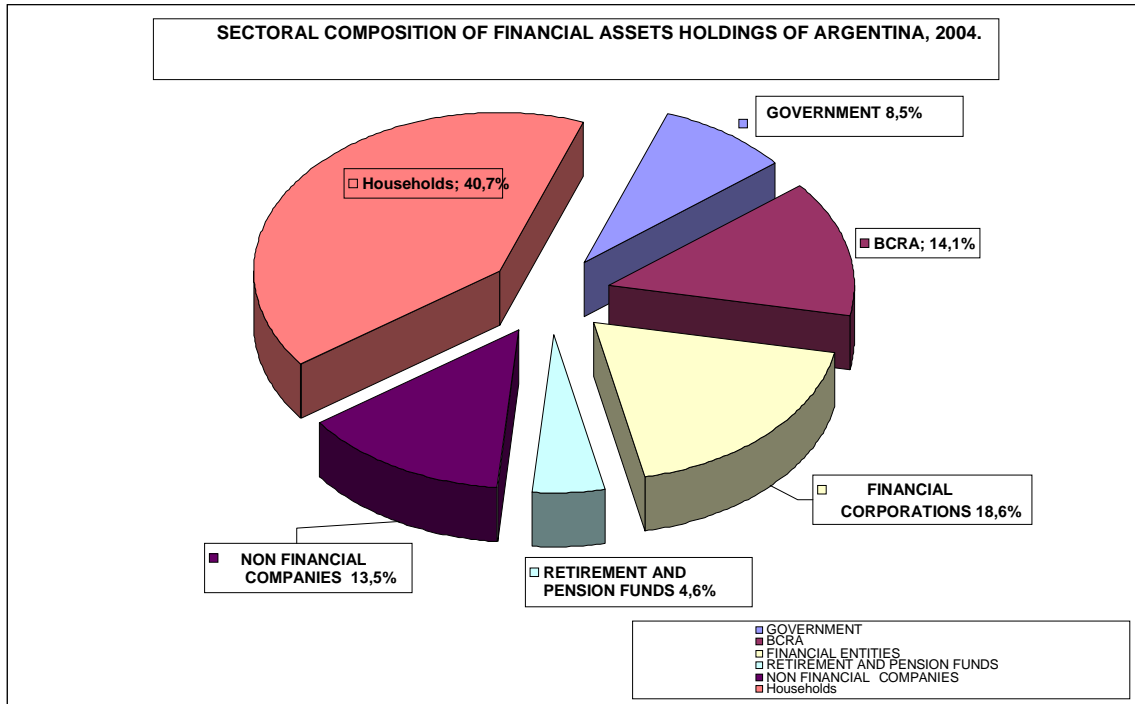


Figure 10 Composition of Financial Asset Stocks of Argentina by Institutional Sector, 2004
 Source: Own estimations based on ARKLEMS database and Central Bank

The fact that households sector has the main financial holding stock is in line with the stylized fact that from a point of view of the flow of funds approach, households are the providers of funds to non-financial corporations in the economy, directly and indirectly through financial intermediation.

As it was described before, the economic resurgence after crisis due to favorable external conditions facilitated the partial recovery of financial relationships, mainly through the exit of “corralito” at the end of 2002.

But the financial crisis is going on hysteresis effects on the Argentinean economy. The memory of the crisis, defaults and mega devaluations survives till present in the form of a higher sovereign risk premium than any other Latin-American neighboring as Brazil, Chile or Uruguay.

The analyses of the changes of the composition of the portfolio of private sector between 2001 and 2004 could reveal how the crisis of 2002 changed the financial channels by which savings is allocated towards investment.

The following figure shows the important change of the portfolio of the private sector of Argentina after crisis. The focus is pointed out on how much of the financial stocks are channeled through formal financial intermediation and how much are allocated in other instruments.

The analyses is made through the composition of financial assets in terms of those which are channeled through the financial intermediaries (bank deposits and other institutional investors: pension funds, insurance and investment funds), individual

holdings (currency and private and public securities), external assets (currency, investments, direct external investment, deposits) and non banking credit granted by non financial companies (fiscal credits, direct credit to customers and providers, other current and noncurrent assets, etc)⁵³.

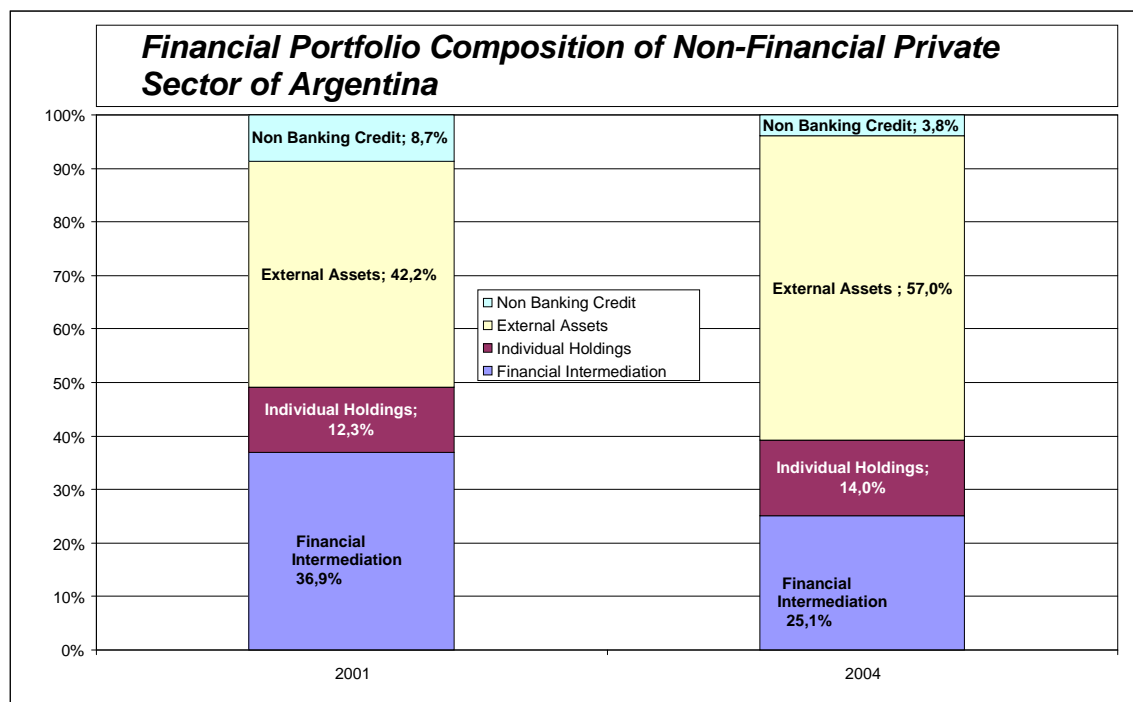


Figure 11 Financial Portfolio Composition of Private Sector of Argentina. 2001-2004
Source: Own estimations based on ARKLEMS database and Central Bank

The share of financial intermediation and non-banking credit in the private portfolio decreased from 36,9% to 25,1% and from 8,7% to 3,8% respectively. This fall was in favor of external assets, as a consequence of the devaluation and the “pesification” of foreign currency deposits in Argentina.

On the other hand, the share of individual holdings of financial assets slightly increased: from 12,3% to 14%. But its composition mainly changed in favor of currency (3,7% to 5,4%) and public debt securities holdings (4,9% to 5,2%) as a consequence of the increase in liquidity and in the price of public securities after the devaluation. Besides, the participation of free-float stocks diminished from 3,1% to 1%.

One of the most important persistent effects of the crises has been the boost of holdings of external assets, which increased from 42% to 57%.

It is relevant to point out that, according to IIP figures, portfolio investment abroad constitutes more than 70% of the total external assets holdings, which is the mirror of the historical capital flight from Argentina.

⁵³ The analyses are made at a lower level of aggregation than the balance sheet shows in tables 7 and 8.

After the crisis of 2002 year, Argentina keeps showing a low financial intermediation and dollarization of the resident's savings despite the recovery of the economy. The crisis had hysteresis effects on the portfolio composition of the Argentinean people showing a lower financial deepening, short-term maturity and a foreign assets base.

The persistent memory of the crisis has another important consequence on the growth profile of the Argentinean economy. The after crisis boom on commodity prices contributes to the recovery of economic growth and investment but with the particular characteristic that they are financed through retained earnings instead of financial intermediation.

The following table shows that the leverage of non financial corporations diminished between 2001 and 2004, explaining why the recovery of investment post crises was based on retained earnings. The government sector was the only institutional sector that increased its leverage after crisis.⁵⁴

TABLE 9		
LEVERAGE RATIO OF ARGENTINA'S ECONOMY		
Liabilities/Financial Assets	2001	2004
Total	1.1	1
Government	3.8	4
Non Financial Corporates	2.6	2.2
Households	0.2	0.04

Source: Own estimations based on ARKLEMS database and Central Bank

It is relevant to note that the change in the leverage ratio of a sector or a firm depends on the relative revaluation of the financial instruments on the asset and liability side of the balance sheet. The relative decline in the leverage ratio of the non financial corporation's sector was not only due to the bailout of part of their banking debt and partial recovery of financial assets holdings after the crisis, but also to the persistent credit rationing and lower credit demand of the argentines.

The national balance sheet could bring light on how the crisis changes the solvency of the institutional sectors. Moreover, taking into account that economic agents base their investment and savings decisions on the perceptions of their wealth, the analyses of the change of wealth by sector, is key to explain the crisis and ex post economic recovery of the Argentinean economy during the first decade of XXIst century.

A common approach is to look at financial positions by institutional sectors, as it is shown in the following table.

⁵⁴ Before the public debt restructuring of 2006.

TABLE 10			
NATIONAL WELATH, NET WORTH AND FINANCIAL POSITION OF ARGENTINA BY INSTITUTIONAL SECTORS			
-millions of pesos-			
	2001	2004	Absolute Change
TOTAL FINANCIAL POSITION (IIP)	-59.146	7.665	66.811
Government	-105.798	-295.492	(189.694)
Central Bank	2.423	17.099	14.676
Financial Corporations	11.679	16.234	4.555
Non Financial Corporations	-107.001	-182.417	(75.416)
Households	139.551	452.241	312.690
TOTAL NON FINANCIAL ASSETS	1.805.303	3.960.160	2.154.858
Government*	327.902	525.199	197.296
Financial Corporations	45.242	54.520	9.278
Non Financial Corporations	1.192.046	2.805.436	1.613.390
Households	240.113	575.005	334.893
NATIONAL WEALTH	1.746.157	3.967.825	2.221.668
Government	222.104	229.707	7.602
Central Bank	2.423	17.099	14.676
Financial Corporations	56.921	70.754	13.833
Non Financial Corporations	1.085.045	2.623.019	1.537.974
Households	379.664	1.027.246	647.582

Source: Own estimations based on ARKLEMS database and Central Bank⁵⁵

The Argentine economy changes the sign of its net financial position which is represented by the international investment position (IIP), from a negative position in 2001 to positive in 2004.

This change is explained by the change of the current account from deficit to surplus thanks to the improvement of the terms of trade and mainly to the effect of 2002 devaluation on shrinking the value of foreign direct investment in Argentina in foreign currency and the decrease of the market value of debt securities holdings by non-residents.

Thanks on the estimation of national balance sheet by sectoral consolidation, change in the IIP of the nation could be explained by institutional sector through.

The increase of the price of the main financial instruments during the economic recovery after the crisis generated an important wealth effects on the financial position of the institutional sectors.

The improvement of the net financial position of Argentina was mostly due to the increase in the stock of net financial assets of the households and, to a lesser extent, of the central bank and financial entities.

The economic recovery after the devaluation caused positive wealth effects on net creditor's sectors thanks on the improvement of their value of public and private

⁵⁵ Fixed assets of the Central Bank are implicitly included in the stock of non financial assets of the Government sector, as a consequence of the method of calculation of the capital stock.

securities holdings. This positive effect was higher than the negative effects on the liability side of the balance sheet of the government and non financial companies.

The exit of the 2002 crisis generated important opposite effects on the liability side of the balance sheet of corporate sector.

The liability side of the non financial private sector was partially wiped out mostly due to the implicit bailout caused by the conversion of banking foreign currency banking loans at a lower exchange rate than the market price after the devaluation of 2002.

But at the same time, during the recovery of the economy after the crisis, the market value of debt securities issued by corporate sector augmented, explaining the increase of nominal negative financial position of corporate sector. However as it is analysed before, the leverage of the corporate sector in 2004 was still lower than 1990 decade.

However, a previous analysis is based on liquidity financial positions of institutional sectors. It must be highlighted that the solvency of a firm, sector or nation must be analyzed taking also into account the real components of the asset side of the balance sheet, otherwise, the loss or negative wealth effects of the corporate sector during a crisis could be biased if the analyses takes only into account the financial holdings.

A company which is investing in fixed assets through external financing could have a negative financial position due to the increase in leverage, but a positive net worth, at the same time, taking into account the current cost of its capital stock or the market price of the firm that could reflect better economic perspective through its goodwill.

As we have previously seen, non financial assets constitute the main components of institutional sectors' wealth. Therefore, changes of the prices of real assets could have important wealth effects on the net worth of sectors and consequently over their consumption, investment and production decisions.

The methodology applied to estimate the national balance sheet through asset and sector consolidation allows for the inclusion of non-financial assets in the asset side to obtain the consistent net worth by sector, apart from their financial position.

Table 10 presents that the national balance sheet clearly shows the sectoral net worth result as the sum of non financial assets and financial position (financial assets net of liabilities)

The solvency study based exclusively on financial position could distort the analyses of the effects of economic resurgence of the argentine economy post crisis. This phenomenon impacted on both sides of the national balance sheet.

The value of financial holdings improved considerably, increasing the value of the assets for net creditors (specially households, Central Bank and the financial system) but also increasing the value of liabilities for debtors (government and non-financial corporation's).

As it has been shown before, the financial position of the government and non-financial sector in domestic currency deteriorated after the crisis, despite the bailout of the banking loans, as a consequence of the important increase in the value of financial instruments in the liabilities side.

Nevertheless, the financial position does not take into account the impact of the holding gains effects of the change of the value of fixed assets.

If assets are estimated based on the current cost, as it is in this case, the losses of the corporate sector due to a crisis or of revaluation of debt securities would be smaller or it could even turn into a to profit. Holdings of real assets act as a hedge against inflation or devaluation.

So the sign of the financial position could be different from that of the net worth once the wealth effects caused by changes in real asset prices of net debtor sectors are considered.

According to this research, wealth effects of the recovery of non-financial assets after the crisis have been stronger than the change in the liability side of every institutional sector of the Argentine economy.

Holding gains of fixed assets of the non-financial corporation sector more than compensated the negative financial position, showing an increment in its net worth after the 2002 crisis.

Households also increased the value of their non financial assets. This improves the already high net worth due to the positive change in the financial position.

The Government sector presents a different picture. The improvement in the absolute value of its assets is exactly offset by the increase in the absolute value of the public securities, thereby having a null effect over its net worth.

In summary, the national balance sheet shows that the post crisis economic resurgence of the Argentine economy could not only be due to the financial bailout.

The improvement of the prices of export commodities triggered impressive appreciation of non-financial assets holdings, improving the solvency of private sector.

Despite the recent resurgence of the Argentine economy, the memory of 2002 crises has hysteresis effects on the portfolio of private sector of Argentina: lower financial intermediation, lower capital market deepening, and higher share of foreign assets in private savings, invested abroad and at short term maturity.

Future steps in this research should include the update of the series of wealth and national balance sheet of Argentina. This could allow for the measurement of the effect of recent inflation acceleration and dollarization of portfolios on the net worth of households and corporations. A second step should consider the measurement of currency and maturities mismatches on the balance sheet of financial and non-financial corporations.

5. CONCLUSIONS

The main objective of this research is the measurement and analyses of the magnitude, dynamism, origins and allocation of the Wealth of Argentina through an exhaustive estimation of the National Balance Sheet by asset and liabilities type of institutional sectors.

The measurement of wealth and balance sheet of Argentina highlights the opportunities for future development of capital market and financial intermediation of domestic savings towards economic development in line with the importance that human capital and real assets have on national wealth.

The measurement of the Wealth and the National Balance Sheet of Argentina is an important methodological challenge taking into account its unstable behavior, land rich characteristic and structural change of the Argentine economy after the crisis of 2002. This experience could be taken into account to analyze the current financial crisis in developed countries.

The paper presents a methodology to measure wealth effects in the Argentinean economy after the bailout of the financial and corporate sector during the crisis of 2002 and in the post crisis resurgence based on natural resources and commodities boom.

Important methodological issues have been analyzed: asset boundary, valuation criteria and heterogeneity of the assets that the measurement of national balance sheet must take into account.

Following the SNA08, the general market valuation principle is adopted in order to aggregate assets and liabilities at macroeconomic as well as sectoral level, considering specific issues of valuation by asset type.

Produced Capital Stock has been valued at current cost following Coremberg (2004) (2009) and OECD (2008) recommendations.

Natural Capital has been measured by market value in the case of agricultural land and replicated market price by net present value approach in the case of subsoil assets. This procedure allows including natural capital in wealth and the impact of economic resurgence post crisis based on the boom of commodity prices since the beginning of XXIth century.

Following the Jorgenson, Nordhaus and Landefeld (2006), Hall (20001), Hamilton and Clemens (1999), Hamilton and Hartwick (2010), Hamilton and Ley (2010), World Bank (2006) (2011) and Hulten, Corrado and Sichel (2005) approach, national wealth should also include Human capital, goodwill, know-how and other intangibles that explain the welfare and economic progress of a nation.

The magnitude of non-observed economy of Argentina, its low capital markets deepening, rent seeking activities and financial distortions prevent the application of methodologies based on capturing intangibles through the capital market price of firms,

capitalization of intangibles expenditure records in balance sheet or by the present value of consumption.

Moreover, the non-additive value characteristic of intangible capital must adopt a conservative approach: measuring the overlapping value of goodwill and other intangibles by the value of wealth human capital by the Jorgenson-Fraumeni approach (1992) (1996) for Argentina, taking into account the measurement of Coremberg (2010) adjusted by non-reported employment and income and probability of unemployment.

This methodology is generalized to the whole economy thanks on the revaluation of IIP position at current cost and market prices following the proposition of Landefeld and Lawson (2001) and Hugens (2011).

One important feature of this approach is that our measurement of wealth is adjusted by the know-how of companies. This is called as the “dark matters” by Hausman and Sturzenegger (2006) for the case of the analyses of US net external asset position revalued by their market value, and how it changes the sign and magnitude of US IIP.

The construction of the National Balance Sheet demands the application of SNA08 symmetric valuation principle of financial assets at market price independent of the side of sectoral balance sheet they appear.

The recommended methodology allows for the consistent valuation by “marketability” and “quadruple entry” principles of all financial instruments and real assets at sectoral level compatible with the macroeconomic national wealth.

As in the case of Indonesia bank run crises during 1990`s decade analyzed by Frecault (2002), this research values real assets at current cost in order to capture its feature of hedging against inflation and devaluation to avoid the overestimation of the losses during financial crises as it is the case in commercial accounting.

Furthermore, the revaluation of fixed assets at current cost and the inclusion of procyclical goodwill in the sectoral net worth and national wealth allows for the indirect record of the “reproduced market price” of non-traded loans, besides the market value of debt securities.

The measurement of Argentina’s National Balance Sheet based on the suggested methodology shows the negative impact of unstable political and economic behavior during the 2002’s crisis and the positive effect of the present natural resources boom on the magnitude and composition of Wealth.

These empirical findings show that the measurement of wealth and national balance sheet is an important analytical instrument to measure wealth effects, which have a larger impact on the welfare and economic progress of the nations than changes in GDP.

The key empirical findings of this research are the following:

The National Wealth of Argentina is lower than that of developed countries.

Argentina's wealth performance is mostly explained by wealth effects due to the impact of changes in asset price on net worth, rather than savings flows.

Human Capital is an important component of wealth, but lower than in other developed countries, showing a slowdown of its share after the mega devaluation of 2002.

The share of natural capital in total wealth is surprisingly not so high compared to other natural resources dependent countries. However, this depends mainly on the impact of the cycle of the prices of commodities on the market value of natural resources.

Households are the main holder of the financial assets. This is in line with the stylized fact that households' savings are the main financial source of the private and public investment sector, directly and indirectly through financial intermediation.

After the 2002'crises, the IIP of the Argentinean economy changed to a net external creditor position, after taking into account the improvement of terms of trade and the shrink of foreign exchange value of FDI in Argentina.

The improvement of the position of IIP translate in an improvement of the financial position of net creditor's sectors, households and financial entities, due to the increase the main financial assets holdings after the crisis.

This positive effect was higher than the negative effects on the liability side of the balance sheet of the government and non financial companies.

The non-financial corporate sector financial position in domestic currency deteriorated after the 2002' crisis, despite the bailout of its banking loans, as a consequence of the important increase in the value of financial instruments in the liabilities side.

But it must be highlighted that the financial position does not take into account the impact of the wealth effects on the change of market value of fixed assets. Otherwise, the loss of corporate during the crisis could be overestimated.

The boom of commodity prices after 2002 crisis generated a revaluation of natural capital (land and subsoil assets) and real estate, helping the economic resurgence.

This phenomenon has been captured on the asset side of corporate balance sheet thanks to the symmetric valuation principle adopted by this research, through the revaluation of fixed assets at current costs and the inclusion of goodwill on national balance sheet.

Therefore, the resurgence of Argentinean economy could also due to the increase of the market value of fixed assets and therefore on the sectoral net worth, improving the solvency of corporations and neutralizing the financial effects on the liability side.

The main finding of this research is that the consistent estimation of national balance sheet by asset and sectoral consolidation allows for the recognition of the fact that the post-crisis economic resurgence could not only be due to the financial bailout but also to the important role played by the commodity prices boom and its impact on the value of natural resource and on fixed produced assets.

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