The Impact of the Economic Crisis on the Evolution of Tangible Fixed Assets in Romania

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Abstract

Tangible fixed assets represent the main component of the national wealth, being the material basis for the evolution of any economic and social activity. Knowing information about the volume and structure of tangible fixed assets, their functionality, their technological level, is essential for ensuring a proper management that could lead to the efficiency and quality of the economic and social processes. In this context, the paper approaches a series of theoretical aspects referring to tangible fixed assets and presents the evolution of the main field indicators, in Romania, after 1990, focusing in particular on 2008-2010 to highlight the negative influence of the global economic crisis, started at the end of 2008.

Key words: *tangible fixed assets, global economic crisis, national wealth, nominal dynamic, real dynamc*

JEL Classification: *E22*

Introduction

Tangible fixed assets represent the main component of the national wealth, being the material basis for the evolution of any economic and social activity. Basically, the quality of the economic and social processes essentially depends on the volume and structure of tangible assets, their renewal level, their functionality and their technological level.

Due to the importance of tangible assets, both at macroeconomic and microeconomic level, in time, there have been constant concerns relating to their definition in terms of value and structurally, to the continuous updating of the legislation, harmonizing the content, methodology and rules with the European and international ones.

In practice, the inventory, quantification and analysis of the tangible fixed assets are approached both statistically and from the accounting point of view, to obtain a clearer, complex and real economic image.

Therefore the paper presents theoretical aspects both in terms of accounting regulations and statistical indicators and the analysis is conceived in statistical terms.

Theoretical Aspects regarding Tangible Fixed Assets

According to statistical practice and accounting legislation, only the goods that are used for more than one year and have a higher inventory value, of a certain ceiling value, are considered tangible fixed assets.

More specifically, the Order of the Ministry of Public Finances no. 3055/2009 regarding the approval of accounting Regulations in accordance with the European directives, defines tangible fixed assets as "assets held by an entity in order to be used in the production of goods and services, to be rent to third parties or to be used in administrative purposes, for more than one year."

In terms of value, as required by law (HG 105/2007, starting with 12.02.2007), tangible fixed assets are those goods that have an inventory value higher than 1800 lei (RON) and a lifetime more than one year (according to Law 15/1994 completed and updated).

Tangible fixed assets are non-financial assets including: dwellings, other buildings (industrial buildings, commercial buildings, hotels and restaurants, buildings for education, hospitals etc.), structures (highways, roads, railways, airfields etc.), machinary and equipments (transportation equipments, broadcasting and communication equipments, medical instruments, furniture, musical instruments aso.), plantations and animals.[1]

After 1990, precisely starting with 1992, tangible fixed assets were revalued according to the specific legislation, and since 1994 the value of lands belonging to the socio-economic units has been included in the value of tangible fixed assets.

The main information sources for determining the tangible fixed assets are:

o   the balance sheets of the economic operators, social and cultural units, units of corporation, political and public organizations, centralized at national level, by various characteristics;
o   statistical surveys and researches.

The statistical characterization of tangible fixed assets, the main component of the national wealth, requires the calculation of indicators that can highlight their total value, their structure according to different characteristics, their physical condition, their movement and their usability.

Statistical indicators of Tangible fixed assets must be calculated on the total national economy, on activities of the national economy (according to NACE Nomenclature), on categories of Tangible fixed assets and types of property.

In order to determine *the value of Tangible fixed assets* it is necessary to evaluate them and this evaluation is achieved through: current prices and comparable prices[2].

Tangible fixed assets can be formulated by:

o   the initial value or the inventory (the value from the balance sheet, which is determined when Tangible fixed assets are brought into use);
o   the replacement value (the current value of reproduction);
o   the remained value (the difference between the initial or replacement value and their depreciation).

The initial, replacement or remained value represents moments or stock indicators.

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[1] *The Romanian Statistical Yearbook, 2011 edition,* Chapter Investments and tangible fixed assets, methodological notes, National Institute of Statistics, Bucharest, 2012
[2] Current prices are used when they have a relatively stable character, while comparable prices (constant) are used when prices significantly change from one year to another. The prices of the compared year are used as constant prices.

In the economic analysis for determining the efficiency or profitability indicators [3], the value of Tangible fixed assets correlates with indicators of result (Gross Domestic Product, Net Domestic Product, National Income, Turnover etc.), which are stream or interval indicators, referring to a period of time, usually one year. This is why for Tangible fixed assets it is necessary to calculate an interval indicator, represented by *the annual average value ($\overline{F}$)*:

$$\overline{F} = \frac{\sum_{t=1}^{12} VI_t}{12} \tag{1}$$

where: VI_t – monthly inventory value of tangible assets.

Tangible Assets' Structure Indicators

A very important aspect in the analysis of Tangible fixed assets is their structure that highlights the total share of various groups.

The structure of Tangible fixed assets according to the characteristic, on which their grouping is made, is calculated using the following formula:

$$YF = \frac{F_i}{\sum F_i} \cdot 100 \tag{2}$$

where F_i represents groups of tangible assets, created after certain features.

The main criteria (characteristics) on which the grouping of tangible fixed assets is made are:
- activities of national economy, according to NACE nomenclature;
- types of ownership;
- types of tangible fixed assets (lands and buildings, technical equipments and machinery, other equipment, facilities and furniture, tangible fixed assets in progress)[4]

Physical Condition's Indicators of Tangible Assets

The depreciation indicator (Iuz) is calculated as a ratio between the depreciation of tangible fixed assets (the level of amortization) and their inventory value at a certain time:

$$Iuz = \frac{Uz}{VI} \cdot 100 \tag{3}$$

where:

Uz – depreciation (the level of amortization)

VI – inventory value

The utility status indicator (Isut) is calculated as a ratio between the remained value of tangible fixed assets and their inventory value at a certain time:

$$Isut = \frac{VR}{VI} \cdot 100 \qquad Isut = 100 - Iuz \tag{4}$$

where: VR – the remained value

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[3] S t r o e s c u , I . , P o p e s c u , M . L ., *Eficiență economică*, Editura Fundației România de Mâine, București, 2012, p. 88
[4] According to tangible assets classification from the Order of the Ministry of Public Finances no. 3055/2009 regarding the approval of accounting Regulations in accordance with the European directives.

Tangible Fixed Assets' Dynamic Indicators

The dynamics of tangible fixed assets compares their value in nominal or real terms at two different moments in time, 1 and 0.

The nominal dynamics of tangible fixed assets (IF) is calculated on the relationship:

$$IF = \frac{F_1}{F_0} \cdot 100 \tag{5}$$

The real dynamics of tangible fixed assets (IF^R) is calculated on terms of comparability, based on the prices index of tangible fixed assets according to the relationship:

$$IF^R = \frac{IF}{IP_{1/0}} \cdot 100 \tag{6}$$

or

$$IF^R = \frac{F_1^{comp}}{F_0} \cdot 100 \tag{7}$$

where: $\quad F_1^{comp} = \frac{F_1}{IP_{1/0}}$

The structure and dynamics of tangible fixed assets are reflected in a document entitled *The balance of tangible fixed assets* (Table 1).

The Balance is an accounting document at the level of economic operator, institution and statistically at meso-economic and macroeconomic levels.

Table 1. The balance of tangible fixed assets

	Existing at the beginning of the year F_0	Inputs Investments Transfers Re-evaluation I	Outputs Taking of service Transfers Re-evaluation E	Existing at the end of the year F_1
Total tangible fixed assets				
o by categories o by NACE activities o by type of ownership				

Based on this balance, beside the dynamics indicators previously presented, it can be analysed the movement of tangible fixed assets by using the balancing formula:

$$F_1 = F_0 + I - E \tag{8}$$

where: I – inputs; E – outputs.

The dynamic of tangible fixed assets must be carried out in terms of comparability and it is determined by their movement between moment 0 and 1.

Specific Indicators of Tangible Fixed Assets

A series of specific indicators can also be calculated on the basis of this balance:

The indicator of renewing the tangible fixed assets represents the ratio of new tangible fixed assets, commissioned during the year, expressed in inventory value, in total value of tangible fixed assets existing by the end of the year, also expressed in inventory value.

$$I_{in} = \frac{PF}{F_1} \cdot 100 \qquad (9)$$

The indicator of taking of service the tangible fixed assets represents the ratio of the inventory value of tangible assets, removed from service during the year, in total value of tangible fixed assets existing at the end of the year, also expressed in inventory value.

$$I_{sf} = \frac{SF}{F_0} \cdot 100 \qquad (10)$$

The Evolution of Tangible Fixed Assets in Romania

After 1990, the dynamics of tangible fixed assets in Romania has been an ascending one, clearly influenced by the dynamics of different sectors of economy, the dynamics of prices, and generally by the evolution of the economy.

In this period there were numerous changes relating to the calculation methodology of tangible fixed assets that affected the content, the coverage, the structure by activities of national economy, by categories, the value locution. Unfortunately this influenced the comparability of the series of statistical data.

Therefore, experts often refer to various ad hoc analysis procedures in their analysis of tangible fixed assets, as well as of all value indicators, during a long period of time[5]. Thus taking into account the numerous methodological changes, the dynamics of tangible fixed assets can not be presented as a unitary evolution for the entire period, but fragmented into three segments (Figure 1).
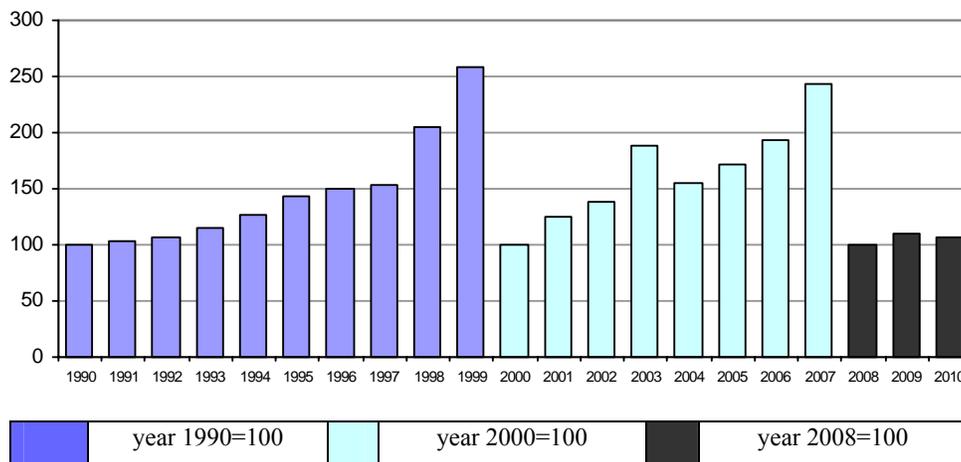
Fig. 1. The total dynamics of tangible fixed assets in Romania, during 1990-2010 (%)

Data source: *Romanian Statistical Yearbook,, edition 2011*, Chapter Investments and tangible fixed assets, National Institute of Statistics, Bucharest, 2012

The first period is 1990-1999, at the end of which the total value of tangible fixed assets was 2.5 higher than 1990's level, the increase being more pronounced in 1998 and 1999.

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[5] D o b r e s c u , E . , *Modelling the Romanian Economy: some data problems,* Romanian Journal of Economic Forecasting, nr.1/2007, p. 7

The following period, 2000-2007 maintained the previous period's trend of increase, the value of tangible fixed assets in 2007 being 2.4 higher compared to 2000. But the rhythm of increase is more alert, except for 2004 when a decrease was recorded, comparing to the previous year.

The last period 2008-2010 is clearly different from the other two, with a much slower increase, the level of tangible fixed assets in 2010 being only with 6.8% higher compared to 2008 and dropping by 3.4% compared to 2009.

Obviously it's about the influence of the global economic crisis, started by the end of 2008 that clearly affected Romania too.

Further, in the analysis of the level, dynamics and structure of the tangible fixed assets in Romania we have only elaborated the period after 2008, for two reasons:

o   the first reason is that starting from January 1st, 2008, in order to classify indicators on activities, they turned to version NACE Rev.2, which has many differences for the majority of activities compared to the previous version NACE Rev.1, and the comparison with previous periods would be irrelevant;

o   the second reason is that at the end of 2008 the global economic crisis started and its consequences are also obvious in our country's case.

Thus, in nominal terms, at the end of 2010 the value of tangible fixed assets in Romania was 1563.6 billion lei, with 16.1% higher than the end of 2008.

But in real terms, as we previously noticed, the increase of tangible fixed assets in this period was only 6.8%. The dynamics of tangible assets, both in nominal and real terms, is presented in Table 2.

Table 2. The dynamics of tangible fixed assets in Romania, during 2008-2010

-% -

Indicators	**2008**	**2009**	**2010**
Dynamic index	*year 2008 = 100*		
o nominal	100,0	110,2	116,1
o real	100,0	110,2	106,8
Dynamic index	*previous year = 100*		
o nominal	100,0	110,2	105,4
o real	100,0	110,2	96,9

Data source: The data are calculated based on *Romanian Statistical Yearbook, edition 2011*, Chapter Investments and tangible fixed assets, National Institute of Statistics, Bucharest, 2012

The data about a chain based dynamics (the previous year = 100) emphasize the different dynamics of 2009 and 2010, the effects of the crisis being felt more powerfully in 2010 when there is a decrease of 3.1% of the value of tangible assets, compared to 2009.

According to the structure by activities of the national economy, the situation of tangible fixed assets during the analyzed period (table 3) shows that the largest share is held by industry, with over 40 %, but dropping by 3.8% compared to 2008.

Public administration is second in place as share of total fixed assets, with about 30%, share that increases by 7% in the analyzed period.

Among the highlighted activities, education has the lowest percentage of total tangible assets, with less than 1%, as same as health, that is almost in the same situation.
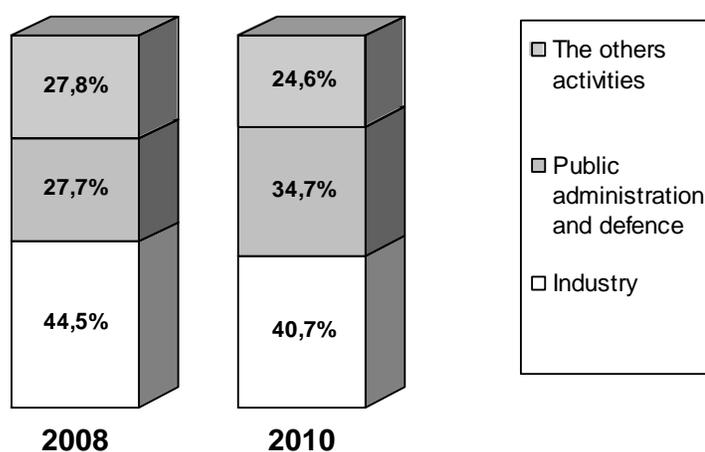
Table 3. The structure of tangible fixed assets in Romania, on national economy activities, during 2008-2010

-% -

Indicators	2008	2009	2010
Total	**100,0**	**100,0**	**100,0**
Agriculture, hunting and forestry	1,9	2,3	1,8
Industry	44,5	41,7	40,7
Construction	4,9	5,5	4,3
Trade	6,1	5,8	5,5
Transport and storage	4,3	4,2	2,9
Hotels and restaurants	1,1	1,1	1,1
Public administration and defence, social insurance of public sector	27,7	31,1	34,7
Education	0,1	0,04	0,03
Health and social assistance	0,2	0,2	0,2
The others activities	9,2	8,1	8,8

Data source: The data are calculated based on *Romanian Statistical Yearbook, edition 2011*, Chapter Investments and tangible fixed assets, National Institute of Statistics, Bucharest, 2012

Thus, only two activities own almost two thirds of all tangible fixed assets, fact that is also illustrated by the graphic representation (Figure 2)

Fig. 2. The structure of tangible fixed assets in Romania, on national economy activities, in 2010 compared to 2008

Data source: The data are calculated based on *Romanian Statistical Yearbook, edition 2011*, Chapter Investments and tangible fixed assets, National Institute of Statistics, Bucharest, 2012

Analyzing the structure of tangible fixed assets on industrial activities we notice that the highest share is that of the mining industry with almost 60% of the total value of assets and that the manufacturing industry owns less than 25% (Table 4).

Table 4. The structure of tangible fixed assets in Romania, on national economy activities, during 2008-2010

- % -

Indicators	2008	2009	2010
Total industry	**100,0**	**100,0**	**100,0**
Mining	60,2	58,6	57,5
Manufacturing	26,8	27,4	27,5
Electricity, gas, steam and air conditioning production and supply	11,5	12,4	13,1
Water supply; sewerage, waste management and decontamination activities	1,4	1,7	1,9

Data source: The data are calculated based on *Romanian Statistical Yearbook, edition 2011*, Chapter Investments and tangible fixed assets, National Institute of Statistics, Bucharest, 2012

As regards the structural changes, they are not major but reveal a decreasing trend of the total share of tangible fixed assets in the mining industry, while there is an increase in the other industrial activities.

By forms of ownership, at the end of 2010, 64.5% of the total of tangible fixed assets was majority state property and 35.5% private majority, the situation being similar during the analyzed three years (Figure 3).
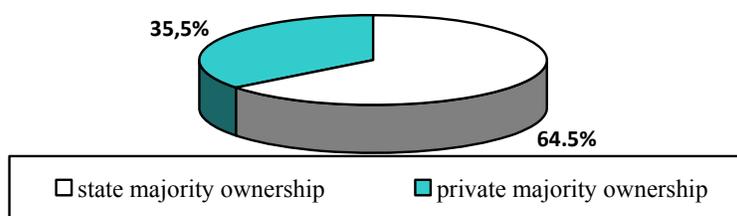
Fig. 3. The structure of Tangible fixed assets in Romania, on national economy activities, in 2010

Data source: The data are calculated based on *Romanian Statistical Yearbook, edition 2011*, Chapter Investments and tangible fixed assets, National Institute of Statistics, Bucharest, 2012

The analysis of the movement of tangible assets, namely the existing at the beginning and the end of year, the inputs and outputs, is made on the basis of the Balance of tangible fixed assets (Table 5).

The balance of tangible fixed assets highlights both their dynamics and structure. Thus, in nominal terms we notice an increasing dynamics of inputs, especially in 2009 when, as a consequence to the beginning of the economic crisis, the value of inputs was less than half diminished compared to 2008, the same trend being maintained also in 2010, even though it evinces an attenuated rhythm and an increased dynamics of outputs.

Table 5. The balance of tangible fixed assets in Romania, during 2008-2010

Lei million current prices

Year	Existing at the beginning of the year	Inputs	Outputs	Existing at the end of the year
2008	890331,5	613850,9	157563,0	1346619,4
2009	1331912,2	285134,4	133476,2	1483570,4
2010	1454158,2	279931,6	170459,0	1563630,8

Data source: *Romanian Statistical Yearbook, edition 2011*, Chapter Investments and tangible fixed assets, National Institute of Statistics, Bucharest, 2012

Relying on the balance we can determine the inputs and outputs coefficients of tangible fixed assets, which in this case are the following (Table 6)

Table 6. The inputs and outputs coefficients of tangible fixed assets in Romania, during 2008-2010

Years	The inputs coefficient (%)	The outputs coefficient (%)
2008	45,6	17,7
2009	19,2	10,0
2010	17,9	11,7

Data source: The data are calculated based on *Romanian Statistical Yearbook, edition 2011*, Chapter Investments and tangible fixed assets, National Institute of Statistics, Bucharest, 2012

We note that in 2008 the highest level of input coefficient was recorded, of 45.6%, while in the following two years the input percentage dropped at less than 20%.

Also, 2008 records the highest value of outputs, 17,7% and 2010 records an output percentage about of 10%.

Conclusions

The analysis of tangible fixed assets at macroeconomic level represents a very important approach in diagnosing the economic potential of a country. The methodological changes recorded after 1990, referring to the tangible fixed assets and generally to the value indicators, make this approach quite difficult to achieve under comparability conditions for longer periods of time.

However, although we fragmented the periods of analysis, we could still highlight the manifested trends in the dynamics of tangible fixed assets in Romania, during the post-December period.

One can clearly notice three distinct periods: the first two, 1990-1999 and 2000-2007, with an ascending evolution and a trend of increasing the rhythm of growth during the second period and the period 2008-2010 when the dynamics of tangible fixed assets becomes almost linear, with a trend of decrease.

Due to methodological issues we detailed only the period 2008-2010 when we highlighted the negative effect of the economic crisis, triggered by the end of 2008, which considerably slows down the rhythm of increase in 2009 and aggravates it in 2010.

Structurally, the highest percentage of tangible fixed assets belongs to the state majority sector (over 60%), approximately 40% is found in industry and nearly 30% belongs to the public administration and defence activities.

In industry, more than 50% of the tangible fixed assets are found in the mining industry, while the manufacturing industry owns only a quarter of the total tangible fixed assets if the industry.

As regards the movement of the tangible fixed assets during 2008-2010, 2008 was the most active year, the inputs representing approximately 45% of the recorded value by the end of the year and outputs being approximately 17% of the value at the beginning of the year.

Of course, the analysis of tangible fixed assets would require more detailed approaches[6], but the lack of information and the difficulty to compare the existing ones determined us to dwell only on the presented aspects that we consider to have created a fairly relevant image of this field.

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[6] I a c o v o i u , V . B . , S t r ă o a n u , B . M . , T e o d o r e s c u , C . D . , (2011*) Instrumente şi tehnici de analiză a stării economico-financiare a firmei*, Editura Karta-Graphic, Ploieşti, p. 191

References

1. *** HG nr. 105/2007 privind stabilirea valorii de intrare a mijloacelor fixe.
2. *** Legea nr. 15/1994 *privind amortizarea capitalului imobilizat în active corporale si necorporale.*
3. *** Ordinul Ministerului Finanţelor Publice nr. 3055/2009 *pentru aprobarea Reglementărilor contabile conforme cu directivele europene.*
4. *** *Romanian Statistical Yearbook, edition 2011*, Chapter Investments and tangible fixed assets, Methodological notes, National Institute of Statistics, Bucharest, 2012.
5. D o b r e s c u , E . , *Modelling the Romanian Economy: some data problems,* Romanian Journal of Economic Forecasting, nr.1/2007.
6. E n e a – S m a r a n d a c h e , I . , M u r ă r i ţ ă , I ., (2007), *Statistică microeconomică, Editura Universităţii Craiova.*
7. I a c o v o i u , V . B . , S t r ă o a n u , B . M . , T e o d o r e s c u , C . D . , (2011*) Instrumente şi tehnici de analiză a stării economico-financiare a firmei*, Editura Karta-Graphic, Ploieşti.
8. I o n e s c u , L . , (2007), *Analiză Economico-Financiară,* Editura Biblioteca, Târgovişte.
9. P e t r e s c u , S ., (2010), *Analiză şi diagnostic financiar-contabil. Ghid teoretico-aplicativ,* Editura CECCAR Bucureşti.
10. R u s u , C . , (2006), *Diagnostic economico-financiar,* vol I, Editura Economică, Bucureşti.
11. S t r o e s c u , I . , P o p e s c u , M . L ., *Eficienţă economică*, Editura Fundaţiei România de Mâine, Bucureşti, 2012.

Impactul crizei economice asupra evoluţiei imobilizărilor corporale în România

Rezumat

Imobilizările corporale reprezintă principala componentă a avuţiei naţionale, constituind baza materială pentru desfăşurarea oricărei activităţi economico-sociale. Cunoaşterea informaţiilor referitoare la volumul şi structura imobilizărilor corporale, la starea de utilitate, la nivelul tehnologic al acestora, este esenţială pentru asigurarea unui management corespunzător, care să conducă la eficienţa şi calitatea proceselor economice şi sociale. În acest context, lucrarea abordează o serie de aspecte teoretice legate de imobilizările corporale şi prezintă evoluţia principalilor indicatori din domeniu, în România, după anul 1990, insistând în special asupra perioadei 2008 – 2010 pentru a evidenţia influenţa negativă a crizei economice globale, declanşate la finele anului 2008.