

DEPRECIATION TERMS AND METHODS AT COMPANY AND MACROECONOMIC LEVEL IN HUNGARY

Mária Lakatos⁶⁴

Éva Karai⁶⁵

László György⁶⁶

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Abstract: *The term depreciation differs in the System of National Accounts from the accounting. Calculation and presentation of depreciation and amortization can also vary by accounting and tax systems. Our research aims to compare the depreciation terms and requirements of National Accounts with the of the Hungarian Accounting Act, the International Financial Reporting Standards (IFRS) and the Hungarian Corporate Tax Act. The presented accounting depreciation and amortization can vary due to the different recognition and measurement requirements, the applied accounting policy for fixed assets, determination of useful life, residual value and depreciation methods. The Corporate Tax Act uses the same terminology as the Accounting Act but calculates depreciation differently. The detected differences in the terminologies and methods at economic, accounting and taxation level can be derived from the different underlying purposes of the regulations. As a consequence of these the aggregated accounting or tax depreciation of companies does not reflect the economic depreciation.*

Keywords: *depreciation, IFRS, Hungarian Accounting Regulation, System of National Accounts*

1. INTRODUCTION

In Hungary, depreciation is calculated differently according to the rules of accounting, economics, and the corporate taxation since 1992, the effective date of the first Accounting Act 0. This difference was further pronounced with the spread of the International Financial Reporting Standards (IFRS) 0, which apply a measurement method that differs significantly from the Hungarian methods, influencing the depreciation basis of the assets and the amount of the profit before tax. IFRS amortization created, therefore, a further depreciation value in addition to the already-existing three values.

In the European Union, development is, however, a multidimensional concept. GDP is the generally applied indicator of economic output and it is calculated by determining, on the one hand, the total income of the operators of a given economy, and on the other hand, the total amount spent on products and services, as the two sides of an equation. This allows regions to be ranked based on their development (Mankiw, 2002).

The System of National Accounts 0 play a fundal role in the calculation of GDP, a common denominator which measures output in the macroeconomic accounts based on Keynesian

⁶⁴ John von Neumann University, HU-6000 Kecskemét, Izsáki út 10., Hungary

⁶⁵ John von Neumann University, HU-6000 Kecskemét, Izsáki út 10., Hungary

⁶⁶ John von Neumann University, HU-6000 Kecskemét, Izsáki út 10., Hungary

concepts in a market context. GDP is one of the most common indicators, and the component we are studying comprises the various techniques used to measure non-housing investments in the business sector.

Even the application of GDP can divide experts. There has been a decades-long debate about whether development itself, a multidimensional concept with multiple indicators, can be boiled down to quantitative indicators. In addition, measurement results greatly depend on the spatial differences of a given region. For instance, inequality indicators have a higher value in a sub-region consisting of multiple towns, even if all the other characteristics are identical. Even the different sizes of sub-regions can affect the end result (Egri, 2017). The deviation of measurement results due to regional differences and the application of GDP per capita, an absolute indicator, lead to increasingly heated debate, yield different measurement results, and indicate different conceptual conclusions. Among others, Fagerber, 1987, Porter, 1998 and Krugman, 1991 0, are oft-cited experts who developed different hypotheses based on the same data.

Our research focuses on the measurement of the value of available goods, more specifically, we analyze the measurement of replacement. As it is, available production assets must be replaced. This is what depreciation reflects by demonstrating deterioration, a concept all financial disciplines interpret and calculate differently, as we will see. In our paper, we compare depreciation calculated when measuring GDP with the Hungarian Accounting Act 0 and IFRS providing the boundary conditions for business and the rules of corporate taxation, with some international outlook.

2. ECONOMIC DEPRECIATION

It was the proposition of the United Nations, the System of National Accounts (SNA) of 1953, which created a basis for the comparison of the system of national accounts. It has been amended several times since its introduction. EU Member States are obliged to apply Regulation (EU) No 549/2013 of the European Parliament and the Council, providing a methodology for Member States to recognize economic events in an identical manner and ensure their comparability 0 0.

Following the requirements of the EU Directive mentioned above, the statistical categorization divides economic assets into financial and non-financial assets. Non-financial assets held by entities can be divided into two further groups, produced and non-produced assets, where the latter can still be divided to in production used and non-used assets, both in terms of origin and Fixed assets used in production process and (among the goods that are also in production used but not produced) patents, know-how and licenses have measurement relevance for our topic. Whereas Hungarian taxation laws rely on the Accounting Act in determining and categorizing individual goods, we will also apply this aspect to compare the concepts of tangible assets and intangible assets in the Accounting Act with the concepts applied in the national accounts.

3. ACCOUNTING DEPRECIATION

According to the Hungarian Accounting Act 0, the depreciable amount can be the initial cost of the asset or the carrying amount which is the initial cost after deduction of accumulated depreciation and accumulated impairment. Fixed tangibles and intangibles can be revalued to

the higher market value but revaluation - on the contrary to IFRS 0 – it does not affect the depreciable amount of the asset and so the amount of depreciation.

The initial cost of an asset is the combined number of items individually linked to the asset and incurred for the purposes of acquiring, creating or commissioning that asset prior to its commissioning or delivery to the warehouse. The initial cost comprises the purchase price reduced by discounts and increased by surcharges, the consideration payable for transport, manipulation, foundation, installation, commissioning, and intermediary activities incidental to the procurement, commissioning and warehouse delivery of the assets, and the commission charges, taxes, parafiscal items, and customs charges.

IAS 16 and IAS 38 define cost as the amount of cash or cash equivalents paid or the fair value of the other consideration given to acquire an asset at the time of its acquisition or construction or, where applicable, the amount attributed to that asset when initially recognized in accordance with the specific requirements of other IFRSs.

The definition appears to be similar to the in the Hungarian Accounting Act. There are, however, some items that imply a different practice with respect to the basic principles defined in the standards and the requirements of the Accounting Act. From these we highlight the following:

For property, plant and equipment, IAS 16 requires the allocation of the amount initially recognized in respect of an item of property, plant and equipment to its significant parts. The Accounting Act, however, does not require this allocation. This is decisive for determining useful life, residual value, and the proper depreciation method.

IAS 16 requires that the initial estimate of restoration, dismantling, and removal costs be recognized in the cost of property, plant and equipment. The Accounting Act does not allow the capitalization of these costs. Therefore, it can cause a considerable difference in terms of cost of real estate and production equipment.

In determining the cost of purchased fixed assets, the Accounting Act gives priority to the invoiced price, irrespective of the payment deadline of the invoice. The initial cost calculated according to the Accounting Act may, therefore, include a financing element due to a long-term payment deadline. In any case, this is consistent with the requirements of the Accounting Act concerning the acquisition value of borrowing costs. Due to the Hungarian regulations concerning the recognition of cash discounts, the cost of an asset can have an element that is not paid for at all.

The Accounting Act regards the borrowing costs directly linked to the procurement and production of an asset as part of its acquisition value. By contrast, IAS 23 stipulates conditions for their inclusion in the initial cost and limits this only for qualifying assets.

The learning and training costs of a new technology can also account for a considerable amount in the cost of tangible or intangible assets. While the Accounting Act explicitly requires this for the cost of investments, IAS 16 and IAS 38 emphatically forbid their recognition as assets. The primary reason for this is that, though training directly contributes to the normal use of an asset, it is still not to be capitalized, because it does not meet the recognition requirements concerning assets.

The Accounting Act provides entities with a choice, to be made in their accounting policies, regarding the recognition of development costs as assets, contrarily to international standards where costs incurred in the development state must be capitalized.

The Accounting Act is less strict than the international accounting standards in terms of recognizing start-up and restructuring costs as assets.

According to the Accounting Act, the starting date of depreciation is the date of commissioning, i.e. when the use for the intended purpose begins. In the system of IFRS, depreciation of tangible or intangible assets should start when they are available for use. According to the Hungarian rules, depreciation and amortization can be recognized for normally used assets only, meaning that the recognition of depreciation ends if the tangible asset is removed from the scope of normal use, the asset reaches its planned residual value, or it is derecognized. In the IFRS system, just like the starting date, the end date of depreciation is independent from normal use; this is only limited by derecognition or holding for sale.

The regulations concerning residual value and useful life also reveal fundamental conceptual differences. The Accounting Act regards these as important in the planning of depreciation. The accounting treatment of the useful life and the residual value is basically static, although if the residual value or the useful life change considerably, the Act allows, but does not require, corporations to make corrections. By contrast, the standards require the revision of useful life and residual value of both tangible assets and intangible assets for each financial year-end, and the correction of the estimation if there is a considerable difference. The standard on tangible assets requires the same for the residual value. For intangible assets, however, IAS 38 Standard requires that the residual value of intangible assets be different from zero only in specific cases where the residual value can be reliably measured (there is a commitment to sell the asset at the end of its useful life or the asset has an active market through that residual value can be determined, and it is probable that such a market will exist at the end of the asset's useful life). Dynamism, however, applies here as well. If, for instance, a buyer appears for the intangible asset and buys the asset at the end of its useful life, the residual value will appear at the year-end. IFRS does not limit the duration of the useful life. If this life is indefinite, then the recognition of depreciation is not allowed. By contrast, the Accounting Act is restrictive and sets a five-year maximum duration for completed experimental developments. It requires that goodwill be depreciated within 5 to 10 years, while, for the latter case, IAS 38 emphatically forbids the recognition of depreciation.

We have found fundamentally different approaches in the determination of impairment as well. Under IFRS, impairment is recognized for tangible or intangible assets if the recoverable amount is less than the carrying amount, and the recoverable amount is determined by the higher of the fair value at the financial year-end or the value in use calculated from the expected future cash flows. In the case of extraordinary write-off, the Hungarian Accounting Act usually ignores the capability of assets generating future cash flows, i.e. their value in use. For the recognition of an extraordinary write-off, the Hungarian Accounting Act requires that the market value of normally used assets be durably low and the market value of assets not suitable to be used for their intended purpose be expected durably low. Another difference is that the Hungarian Accounting Act requires that write-off be recognized not in the value applicable on the closing date but in the one applicable on the date of balance sheet preparation. This requirement implies that the tangible or intangible assets in the balance sheet have a value that can relate to the performance and events of the next business year.

4. DEPRECIATION IN CORPORATE TAXATION

The Corporate Tax Act applies the concepts defined in the Accounting Act, i.e. it distinguishes non-current assets from current assets. For non-current assets, it requires the recognition of depreciation for tangible assets and amortization of intangible assets, while it forbids that for non-current financial assets and the entire class of current assets. The basis for the depreciation (amortization) of tangible and intangible assets is their cost. There are no differences between

the two acts in this regard. However, amortization and depreciation is still calculated differently under the Accounting Act and the Corporate Tax Act.

The basic principle is based on the primary function of the Corporate Tax Act; to ensure tax revenues, it determines the mandatory depreciation and amortization rates based on a value-based, linear method.

The Corporate Tax Act calculates depreciation in the following procedure: In the first step, it neutralizes the effect of the accounting depreciation, i.e. it adds the (negative) item recognized as expense according to the Accounting Act to the calculated tax base, then in the second step it reduces the same with the tax depreciation, applying the rates specified in the Corporate Tax Act for each product group individually.

The tax base is a category linked to the payment obligation and not the profitability of the entities. To put it in a slightly more polarized way, it is a calculated base with the sole purpose of providing a proper basis for collecting fiscal revenues.

Another important difference is the treatment of the residual value. The Accounting Act allows for the inclusion of the residual value in the calculations, i.e. depreciation and amortization are calculated on the base of the depreciable amount, i.e. the cost reduced with the residual value, while the Corporate Tax Act does not allow this reduction of the initial cost. Assuming the same depreciation rates in the accounting and the corporate tax, if there is some residual value, then the accounting depreciation or amortization is less than the tax depreciation or amortization, because the basis for accounting depreciation is lower.

Differences in the amounts of depreciation and amortization calculated according to the Accounting Act and the Corporate Tax Act provide various options for tax optimization. These are as follows:

- If the rate, the useful life, and the depreciable amount according to the Accounting Act and the Corporate Tax Act are identical, then profit before tax will increase and decrease by the same amount in each year of the useful life. This means the procedure does not have any implications on tax and tax base.
- If we include residual value in the calculation of depreciation according to the Accounting Act, then the increasing factor (assuming the same depreciation rate) is always lower than the reducing factor, i.e. the tax base is lowered by a more than it is increased. Therefore, the tax liability will be lower.
- If different depreciation rates and accelerated amortization are applied in the accounting, and the depreciable amount is the same, then the payment obligation will be higher in the short run and lower in the long run. However, at the end of the depreciation or amortization period, the two items wholly offset each other.
- For extraordinary write-off (impairment), there is always an increasing effect on the tax base but the decreasing effect is limited.

In summary, on the one hand, the level of the residual value and the depreciation rate can result in a lower nominal tax liability. On the other hand, by taking into account the time value of money, scheduling the payment of the tax liability can also be an advantage.

5. COMPARISON OF DEPRECIATION TERMS

The Accounting Act specifies the categories of non-current and current assets, and tangible assets, intangible assets and financial assets have separate lines under non-current assets in the balance sheet, where tangibles and intangibles can be depreciated. The ESA 2010, however, does not make this kind of differentiation. It applies the fixed asset category, which includes both tangible and intangible assets such as the result of R&D, which is a product constituting intellectual property.

Another difference is that the investment concept of the system of national accounts is separated from gross fixed capital formation, which is a broader category. This investment category does not include, for instance, assets procured under leasing arrangements or assets constituting intellectual property, while gross fixed capital formation includes not only the procurement of new and used fixed assets, but also the value of assets procured under financial leasing arrangements and the value of restoring non-produced fixed assets.

The system of national accounts requires the application of the market price in valuation as a general principle, increased, for instance, by the incidental expenses related to used assets, which then increase the value of the used fixed asset. Renovation projects of high value, if they increase the life and efficiency of the asset in question, are also added to gross fixed capital formation as value-increasing investments.

However, the values change year by year, as by definition of national accounts 0, the gross value of fixed assets includes the value of all fixed assets still used at the actual or estimated acquisition prices of similar new assets, irrespective of the age of the used assets. The emphasis is on the current acquisition prices (from the year in question), calculated based on separate investment price indices.

For intangible assets a cost-based estimation is applied under the EU directives according the features of these assets, mainly produced by own production.

Proprietary rights and goods acquired under a durable leasing arrangement belong to non-produced assets. Any increase in their value is, therefore, not recognized as accumulation, but as the balance of acquisition and selling in the capital account.

The statement for each institutional sector is prepared based on this, similarly to the balance sheet applied in accounting.

Naturally, gross asset value includes amortization as well. Growth over a given period does, however, obviously require the deduction of annual amortization, deterioration of the gross value.

This is where we can find considerable differences. While accounting applies the principle of actual deterioration, corporate taxation focuses on state revenues, and the system of national accounts considers depreciation in an economic sense. Depreciation calculated for accounting purposes is primarily for-profit optimization. In the accounting term the depreciable amount is the systematic allocation of the depreciable amount over the useful life of the asset, and not the economic life of the asset. Kim and Moore highlight the subsidy effect for firms when the accounting rate for depreciation is higher than economic rate 0. This means that macroeconomics does not calculate depreciation in accounting term but consumption of fixed

capital, which is different, even if they are sometimes used as synonyms. There are two statistical approaches to consumption of fixed capital: One is based on time series, i.e. the asset loses its value as it ages, the other one is depreciation due to obsolescence. In other words, depreciation and productive capital is calculated — taking the distribution of scrapping also into account — using statistical methods from two factors. One is the relation between age and price and the other is the relation between the age and efficiency of the asset. Under company taxation depreciation process usually applies the straight-line method.

The starting point is again the value. The OECD recommendation issued in 2009 suggests the application of the value determined in accounting or taxation terms only with reservations, primarily due to the different price indices. The current consensus is that 200 investment price indicators are weighed: Based on monthly Laspeyres price indices, quarterly indices are calculated and these are then converted using the sectoral Paasche-weights. The annual price indices broken down into asset groups and sectors are then aggregated by chaining, which produces the annual statistics in a comparable value 0.

As we can see, the relationship between accounting and statistical concepts and methodologies is rather weak. Therefore, it is obvious that the aggregation of assets in corporate balance sheets does not produce the amount of the relevant national account.

The method of collecting statistical information in Hungary corresponds to the international requirements and is complemented by quarterly and annual data collection. We can, however, see a considerable difference between the accounting approach and the statistical approach here as well, as quarterly data collection covers businesses with more than 50 employees, while annual data collection covers businesses with more than 20 employees. Though most of the investments are not made at small and medium-sized enterprises; the estimate, however, does not show their specificities.

Expected life used to calculate the net value also show a difference. Applying the above-mentioned statistical methods, Cseh calculated estimated expected economic lives from the data sources using data from a fixed-asset survey in 2000 0. Combining this with the expert opinions, to which we added the time periods calculated from the corporate tax rates, we got the following results:

Table 1: The expected life of assets in years, calculated with statistical and CTA-methods⁶⁷

	<i>Economic life</i>	<i>Tax useful life</i>
Buildings, civil engineering works	82.8	20 / 33.3 / 16.6
Machinery in long-term use ⁶⁸	35.9	7
Frequently replaced machinery	11.4	3
Transport equipment	29	5
Software products	5	3

⁶⁷ Source: Estimation of Cseh 0 and Corporate Tax Act 0

⁶⁸ Machinery in long-term use includes equipment depreciation written-down with the general rate, 14.5%, frequently replaced machinery includes those depreciation written-down with the 33% key

6. CONCLUSIONS

Our research has established that the concept of depreciation is different in the systems of economics and accounting. It affects inventorying, and eventually provides an entirely different result: Corporate depreciation calculated according to the rules of accounting is different from the depreciation calculated in the international system of accounts. In addition to the differences in concept and grouping, the amount underlying the determination of depreciation is also interpreted differently. Useful life is also calculated differently. The Corporate Tax Act applies a very simplified method which, almost exclusively, guarantees budget revenues, which creates a new set of values.

Economic calculations take priority in macroeconomic decisions. Aggregated business indicators, however, also carry important information. Even the direction of the accounting calculation method is different from depreciation calculated on the macroeconomic level. Any further research would certainly require that the depreciation indicators calculated according to the rules of the individual frameworks be shown and analyzed together.

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