

FAIR VALUE *versus* HISTORICAL COST VALUATION FOR NON FINANCIAL FIXED ASSETS: HOW IS FINANCIAL INFORMATION AFFECTED?

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ABSTRACT

This final degree project is devoted to non-financial fixed assets valuation, which can basically be done following the revaluation and the historical cost models. The topic is analyzed from both a theoretical and practical perspective. I first revise the differences between the two models, as included in the IASB standards. Then, I review the main arguments that different authorized voices put forward for and against both models from the perspective of their contribution to the usefulness of accounting information. Finally, I develop a simulated case where I compare the effect of the two models on financial statements and key financial indicators.

JEL codes: M41

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ABBREVIATIONS

CF: Conceptual Framework

FASB: Financial Accounting Standard Board

GAAP: Generally Accepted Accounting Principles

IAS: International Accounting Standard

IASB: International Accounting Standard Board

IFRS: International Financial Reporting Standard

PGC: Plan General de Contabilidad. (General Accounting Plan)

PPE: Property, Plant and Equipment.

QC: Qualitative Characteristics (of accounting information)

FAIR VALUE *versus* HISTORICAL COST VALUATION FOR NON FINANCIAL FIXED ASSETS: HOW IS FINANCIAL INFORMATION AFFECTED?

1. INTRODUCTION

During the last decade, the accounting profession worldwide has witnessed an unprecedented harmonization/convergence¹ process, towards IASB model (IAS/IFRS). This process would facilitate the comparison of financial information among firms in different jurisdictions since, regardless of their origin, all entities would be under a similar regulatory framework.

However, users of financial statements should be aware that there are some aspects of IFRSs that can make financial information less comparable than it was under local GAAP. Despite the big effort carried out by the international standards setter to reduce the number of alternative treatments to account for the same transaction, the IASB model still contains more alternative treatments than other accounting models, like the US GAAP. One of the most controversial ones regards the possibility of using both historical cost and fair value in the valuation of non-financial fixed assets. This possibility is considered in IAS 16 for PPE, IAS 38 for intangible assets and IAS 40 for investment property. In many other jurisdictions, like the Spanish PGC or the US GAAP, only the traditional historical cost model is allowed to value these assets.² The non-current assets valuation has traditionally been a hot topic among fair value supporters and detractors. Those who support fair value argue that it produces timelier information and provides the users of financial statements with a firm's faithful more real representation. In contrast, critics question the reliability of financial information produced under fair value because in the end fair value is a subjective estimation and this can be used to mask certain aspects of financial reporting.

The objective of this final degree project is to analyze and explain how the financial information might be affected depending on the model used to value non-current assets. I intend to provide a critical overview of each model by: 1) reviewing the theoretical arguments that different authors provide for and against both historical cost and fair value models, applied particularly to non-financial fixed assets. This will allow showing their strengths and weaknesses; and 2) developing a simulated practical case where the potential effects on financial information of the two alternative models, applied to both PPE and investment property and in different price trends settings, are shown.

¹ Harmonization and convergence do not refer to exactly the same process. The former refers to the process of making accounting standards of different jurisdictions more similar while the latter has to do with the idea of adopting a unique accounting model everywhere (see Douppnik and Perera, 2007: chapter 3). There has been a diversity of approaches to move towards the IASB model all around the world: in some jurisdictions the IASB standards have been directly adopted as local GAAP, in others they are adopted after a screening process, and in others the local GAAP have been changed to be more similar to IFRSs.

² Under US GAAP, investment property, held by investment entities, are valued at fair value without the possibility for companies to choose.

The project is structured in three main sections. The following section briefly reviews the accounting for non-current assets, and particularly on the differences between historical cost and fair value accounting. I focus on the IASB standards (IAS 16, IAS 39 and IAS 40), where both the historical cost and the fair value models are allowed. The basics of the standards are pointed out and also some examples to illustrate are included.

The third section of the project addresses the debate from a theoretical perspective. As such, I review the different advantages and disadvantages that literature has pointed out of historical cost and fair value accounting in terms of the usefulness of the financial information produced under each model. I consider the different arguments on how each of the two valuation models affects the characteristics of the financial information highlighted in the CF.

Finally, in the fourth section of the project, the effect of the two alternative valuation models on the financial statements and on several key financial indicators is illustrated using a simulated practical case. In particular, I develop a case where both historical cost and revaluation models are applied to both land and buildings included in both PPE and investment properties, and considering different trends in the market price of the assets.

As a student of finance and accounting, I believe my project contributes to a better understanding of the potential effects of using alternative valuation models to non-current assets. The topic is of interest for all standard setters, practitioners, preparers and users of financial statements. In the concluding section I comment on some questions that the analysis of the topic rises from the perspective of each of these interested parties.

2. HISTORICAL COST *VERSUS* FAIR VALUE ACCOUNTING FOR NON FINANCIAL FIXED ASSETS

There are differences on the subsequent valuation of the elements that compose non-current assets in the different accounting models worldwide. In some jurisdictions the revaluation of these assets is allowed but not in others. For example, under the U.S. standards (hereafter US-GAAP), the revaluation of assets is not allowed. Other countries whose accounting standards do not permit the revaluation model are China (PRC GAAP), Germany (German GAAP), France (French GAAP) and Japan (JP GAAP). The Spanish PGC does not consider the revaluation model either, although the fixed assets of the Spanish companies are not necessarily valued at historical cost because, over the years, there have been specific laws that have allowed companies to voluntarily reflect an updated value of its assets to adjust for inflation.

Countries like New Zealand and Australia contemplate the revaluation model the same as IFRS, the IASB model, which allow for the use of both methods: the historical cost and the fair value models.

In the set of IASB standards, there are four rules that refer to the valuation of non-financial fixed assets.

- IAS 16 Property, Plant and Equipment (PP&E). This rule refers to non-current assets held by the company for their daily activities that are used for production.
- IAS 40 Investment Property. It makes reference to non-current assets that are not held for the production, but it is expected to earn rentals or for capital appreciation through leases and / or things like that.
- IAS 38, Intangible Assets. These assets are non-monetary assets with no physical substance, which are also used for daily production.
- IFRS 5 Non-current assets maintained for sale. Assets that are expected to sell in less than a year and need to accomplish a series of standards to be classified in this way. These assets actually cannot be treated as fixed assets.

In the first three types of the assets we talked about previously, international standards allow assessment of both the cost and fair value. Assets held for sale have to be measured at the lower of the fair value minus costs to sell and its carrying value. Therefore, from now on we will only refer to assets that can be measured both the cost and at fair value, in other words, PP&E, investment property and intangible assets.

Since the main objective of the work we are going to make is to review the main arguments relating to the valuation of non-financial elements of fixed asset, in the following lines we describe the main aspects of the two basic models used, the traditional model of cost and the revaluation model. We are going to briefly develop the rules of the IASB on the subsequent valuation of tangible and intangible investments and property investment, with some examples illustrating the different effects that each of the two models have on the information reported in the financial statements. To do this, we will review the provisions of the IAS 16 in this regard to tangible assets. Later we will refer to the most relevant aspects for differential intangibles (IAS 38) and property investments (IAS 40).

1.1. VALUATION OF FIXED ASSETS: COST VALUE VERSUS FAIR VALUE

At the time of initial recognition, fixed assets are recognized at cost of production, if self-made, or acquisition price if it has been acquired abroad. To this appraisal we will add all the necessary costs until the good can be put into operation, including the present value of future dismantling costs. The costs incurred after commissioning to increase productivity and / or production capacity of the asset will be added to its initial value. The maintenance costs or other related assets that will not improve productivity and enhance their productive capacity costs shall be considered an expense.

While there are some differences in the initial valuation of these assets among the different financial models³, is in the subsequent measurement where the most significant differences arise. As noted above, some accounting models, such as the IASB allow you to apply the cost model or the revaluation model (IAS 16, para 29; IAS 38, para 72; IAS 40, para 30), while in others, such as U.S. GAAP and Spanish GAAP, the revaluation model is not covered⁴.

1.1.1. COST MODEL

PP&E, to which the cost model is applied, are basically valued at cost of acquisition minus amortization deducted in the case of depreciable assets, minus any impairment loss that may arise (IAS 16, para. 30). Impairment losses should be evaluated and accounted for according to the provisions of IAS 36 (impairment losses).

1.1.2. REVALUATION MODEL

For those items of property to which apply the revaluation model, IAS 16 establishes that they should be measured at fair value minus accumulated amortization and impairments corresponding value (IAS 16, para. 31).

The standard does not explicitly provides the frequency with which revaluations should be conducted, but it does indicate that this frequency should be enough so that the carrying amount does not differ materially from fair value at the balance sheet data (IAS 16, para. 31). If the assets' market prices are highly volatile, annually evaluations may be needed, but if not, it may be enough to do a revaluation every three or five years (IAS 16, para. 34).

Furthermore, when opting to revalue a specific type of asset, all assets of the same class must also be revalued (IAS 16, para. 36). The standard includes a small guide with examples of what can be considered separate classes of assets (IAS 16, para. 37). That is, if one chooses to enhance, for example, machinery or vehicles, all elements that integrate those headings should be revalued simultaneously to avoid arbitrariness (IAS 16, para. 38).

FAIR VALUE: DEFINITION AND DETERMINATION

In the previous version to the current IAS 16 described the process of determining the fair value of tangible fixed assets. In the case of buildings, which in practice are almost the only assets to which the revaluation model is applied, the rule stated that the fair value would be established based on "evidence of market" (IAS 16, para. 32), but it also indicated other ways to rectify it when there is no such evidence, like the use of prices for similar assets appropriately adjusted price or of a less active market adjusted changes in economic conditions, or application of a model to estimate the replacement cost of assets (IAS 16, para. 33). In the current version of IAS

³ For example, regarding the determination of the financial costs or capitalized dismantling costs, the treatment of IFRS and U.S. GAAP differs in some details.

⁴ It should be noted that under U.S. GAAP it the revaluation model is applied in the case of property investments, but only when it is "investment entities" which are companies dedicated to holding real estate for the purpose of obtaining capital gains. The definition of property investment differs between US GAAP and IFRSs (see De Vicente et al., 2012).

16 references to the determination of fair value have been removed because, due to the complexity of the concept and measurement of fair value, the international regulator has recently developed a specific standard dedicated solely to fair value IFRS 13, which is in force since 2013. Generally the stated in the IFRS 13 relating to non-current assets was compatible with what IAS 16 indicated previously, but this new comprehensive standard clarifies some issues. IFRS 13 defines fair value as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" (IFRS 13, para. 9). This means, the standard clarifies that fair value is a starting price of the asset. IFRS 13 also provides detailed guidance on how to determine fair value. Thus, paragraph 18 states that if there is a major market for this asset, the value measurement, in this market, will represent the fair market value, even if the price in another market is potentially more advantageous at the measurement date.

Therefore, although the rules do not consider the concept of fair value as a synonym of market value, they indicate that the best estimate of fair value is what we would get from an active market.

Paragraphs 27-30 of IFRS 13 make express reference to the fair value measurement in the case of non-financial assets that are the ones that concern us in this work. One of the main novelties of this standard in this respect is that it establishes the principle of "highest and best use." It is considered that to measure the fair value of a non-financial asset, we should take into account the use of the assets that are physically possible, legally permissible and financially feasible.

TREATMENT OF CHANGES IN FAIR VALUE

When an item of plant and equipment is revalued, IAS 16 requires an asymmetric treatment of fair value changes for gains and losses, that is, the rule provides a different treatment when increases and decreases in value occur. In particular, in paragraphs 39 and 40 the regulation provides as follows:

- The increases in fair value:
 - In general, shall be credited directly in equity, in a balance item of "revaluation surplus".
 - However, if the increase in value is a reversal of a reduction of a previous asset value, the corresponding amount shall be paid, and the rest up reach the new fair value is paid to the "revaluation surplus."⁵

⁵ According to Ernst & Young (2012) the amount that should be equity is the difference between the values that the asset would have had if it had not been revalued, that is, according to initial recognition, and the new revalued amount. The rest will lead to results.

- On the other hand, reductions in fair value:
 - Will be charged as a general rule to the income statement.
 - However, if the reduction in value is a reversal of a previously posted increase in equity it will be first charged to the revaluation reserve account, and if the loss exceeds this amount it will be charged to the income statement. In short, it cannot exist a negative revaluation reserve for a particular asset.

TWO METHODS TO ADJUST THE ACCUMULATED DEPRECIATION IN THE REVALUATION MODEL

The revaluation model in IAS 16 allows to treat accumulated depreciation in two different ways when an asset (IAS 16, para. 35) is revalued:

- Zero depreciation method. Depreciation is eliminated against the book value and the net asset value is adjusted to reflect the fair value. This method is commonly used for construction (IAS 16, para. 35 (b)). Thus the accumulated depreciation account is settled.
- Corrector method⁶. This method applies a correction coefficient to both the historical cost as depreciation, so that the resulting value is the new value of assets (IAS 16, para. 35 (a)). The weighting can be calculated as the ratio between the new value and the book value prior to the revaluation of assets.

Both methods produce the same effect on the result.

TREATMENT OF THE REVALUATION SURPLUS

In the beginning, the revaluation reserve is unavailable, in other words, dividends may not be distributed charged to it. However, this book can be transferred to available reserves as making profit is going, that is, as the asset is depreciated and / or when you have it, for example by sale (IAS 16, para. 41). If the revaluation reserve is transferred to retained benefits as good benefits is depreciated, the amount to be transferred is the difference between the new calculated depreciation after revaluation and the depreciation calculated with the cost. This method allows compensation of excess depreciation provided due to the revaluation.

In contrast to the case with other assets that are carried at fair value through equity transfers from the revaluation reserve to retained earnings items are always made directly, bypassing the income statement.

⁶ The IASB has introduced a number of changes relating to the annual improvements of the 2010-2012 periods. Modifications will be effective for annual periods beginning on or after July 1, 2014. One such improvement eliminates corrector method as a method of calculating depreciation. Thus the only valid method is zero accumulated depreciation method. The modification will apply retrospectively.

1.2. EXAMPLES

To illustrate the differences between the cost model and the revaluation model a few examples are developed below.

Example 1: A land is acquired on the 1st of January X0, worth € 200,000. On December, the 31st, X0, is carried out an expert review and conclude that the fair value of the land is € 300,000. On the 30th of June the field X1 is sold by 400.000 €.

COST MODEL

Land acquisition. 1/1/X0

	DEBIT	CREDIT
PP&E	200,000	
Cash		200,000

On the 31st of December X0 any adjustment is realized given that the land is not deteriorated and the cost model increases in value are not recognized.

Sale of the land. 30/6/X1

	DEBIT	CREDIT
Cash	400,000	
Profit for sale		200,000
PP&E		200,000

REVALUATION MODEL

Land acquisition. 1/1/X0

	DEBIT	CREDIT
PP&E	200,000	
Cash		200,000

Revaluation of the land. 31/12/X0

	DEBIT	CREDIT
PP&E	100,000	
Revaluation reserve		100,000

Sale of the land. 30/6/X1

	DEBIT	CREDIT
Cash	400,000	
PP&E		300,000
Profir for sale		100,000

At the time of the sale of the asset the revaluation surplus would be transferred to available reserves.

	DEBIT	CREDIT
Revaluation reserve	100,000	
Available reserves		100,000

Tables 1 and 2 show the effect in the balance sheet and the profit and loss account respectively, for each of the two models.

Table 1. Cost model vs Revaluation model. Effects on the balance sheet. Data of Example 1.				
	Final Year X0		Final Year X1 (Year when de land is sold)	
	Cost model	Revaluation model	Cost model	Revaluation model
Asset	200,000	300,000	0	0
PP&E	200,000	300,000	0	0
Equity		100,000		100,000
Revaluation reserve		100,000		
Available reserve				100,000
Cumulative result				

Table 2. Cost model vs Revaluation model. Effects on the income statement. Data of Example 1.				
	Final Year X0		Final Year X1 (Year when de land is sold)	
	Cost model	Revaluation model	Cost model	Revaluation model
Earnings			200,000	100,000
Change in value				
Result of the sale			200,000	100,000

In summary, in cost model, at end of year X0, any adjustment is made, unlike the revaluation model, where the asset value increases, and to compensate for this increase in active, equity has increased in the same amount, creating the revaluation reserve account. Obviously, the benefit at the time of the sale also differs depending on the method used. If the cost model is used, the benefit at the time of sale is higher, since the value of the asset is less than in the case that has been revalued.

The main difference between the two methods is that while in cost model the total result generated by the asset during the period it has been in equity (200,000 €) was attributed entirely to income in the year of sale, in the revaluation model this result has been charged directly to equity (100,000 €) and never go through the income statement.

In the following example, the two methods that can be used in IAS 16 for adjusting accumulated depreciation at the revaluation model are illustrated.

Example 2: A building is acquired on 1/1/X0 for €1.000.000. Its useful life is 50 years, no residual value and depreciation is linear. The 31/12/X0, the estimated fair value of the building is € 1.2 million, due to works on the street where he was, dramatically improving the area.

Land acquisition. 1/1/X0

	DEBIT	CREDIT
PP&E	1,000,000	
Cash		1,000,000

Depreciation. 31/12/X0

Depreciation expense = $1,000,000 / 50 = 20,000$

	DEBIT	CREDIT
Depreciation expense	20,000	
Accumulated depreciation		20,000

PP&E revaluation.

Initial value = 1,000,000.

Accumulated Depreciation = 20,000

Accounting = 980.000 Value

Increased building value = $1200000 - 980000 = 220,000$

In this method the account of accumulated depreciation to the gross amount of the asset is repaid and the value of the asset is adjusted to reflect its new fair value.

	DEBIT	CREDIT
PPE	200,000	
Accumulated depreciation	20,000	
Revaluation reserve		220,000

CORRECTOR METHOD

The annotations of the purchase of the building and the depreciation and amortization of X0 would be, logically, the same as in the previous method. The difference lies in how the revaluation is recorded, in particular the setting of accumulated amortization.

In this method, to account the revaluation of 31/12/X0 a correction coefficient will be applied to the gross value and accumulated depreciation to make the difference between the new figures of gross value and accumulated depreciation equals the revalued amount.

Correction coefficient = $1,200,000 / 980,000 = 1.224489796$

The new gross book value is = $1.224489796 * \approx 1,000,000 = 1,224,489.796$

There will be increased to account for = $1224490 - 1000000 \approx 224,490$

New accumulated depreciation will be $20,000 * 1.224489796 \approx 24489.7592$

Increase in accumulated depreciation = $24490 - 20000 \approx 4,490$

	DEBIT	CREDIT
PP&E	224,490	
Revaluation reserve		220,000
Accumulated depreciation		4,490

Below, Tables 3 and 4 show the effect of the application of each of these two methods to the information reported on the balance sheet and the income statement respectively.

Table 3. Different methods to adjust the accumulated depreciation in revaluation model. Data of example 2.		
	Final of Year X0	
	Zero depreciation method	Corrector coefficient method
Assets	1,200,000	1,200,000
PP&E	1,200,000	1,224,490
(Accumulated depreciation)	0	(24,490)
Equity		220,000
Revaluation reserve		220,000

Table 4. Different methods to adjust the accumulated depreciaton in revaluation model. Effects on the income statemet. Data of example 2.		
	Year X0	
	Zero depreciation method	Corrector coefficient method
Earnings		
Depreciation purchase	(20.000)	(20.000)

As shown, both methods have the same effect on both the balance sheet and the income statement. The difference is simply in the breakdown of the net value of fixed assets, which in the case of the first method removes the accumulated depreciation balance while in the second it is also set to rise in the same proportion as the value of gross assets.

After analyzing the different ways to treat depreciation on revaluation method, another difference between the cost model and the revaluation is the revaluation reserve and its transfer to available reserves. The transfer can occur gradually depending on the amount of depreciation or full when the asset is sold.

Example 3: A building is purchased for € 500,000, with a useful life of 40 years and a null residual value 1/1/X0. We opt for a linear depreciation. The 31/12/X0 appreciates the good and its new value is € 600,000. Offset the amortization method after upgrade is chosen. Three years after the purchase, 1/1/X3, the asset is sold for € 400,000.

PP&E acquisition. 1/1/X0

	DEBIT	CREDIT
PP&E	500,000	
Cash		500,000

Depreciation. 31/12/X0

	DEBIT	CREDIT
Depreciation purchase.	12,500	
Accumulated depreciation		12,500

Revaluation. 31/12/X0

Cost: 500,000

Accumulated depreciation. = 12,500

Net value = 487,500

Increased value = 600,000 – 487,500 = 112,500

	DEBIT	CREDIT
Accumulated depreciation.	12,500	
PP&E		12,500
PP&E	112,500	
Revaluation reserve		112,500

Until now both alternatives are treated in the same way. The difference arises from the first year to depreciate.

Depreciation: 31/12/X1

New annual depreciation = 600,000/39 = 15,384.60

	DEBIT	CREDIT
Depreciation purchase	15,384.60	
Accumulated depreciation		15,384.60

TRANSFER BY DEPRECIATION.

Transfer of revaluation reserve to the reserve of accrued benefits. 31/12/X1

Variation amortization amounts → 15384.6-12500 = 2884.6

Transfer on 31/12/X1	DEBIT	CREDIT
Revaluation reserve	2,884.6	
Reseve of accrued benefits		2,884.6

TRANSFER AFTER SALE

Until the property is not sold, any transfer between reserves will not occur.

Depreciation: 31/12/X2

TRANSFER BY DEPRECIATION.

If on 31/12/X1 any revaluation of assets occurs, at the end of the year it will take place the same setting as the previous year, as the amortization of the year X2 will be the same

Transfer on 31/12/X2	DEBIT	CREDIT
Revaluation reserve	2,884.6	
Reseve of accrued benefits		2,884.6

Sale of PP&E. 1/1/X3

Book value of asset= 600,000 to 15384.6 = 584615.4

Profit from sale = 400,000 to 584,615.4 = -184,615.4

	DEBIT	CREDIT
Cash	400.000	
Accumulated depreciation	15.384,6	
Loss of PP&E	184.615,4	
PP&E		600.000

TRANSFER BY DEPRECIATION

The remaining amount of the revaluation reserve is transferred.

Revaluation reserve = $112500 - 2 \times 2884.6 = 106,730.80$

	DEBIT	CREDIT
Revaluation reserve	106.730,80	
Reseve of accrued benefits		106.730,80

TRANSFER AFTER SALE.

	DEBIT	CREDIT
Revaluation reserve	112,500	
Reseve of accrued benefits		112,500

Depending on the choice of transferring the revaluation reserve during depreciation of assets or only at the end, differences appear in the composition of equity.

At end of the year X0 no transfer of any kind takes place, therefore the study will focus on the transfer at the end of X1, X2 and at the moment of sale, at the beginning of X3. The following tables, 5, 6 and 7, show the amount of each reserve and the amount transferred between both reserves.

Table 5. Different methods for the transfer of the revaluation reserve to available reserves. Data of example 3.		
	Final of Year X1	
	Transfer by depreciation	Transfer after sale
Equity	112,500	112,500
Revaluation reserve (A)	109,615.40	112,500
Transfer (B)	2,884.60	0
Reserve of accrued benefits (A+B)	2,884.60	0

Table 6. Different methods for the transfer of the revaluation reserve to available reserves. Data of example 3.		
	Final of Year X1	
	Transfer by depreciation	Transfer after sale
Equity	112,500	112,500
Revaluation reserve (A)	106,730.80	112,500
Transfer (B)	2,884.60	0
Reserve of accrued benefits (A+B)	5,769.20	0

Table 7. Different methods for the transfer of the revaluation reserve to available reserves. Data of example 3.		
	Sale of asset. 1/1/X3	
	Transfer by depreciation	Transfer after sale
Equity	112,500	112,500
Revaluation reserve (A)	0	0
Transfer (B)	106,730.80	0
Reserve of accrued benefits (A+B)	112,500	112,500

Either of the two options to transfer the revaluation reserve does not affect in any way the composition of the asset. This does not occur with equity. Depending on when the transfer occurs, different reserves will be available. The revaluation reserve is unavailable, but the accumulated benefit reserves are available. If the method of transfer is used only after the sale, the revaluation reserve will not be available to be distributed in dividends, and therefore the configuration is the same equity until the sale of the asset. If, however, the transfer to reserve of accrued benefits occurs during the depreciation, the reservation may be distributed in dividends, as this reserve itself is available. This means that distributing dividends, if they are in charge of this reserve, will end in an equity decrease. Under this method it is common to deliver benefits before they have taken place.

It has been observed that the revaluation model allows different procedures when applying. The different treatments on depreciation and the revaluation reserve make comparability within the same model to be difficult. If zero depreciation model is applied, less amortization information will be communicated, as the accumulated depreciation would be zero, when in fact the asset has been depreciated since its commissioning. The corrector method provides maybe more information but it is also more complex when applying. Moreover, reserves can be transferred to results at one time or another time according to the method used, limiting availability of the reserves.

1.3. SPECIFICITIES OF THE REVALUATION MODEL FOR INTANGIBLE ASSETS

The revaluation model for intangible assets, described in paragraphs 75 to 87 of IAS 38, is generally the same as the one applied to tangible fixed assets. The most important for this type of active differential aspect is that the standard requires the fair value to be obtained by reference to an active market (IAS 38, para. 75), the cost model must be applied in the event if there is no such market (IAS 38, para. 81).

The standard itself explicitly recognizes that it is uncommon to find an active market for such assets. However, it provides some examples of intangible assets markets: For example, in some jurisdictions, an active market may exist for freely transferable taxi licenses, fishing licenses or production quotas. However, an active market cannot exist for brands, newspaper mastheads, music and film publishing rights, patents or trademarks, because each of those assets is unique..." (NIC 38, para. 78).

1.4. SPECIFICITIES OF THE REVALUATION MODEL FOR INVESTMENT PROPERTIES

Investment properties are the only non-financial assets for which the international regulatory revaluation posed a "complete" model, wherein the asset is not depreciated or impaired, unlike what happens with tangible and intangible assets.

IAS 40, which regulates property investments, does not establish explicitly that the revaluation model is the preferred treatment, but the international regulator has expressed a preference for this alternative. In fact, the draft standard that was issued before publishing the final IAS 40 only contemplated the revaluation model. Finally, the regulator also decided to allow using the cost model, recognizing that sometimes it is difficult to estimate a reliable fair value for these investments.⁷

⁷ See document base of conclusions of IAS 40.

The choice between the revaluation model and the cost model for investment property even conditions such election to tangible assets, since IAS 16 indicates that an entity that chooses the cost model for its investment property must also choose this model for plant and equipment (IAS 16, para. 5).

IAS 40 requires that all entities must estimate the fair value of its investment properties even when choosing the cost model to value them, given that in that case the information must be disclosed in the notes to the financial statements (IAS 40, para. 32 and 79). In fact, the regulation said that is exceptional the case in that it cannot reliably get the fair value of investment property (IAS 40, para. 53).

To determine the fair value of property investments IAS 40 recommended, but not required, to use an independent expert valuation (IAS 40, para. 32).

The application of the revaluation model for property investments is contained in paragraphs 33-52 of IAS 40. As mentioned above, in this type of asset the fair value model is complete, in other words, the asset is valued to date Balance at fair value (IAS 40 para 33.), and is not subject to amortization and impairments. This naturally means that the company is required to estimate the fair value of its investment property at each balance sheet date. Moreover, unlike in such assets, changes in fair value are always reflected in the income statement, unlike other non-current assets. This makes the outcome more volatile due to changing prices that can affect this game.

3. HISTORICAL COST *VERSUS* REVALUATION MODELS: HOW USEFUL IS THE INFORMATION PRODUCED?

The IASB's CF states that "The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity."(CF, paragraph OB2). This fundamental objective of accounting is indicated in the conceptual frameworks of most financial models.⁸

⁸ For example, first part of PGC 2007.

Qualitative characteristics of useful information, summarized in Figure 1, identify the information that will be useful for decision making. The CF establishes that the information provided, in order to be useful, must be relevant and reflect the faithful image of the company at a moment in time. As Ronen (2008) suggests, the validity of any accounting method can only be evaluated from this perspective, i.e. the degree of usefulness of the information provided for those who use it or may use it in their decision making. Obviously, the use of different methods for valuing fixed assets provides different information. The decision made by some financial regulators such as the FASB or the ICAC, of not allowing the revaluation model for this type of assets suggests that they do not consider the benefits, in terms of utility, derived from the application of the revaluation model outweigh its costs. However, in other jurisdictions, such as the IASB, both methods are allowed. The analysis does not provide a clear answer.

In fact, among academics and accounting professionals this is an open debate, and the key to the desired international accounting convergence (Hail et al., 2010).

One wonders how each method affects the usefulness of financial information, and / or under what circumstances the information provided by each model generates more useful information. This section is dedicated to exposing the various arguments commonly used in relation to this issue, which are summarized in Table 8.

Figure 1. Characteristics of useful financial information

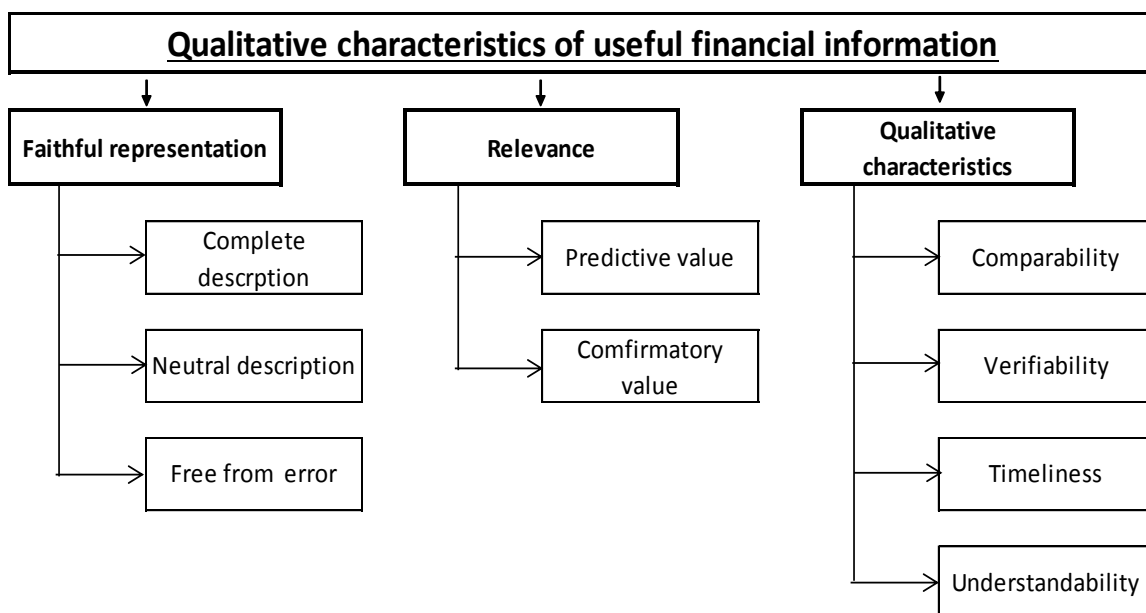


Table 8. Cost model vs revaluation model. Effects on the characteristics of accounting information.

Characteristic	Historical cost model	Revaluation model
Relevance		
Predictive value	- Meets the assumption of going concern.	- Improved predictions. - Narrow view of the objectives of accounting information.
Confirmatory value	- Can let us see the depreciation of an asset when it can be appreciate.	- Investors can confirm their expectations.
Faithful representation		
Complete description	- Provides incomplete information because it does not reflect the current image.	- Provides the fair value of the assets.
Neutrality	- Information bias toward conservatism.	Unbiased information.
Free from error	- The cost price provides real information and with little margin for error.	- Higher possibility of making errors when assets are valued
Comparability	- Limits the comparability two assets acquired in two different moments in time.	- The assets will be comparable at all-time points.
Verifiability	- The acquisition cost is easily verifiable.	- Estimates of fair value can be more difficult to verify.
Timeliness	- The last information is useless (IFRS 2)	- Provides updated information.
Understandability	- Easily understandable to have a single method.	- The different ways of treating depreciation and reserves may hinder comprehensibility.

3.1. RELEVANCE

Financial information is relevant if it is able to influence the decisions of users. In addition, information has the capacity to influence if it has predictive value, confirmatory value or both (IFRS 2, para. QC6-QC7).

PREDICTIVE VALUE

IFRS 2 states that "Financial information has predictive value if it can be used as an input to processes employed by users to predict future outcomes." (IFRS 2, paragraph QC8). Some studies that analyze the relationship between stock prices, revaluation of fixed assets and the expected benefits conclude that the use of fair value for fixed assets improves the prospects for future earnings (eg Barth and Clinch, 1998; Easton, Edey and Harris, 1993; or Aboody, Kasznik Barth, 1999). Furthermore, the predictive value of fair value extends to situations in which the company is no longer a going concern.

Accordingly, although the CF states that the financial statements should be developed under the assumption of going concern, fair values are preferable to historical costs when the objective is to value the company. However, authors such as Schipper (2005), claim that this argument is derived from a limited view of the objectives of accounting. Although the valuation is one of the objectives of accounting, it is not the only one.

CONFIRMATIVE VALUE

"Financial information has confirmatory value if it provides feedback about (confirms or changes) previous evaluations." (IFRS 2, para QC9), this means that, if it allows to verify the previous performed analysis.

At the moment of the acquisition of assets, usually the cost price and the fair value match. As time passes, the fair value changes. If changes in the fair value of fixed assets are reflected in the financial statements these provide useful information to its users, since it allows to confirm both their previous expectations based on current conditions and the changes that had been predicted in the value of fixed assets.

Instead, the historical cost provides restricted information to users. The book value of fixed assets measured at historical cost minus accumulated depreciation reflects the asset is depreciating even though the asset is appreciating in market (Herrmann et al 2006).

For all these reasons, proponents of fair value criterion considers that the confirmatory value of accounting information can be impaired when using the historical cost basis, method in which to confirm the expectations is more difficult, so this could even confuse users when these are assets that are appreciating market.

3.2. FAITHFUL REPRESENTATION

In order for financial information to be useful, it must not only represent the most important events, but it must also do so as accurately as possible. The faithful representation is the one that describes with maximum realism events that have happened in reality. For an adequate representation of faithful representation, the information must be complete, neutral and free from error (IFRS 2, paragraph QC12), characteristics that we will discuss later.

As mentioned above, at the date of acquisition cost and fair value will generally be the same. As time passes, difference between the fair value and cost can appear. If cost model is used, it shows a past reality and not the reality at every moment of time.

Valuation at historical cost also has the problem that does not reflect the effect of inflation. Within the PP&E, it appear assets acquired or built internally. Under the historical cost model, each asset has been valued at a different point in time. Consequently, it is possible that two similar assets present substantial differences in value.

The cost model assumes that an old monetary unit equates to a current unit. The acquisition cost of fixed assets is a historical price and the value given to the balance sheet date does not reflect the financial situation of the moment, on the contrary the fair value would reflect the current situation.

In short, from the perspective of balance sheet, defenders of valuation model based on the fair value argue that this approach minimizes the valuation problem generated by temporary differences in the acquisition of property and the financial position of the company is represented in a more realistic way (Chambers, 1989, p. 14).

Moreover, from the perspective of the earnings, some authors argue that using the cost model generates a more accurate representation of reality than the revaluation model, because using the cost model the expenditure and revenue are less subject to manipulation (Dietrich et al., 2000). To apply the revaluation model is necessary to make estimates of market values. In the case of PP&E, is strange to find an active market to make reference to a reliable fair value, and it often must be lowered to levels of estimating fair value in which the level of application of professional judgment is higher, which necessarily involves wider discretion in determining accounting numbers. Businesses managers can play with these estimates to change outcomes depending on whichever is more convenient. Subsequently, some believe that historical cost accounting is better because it respects the principle of faithful representation. However, there are also studies that find evidence of manipulation of the earnings when the cost model is applied. For example, Herrmann, Inoue and Thomas (2003) show that under the cost model the fixed asset sale transactions are structured to manipulate the net income. Assets recorded under the cost model can have great benefits not recognized. Companies can make the sale of fixed assets at their convenience to make up the result. If an asset is undervalued on the balance sheet, at the moment to sale, a substantial benefit emerges, which can be used to mask negative returns.

In short, regarding to the manipulation of the results, while the revaluation model generates more possibilities of "earnings management", cost model powers "real manipulation" transactions. In revaluation model, the faithful representation of the company may be affected if administrators use the estimated market value to alter the results of the company through future changes in amortization or increases in value that go directly to the income statement. Moreover, the cost model provides the ability to inflate the net income of certain exercises surfacing unrecognized income of assets by selling.

COMPLETENESS

According to the CF, the full information is that which "includes all information necessary for a user to understand the phenomenon being depicted, including all necessary descriptions and explanations." (IFRS 2, para QC13). If the cost model is used, the information users might not know completely the phenomenon that is being rendered. The reflected values are past values and may not serve as much to new investors. By using the revaluation model, seeing the balance could let you know the current value of fixed assets at that particular time.

NEUTRALITY

As IFRS 2 says "A neutral description is not biased, weighted, emphasized, attenuated or manipulated in any form to increase the probability that the financial information is received favorably or adversely by users." (IFRS 2, paragraph QC14). With regard to this characteristic, some authors consider that the asymmetric treatment of increases and reductions in value that is generated in the application of the cost model generates biased accounting information, and therefore not neutral. Conservatism emerged from the cost model is a way to skew the information. Using the cost model assumed positive changes shall not be recognized, but the negative changes must be recognized, skewing toward the conservative side. Impairment losses reaffirm the conservative position. When it comes to decreases in the value of assets we should reflect the value of the asset to a fair value, but when it comes to value increments it is not permitted.

The net assets and profits should not be underestimated, as this makes the information not neutral, neither complete. Consistent with this argument, the conceptual framework of the FASB (SFAC No2, para 93) states that "any attempt to underestimate consistently results may raise doubts about the reliability and integrity of information about the results and will probably be counterproductive in the long term."

FREE FROM ERROR INFORMATION

That the accounting information is free from error means "... no errors or omissions in the description of the phenomenon, and the process used to produce the reported information has been selected and applied with no errors. (IFRS 2, para QC15). Obviously, all the information provided may contain a margin of error. In addition, there are some accounts where the possibility of error is higher. This is the case of items that require an estimate to quantify its value.

The valuation of PP&E at fair value is based primarily on an estimate, so the probability of making unintentional errors is higher than in the application of the cost model. Furthermore, the probability of error increases if there is no active market for the mentioned item to determine fair value. In the absence of an active market, the standards provide other ways to estimate the fair value. Thus, IFRS 13 establishes that “when a price for an identical asset or liability is not observable, an entity measures fair value using another valuation technique that maximizes the use of relevant observable inputs and minimizes the use of unobservable inputs” (IFRS 13, para 3). The estimate of fair value using models and ad hoc techniques, requires the application of professional judgment to a greater extent, and therefore is susceptible to a greater mistake.

With the cost model the probability of valuation error is lower, although some components of the value of the assets in this model, as decommissioning costs should also be estimated.

3.3. ENHANCING QUALITATIVE CHARACTERISTICS

Financial information may have enhancing qualitative characteristics: comparability, verifiability, timeliness and understandability. These characteristics help you better understand the information and achieve its main objective, helping to determine the best way to represent a fact, whether from the point of view of relevance or from the point of faithful representation.

COMPARABILITY

The comparability “is the qualitative characteristic that enables users to identify and understand similarities and differences among items. Unlike the other qualitative characteristics, comparability does not relate to a single item. A comparison requires at least two items” (IFRS 2, para QC21). If the fair value can be measured reliably, this valuation principle contributes substantially to improve comparability. The use of cost and valuation method may limit the comparability between two equal assets acquired at different points in time. For example, within the same company, two properties with similar characteristics will not be equally valued today or in the past time. The land acquired in the present moment will normally be valued at a higher price than the one acquired some time ago, having the same characteristics. This difficulty of comparison is not only in the financial statements of a company, it appears too when we compare two companies.

Moreover, the explicit accounting option that provides the IASB model for fixed assets allows, does not require, revaluations makes comparability still further impaired. Many companies still use the cost method, while others adopted the revaluation model in general only some elements of PP&E. The comparability would be affected positively instead of being an option, it was a requirement.

VERIFICABILITY

Verifiability assures users that information faithfully represents the economic phenomena it purports to represent. Verification can be direct, such as observation of a purchase price, or indirectly through the use of data and formulas. (IFRS 2, para QC27, QC28). Studies such as Nichols and Buerger (2002) suggest that the main argument for the use of historical cost is its superiority over the revaluation model to guarantee this property of verifiability. While the purchase price is easily observable and verifiable therefore, the fair value of certain fixed assets is difficult to verify.

TIMELINESS

Timeliness means "...having information available to decision-makers in time to be capable of influencing their decisions. Generally, the older the information is the less useful it is" (IFRS 2, para QC29). According Aboody et al., 1999 "To report a change in the fair value of PP&E has the potential to provide timely information to investors, creditors, and other interested users of financial information". Creditors, when providing guarantees, asking for the fair value of the assets. Other users of financial information can also benefit from the valuation at current prices rather than old prices. The definition of opportunity indicates that the older the information is, the less useful it is. The production costs are valuations based on past transactions and therefore do not provide a current and timely information.

Despite the fact that the fair value provide more information to investors, it is not always used when making decisions. In some cases it may be useful, for example when delivering an asset as mortgage, but in other cases it might not be so useful. The cost value can be more useful for calculating certain ratios which has to reflect the investment. At the time of measuring the value of investment cost is used. In addition, although the fair value is not shown on the balance sheet does it does not mean that you cannot know it because the memory should reflect the market value of assets. The information remains timely because in the financial statements are displayed both the cost in the balance sheet and the fair value in memory.

UNDERSTANDABILITY

Understandability has to do with the fact that "classifying, characterizing and presenting information clearly and concisely makes it understandable". (IFRS 2, para QC30). The use of different valuation methods can make information miss this desirable characteristic of understandability. By allowing the valuation of fixed assets using both methods, if you do not know in advance which method is working understandability of financial statements may be compromised. In principle, information users will know what method the company uses to value its fixed assets as in memory should be reflected, but in any case the use of more than one method can generate problems in understanding financial information.

4. HISTORICAL COST VERSUS FAIR VALUE ACCOUNTING: THE EFFECT ON FINANCIAL RATIOS

Financial information is used by investors and other stakeholders to analyze the evolution of companies over time and compare different companies in the cross section. The analysis is usually based on the construction of ratios. Financial ratios are sensitive to variations in the numbers presented in the financial statements, and therefore to the accounting policy of the company. As shown in the first section of the paper, using the cost model or the revaluation model to value fixed assets can lead to substantial changes in the value and composition of the main balance sheet aggregates and in the income statement.

The aim of this section is to illustrate the effect of applying the cost model or the revaluation model on some of the most commonly used financial ratios: economic profitability (ROA), calculated as net income over average total assets; return on equity (ROE), calculated as net income on average equity, and debt ratio (Leverage), calculated as total liabilities over total assets.

A hypothetical case has been developed, where the effect of applying each model (cost vs fair value) on the financial statements is simulated, from the moment when the asset is acquired until it is sold⁹. Since these are fixed assets that are more plausible to apply the revaluation model in practice (Jinhan Pae, et al, 2009), the simulation is focused on property, depreciable (buildings) and non-depreciable (land) classified in tangible assets such as real estate investments.

Table 1 shows the balance sheet of the company FICTICIA at the end of year t . It is assumed that non-current assets in this balance sheet reflect the value of an asset acquired by the company at the end of the year t of cost 1,500,000. Considering both valuation models allowed under IFRS, different asset classification and different market price trends for the asset, I have simulated the impact of this fixed asset on the balance sheet and the income statement of FICTICIA, and also on ROA and Leverage, over the period t to $t+5$, where the asset will be sold, as explained below.

Non-current assets	1,500,000.00	Equity	1,210,000.00
Current assests	810,000.00	Equity	1,000,000.00
		Earnings	210,000.00
		Long-term debt	700,000.00
		Short-term debt	400,000.00
Assets	2.310.000.00	Equity and liabilities	2,310,000.00

⁹ The Excel book that has been developed to carry out the simulation is attached in a CD as part of this final degree project.

The following alternatives are considered:

- A1: the asset is land included in PPE.
- A2: the asset is land included in investment properties
- A3: the asset is a building included in PPE.
- A4: the asset is a building included in investment properties

The type of asset is relevant since land has the particularity that it is not amortized. It is said that many companies decide to reevaluate only land for this reason, since changes in fair value do not affect future depreciation expenses. On the contrary, revaluation of buildings will cause an effect on the income statement. If the value increases, the depreciation in future years will also be increased, so that there will be more future expenses.

The classification of the asset within non-current assets is also relevant under the revaluation model. If it is classified as PPE, positive changes in fair value would increase equity. In contrast, if the asset is an investment property, the changes in value are taken to the income statement, generating a series of more volatile results.

Each alternative is in turn discussed in two contexts:

- Hypothesis 1 (H1), based on an inflationary context, where the asset price increases annually at the rate of 5%;
- Hypothesis 2 (H2) reflects a deflationary context where prices decrease annually at the rate of 5%.¹⁰.

Therefore, there are eight cases in total for which the effect of.

In order to develop the case, the following additional assumptions are considered:

1. Under alternatives A3 and A4 the asset has an estimated useful life of 50 years, no residual value and straight line depreciation method. The company does not change these estimates over time.
2. At the end of the year $t + 5$ the asset is sold by its fair value.
3. For the cost model, it is assumed that the recoverable amount is the asset's fair value.
4. Earnings before taxes and before the effect of the accounting treatment of fixed assets, remain constant over the period analyzed, being each year 300,000.
5. All income and expenses are charged and paid during the year, including income tax, so that the net income of each year means a change in cash of the same amount.
6. There are no dividends given during the period. Consequently, net income of each year is transferred to reserves.
7. The rest of the items in the balance sheet remain constant.
8. The tax rate is constant (30%) and tax regulation provides that revaluations are incorporated in the taxable income in the year when they are recognized, regardless of the changes in fair value are registered to equity or results.

¹⁰ The price increase could be much higher. During the Spanish building bubble from 1997 to 2007, the average price of housing grew in real terms at an average cumulative rate of 7%. The annual percentage changes became 17% in the period of greatest growth. Since the bubble exploded in mid-2007, the price of buildings has fallen around 35% until December 2012, which would mean an average annual reduction rate of 7%. (Abad, 2013).

The effect on the balance sheet and income statement of the application of the cost model and the revaluation models in each of the eight cases considered can be found in the Excel file that accompanies this project.

Overall, sixteen results were obtained by combining the different alternatives with the different assumptions. These results can be summarized in seven different cases, as various combinations result into the same financial statements. Those seven different effects are summarized in Table 10. In turn, Table 11 and graphics 1 to 6 synthesize how *ROA*, *ROE* and *Leverage* behave during the period t to $t+5$ in each case.¹¹

¹¹ Details of calculations are available from the author upon request.

Table 10. Historical cost vs revaluation model applied to land or buildings included in PPE or investment properties, under inflationary or deflationary setting. Summary of the results.

Case	Valuation model	Alternatives	Price trend hypothesis	Comments
1	Historical Cost	A1 & A2	H1	Land value does not change because land is neither amortized nor revalued. Same result if land is included in PPE and in investment properties.
2	Historical Cost	A3 & A4	H1	The buildings are amortized, and consequently lose value, but they are not revalued under historical cost accounting.
3	Revaluation	A1	H1	Land increase in value due to revaluation but they are not amortized. The revaluation is registered in equity, net of its tax effect
4	Revaluation	A2	H1	Investment property in land increase in value but they are not depreciated. The revaluation is registered in income statement.
5	Revaluation	A3	H1	The buildings lose value to depreciation and increase its value due to the effect of revaluation. The revaluation is higher due to the effect of depreciation, but the net result is the same as in Case 3. The revaluation is charged against total equity, net of tax.
6	Revaluation	A4	H1	The investment properties in buildings are depreciated and increase their value to revalue. The revaluation is higher than in Case 4, because of depreciation, but the effect on the result is the same in both cases. The revaluation is recorded in the income statement.
7	Historical Cost / Revaluation	A1, A2, A3 & A4	H2	Considering the assumptions made, under a deflationary context, all the alternatives have the same net impact on financial statements. Assets lose value to be valued at fair value, smaller than the cost price (impairment of assets). In cases where the asset is amortized (A3, A4), the impairment amount is lower than in non-amortizable assets (A1, A2). The only difference is the composition of the income statement. In A1 and A2, there is no impairment as there is in A3 and A4. However, the effect on net income is the same in all these cases.

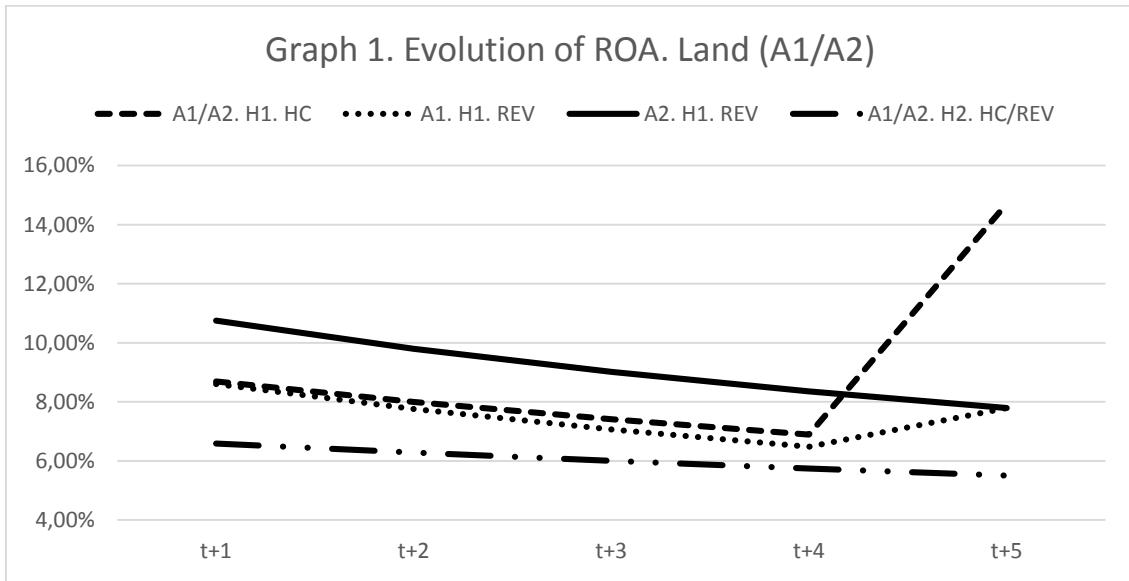
Alternatives refer to the type of asset and its classification within non-current assets: A1: land included in PPE; A2: land included in investment properties; A3: building included in PPE; A4: building included in investment properties. Price trend hypothesis refers to the assumption made as regards the evolution of the asset's market price: under H1 the asset price increases annually at the rate of 5%; under H2 the asset price decreases annually at the rate of 5%.

Table 11. Historical cost vs revaluation model applied to land or buildings included in PPE or investment properties, under inflationary or deflationary settings. Effects on ROA, ROE and Leverage.

Panel A: ROA									
Case	Valuation model	Alternatives	Price trend	t	t+1	t+2	t+3	t+4	t+5
1	Historical Cost	A1 & A2	H1	-	8.70%	8.00%	7.41%	6.90%	14.71%
2	Historical Cost	A3 & A4	H1	-	7.86%	7.29%	6.79%	6.36%	16.82%
3	Revaluation	A1	H1	-	8.60%	7.76%	7.07%	6.48%	7.79%
4 & 6	Revaluation	A2 & A4	H1	-	10.75%	9.80%	9.01%	8.35%	7.79%
5	Revaluation	A3	H1	-	7.74%	6.95%	6.27%	5.70%	7.79%
7	Historical Cost / Revaluation	A1, A2, A3 & A4	H2	-	6.59%	6.29%	6.00%	5.74%	5.50%
Panel B: ROE									
Case	Valuation model	Alternatives	Price trend	t	t+1	t+2	t+3	t+4	t+5
1	Historical Cost	A1 & A2	H1	-	15.97%	13.77%	12.10%	10.80%	21.74%
2	Historical Cost	A3 & A4	H1	-	14.49%	12.65%	11.23%	10.10%	25.05%
3	Revaluation	A1	H1	-	15.66%	13.08%	11.22%	9.81%	11.35%
4	Revaluation	A2	H1	-	19.57%	16.52%	14.31%	12.65%	11.35%
5	Revaluation	A3	H1	-	14.09%	11.71%	9.96%	8.63%	11.35%
6	Revaluation	A4	H1	-	19.57%	16.52%	14.31%	12.65%	11.35%
7	Historical Cost / Revaluation	A1, A2, A3 & A4	H2	-	12.22%	11.06%	10.11%	9.31%	8.63%
Panel C: Leverage									
Cases	Valuation model	Alternatives	Price trend	t	t+1	t+2	t+3	t+4	t+5
1	Historical Cost	A1 & A2	H1	47.62%	43.65%	40.29%	37.41%	34.92%	30.14%
2	Historical Cost	A3 & A4	H1	47.62%	44.02%	40.92%	38.23%	35.88%	30.31%
3, 4, 5 & 6	Revaluation	A1, A2, A3 & A4	H1	47.62%	42.76%	38.76%	35.42%	32.58%	30.14%
7	Historical Cost / Revaluation	A1, A2, A3 & A4	H2	47.62%	44.58%	41.86%	39.42%	37.22%	35.23%

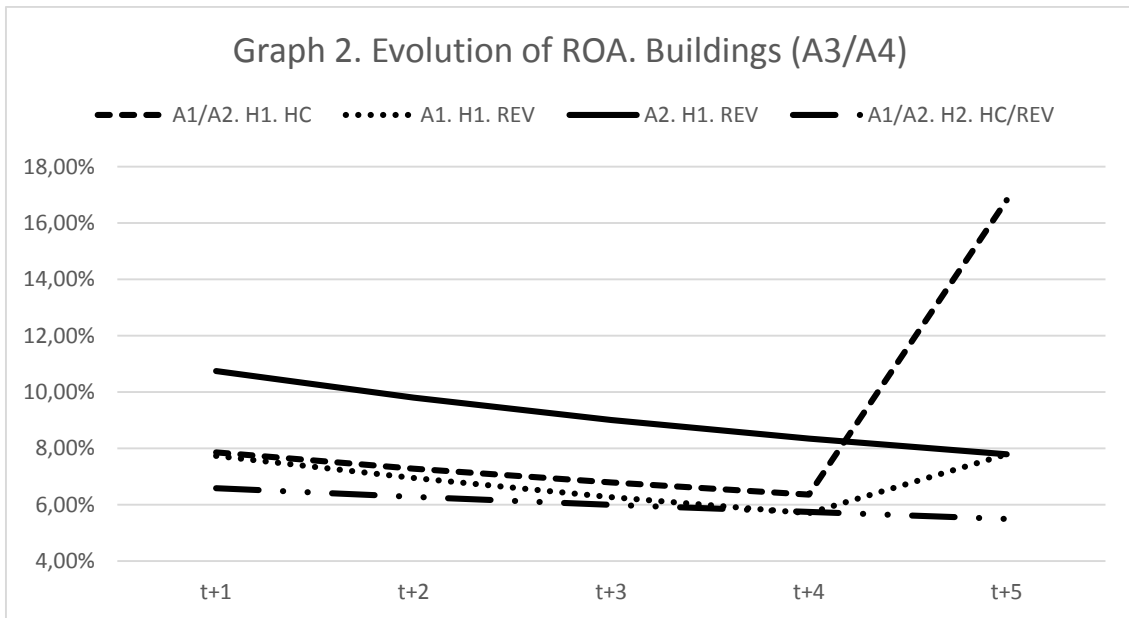
Alternatives refer to the type of asset and its classification within non-current assets: A1: land included in PPE; A2: land included in investment properties; A3: building included in PPE; A4: building included in investment properties. Price trend hypothesis refers to the assumption made as regards the evolution of the asset's market price: under H1 the asset price increases annually at the rate of 5%; under H2 the asset price decreases annually at the rate of 5%.

Graph 1. Historical cost (HC) *versus* Revaluation (REV) model applied to land included in PPE (A1) and in investment property (A2). Effect on ROA under inflationary and deflationary settings.



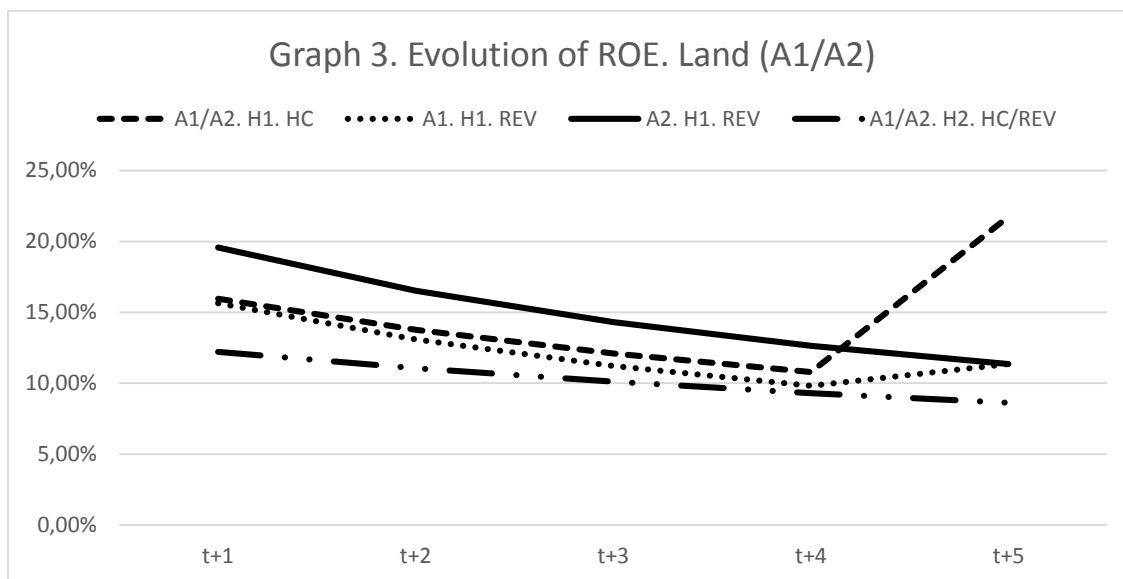
The graph shows the evolution of ROA when classifying the asset as land included in PPE (A1) or in investment properties (A2), under both an inflationary and a deflationary scenarios (H1 and H2 respectively).

Graph 2. Historical cost (HC) *versus* Revaluation (REV) model applied to buildings included in PPE (A3) and investment property (A4). Effects on ROA under different market price evolution settings



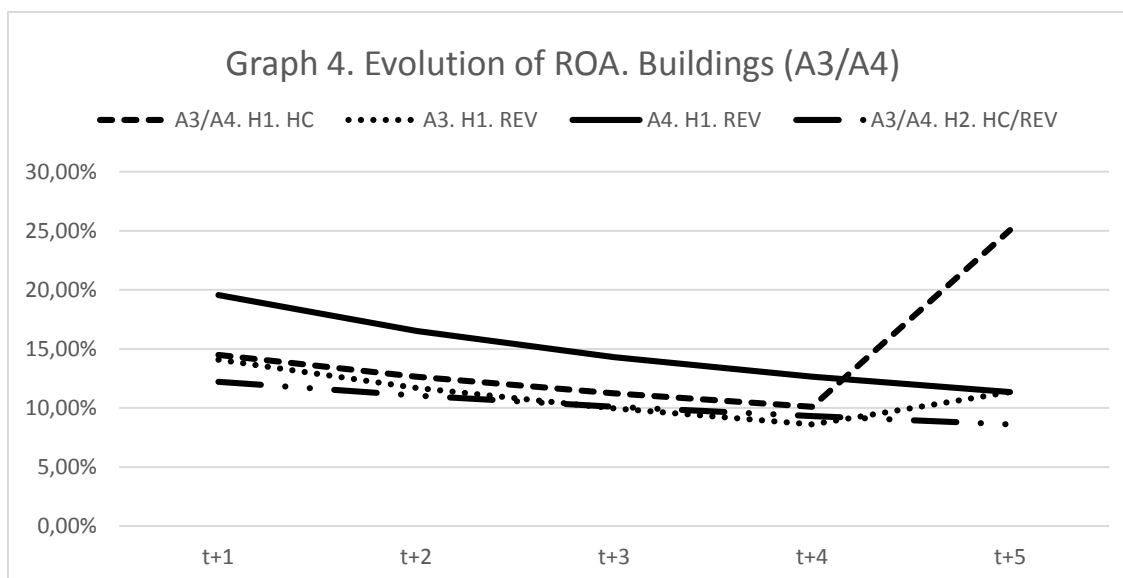
The graph shows the evolution of ROA when classifying the asset as buildings, included in PPE (A3) or as investment property (A4) under both an inflationary and a deflationary scenarios (H1 and H2 respectively).

Graph 3. Historical cost (HC) *versus* Revaluation (REV) model applied to land included in PPE (A1) and in investment property (A2). Effect on ROA under inflationary and deflationary settings.



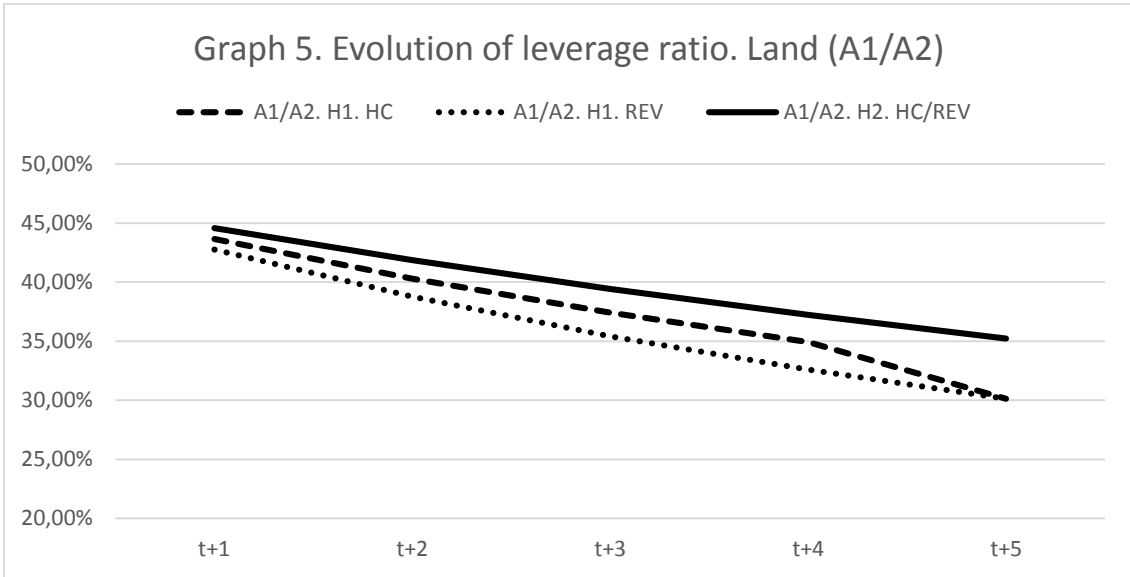
The graph shows the evolution of ROE when classifying the asset as land, included in PPE (A1) or as investment property (A2) under both an inflationary and a deflationary scenarios (H1 and H2 respectively).

Graph 4. Historical cost (HC) *versus* Revaluation (REV) model applied to buildings included in PPE (A3) and investment property (A4). Effects on ROA under different market price evolution settings.



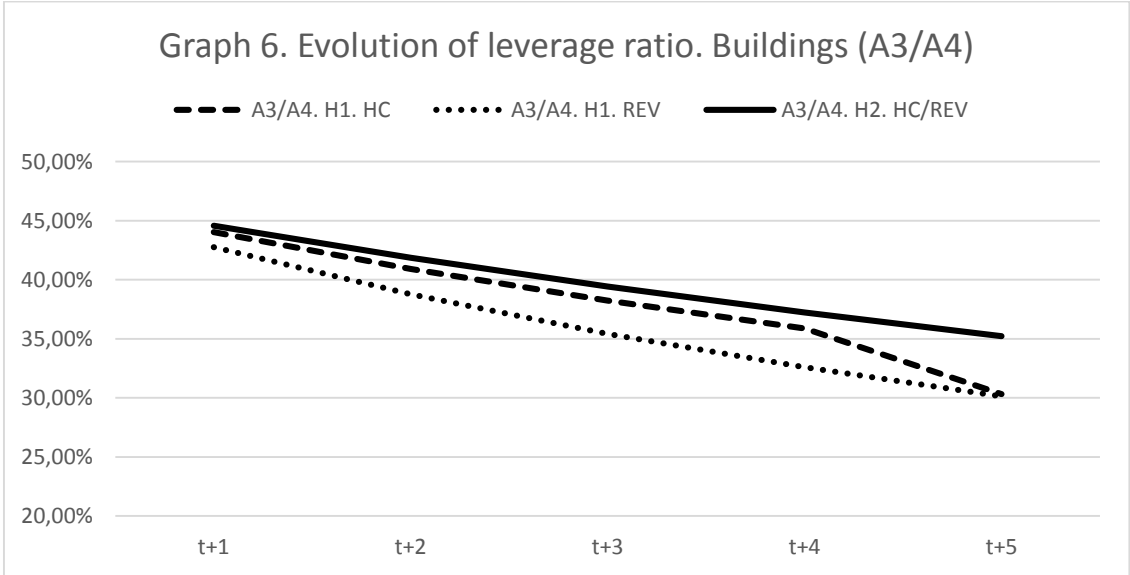
The graph shows the evolution of ROE when classifying the asset as buildings, included in PPE (A3) or as investment property (A4) under both an inflationary and a deflationary scenarios (H1 and H2 respectively).

Graph 5. Historical cost (HC) *versus* Revaluation (REV) model applied to land included in PPE (A1) and in investment property (A2). Effect on leverage ratio under inflationary and deflationary settings.



Source: own. The graph shows the evolution of the debt ratio according to the classification of land as PPE (A1) or investment property (A2) under both an inflationary and a deflationary scenarios (H1 and H2 respectively). Bear in mind that the debts remain constant throughout the study, therefore only varies the asset.

Graph 6. Historical cost (HC) versus Revaluation (REV) model applied to buildings included in PPE (A3) and investment property (A4). Effects on leverage ratio under different market price evolution settings



Source: own. The graph shows the evolution of the debt ratio according to the classification of buildings as PPE (A3) or as investment property (A4) under both an inflationary and a deflationary scenarios (H1 and H2 respectively). Bear in mind that the debts remain constant throughout the study, therefore only varies the asset.

The main highlights from the results of the analysis carried on can be summarized as follows:

1. The two valuation models result into different accounting numbers when the trend in the market value of the asset is inflationary. This is due to the asymmetric treatment of unrealized gains and losses under historical cost accounting, where decreases in the assets' values should also be recognized. The lower value of the asset is recorded as a loss in the income statement under both the cost and the revaluation models.

Nevertheless, if assumption number 3 above was not considered, and the recoverable value of the asset was its value in use (assuming it is higher than its fair value), there could also be differences under a deflationary setting between the historical cost and the revaluation models.

2. Focusing on the upwards revaluation setting (H1), the results indicate that:
 - a. When the asset, doesn't matter whether it is land or buildings, is included in PPE (A1 & A3), since the revaluation effect does not affect the income statement and the value of total assets would be higher, the revaluation model results into a higher *ROA* than the one obtained under the historical cost model for the whole period. On the contrary, if the asset is an investment property (A2 & A4) the revaluation increases net income and therefore in the first four years we have a higher *ROA* under the revaluation model than under historical cost. Consequently, in year $t+5$, when the asset is sold, the gain is much higher under the historical cost method, and so it is *ROA* (14.71% or 16.82% under the revaluation model *versus* 7.79% under historical cost). This result illustrates the reason why some studies indicate that under historical cost accounting companies might discretionarily structure the timely of their fixed assets sales in periods where there are some specific incentives to boost earnings upwards (ej: Bartov, 1993).
 - b. The pattern followed by *ROE* is similar to that of *ROA*.
 - c. Finally, as regards the leverage ratio, we basically observe that it is consistently lower in any alternative considered when using the revaluation model than when the asset is valued at historical cost. This result relates with some studies which suggest that one of the reasons why companies choose to reevaluate their assets is to offer an image of better financial situation, i.e. to improve the debt ratio. For example, Missionier-Piera (2007) analyzes a sample of Swiss listed companies and finds that leverage is positively associated with the revaluation choice

Overall, the results of the simulated case illustrate how different valuation models applied to non-current assets might result into different series of accounting numbers, and in turn in different financial indicators. If such differences are not taken into account when analyzing and comparing financial statements, the decisions made could be biased. Whether investors and other users of financial statements are able to adjust the numbers is an interesting question which is worth to be studied. Results of research in this area are of interest not only for users but also for standard setters.

5. CONCLUSIONS

The possibility of applying fair value accounting to non-financial fixed assets has been discussed extensively by the accounting community. There are arguments for and against it. Basically, there is a tradeoff between relevance and reliability underlying the debate on fair value vs historical cost accounting, which analysis results into different standards promulgated by different standard setters. Under the IASB model, which is becoming the predominant all over the world, both historical cost and fair value accounting are allowed for PPE, intangible assets and investment properties. Using one model or the other affects accounting numbers, and all parties somehow interested in financial information should be aware of that. After carrying out this final degree project, many questions arise regarding whether this is the case or not.

Companies might decide whether preparing financial statements using historical cost or fair value accounting for their non-financial fixed assets. The decision should be made considering both benefits and costs for the company. One of the main problems of applying fair value accounting for these assets is that an active market where obtaining an objective fair value estimate does not always exist. Estimating fair value using other allowed techniques is more costly and, at the same time, produces less reliable estimates, which could in turn reduce the potential gains that they could obtain in terms of cost of capital reductions. Moreover, finding the fair value can generate a high cost to preparers, because the fixed assets for which the revaluation model is chosen must be reevaluated frequently.

When it comes to verifying the information, auditors are also affected by the fact that the accounting model offers the two options to value fixed assets. Fair value accounting is more difficult to audit. Auditors must verify how the fair values have been estimated. When the fair value estimates do not come from an active market the auditor has a difficult task, which in turn increases the audit costs.

Finally, users of financial statements are also directly affected by the model a company uses to value non-financial fixed assets. Creditors use the financial information to make two basic decisions: whether or not providing the firm with funds, and if so which risk premium they should ask in exchange. To make their decisions, creditors pay attention to solvency ratios, as the leverage ratio. We have illustrated that the use of fair value decreases the leverage ratio. Do creditors consider whether the company is using the revaluation model to improve its leverage ratio? Also investors use financial information to make their decisions, for example based on future return's expectations. Fair value accounting improves their ability to predict future earnings and cash flows by providing timely information. However, maybe this information is not free from error due to the difficulty to estimate the fair values.

In sum, every stakeholder involved in the process of preparing, evaluating or verifying financial information is affected by the coexistence of the two models. I believe that analyzing how the cost-benefit relation behaves for each of them is of interest for the international standard setter, the IASB, who might want to rethink whether the coexistence of both models is working as expected when the standards were promulgated. It is also of interest for those standard setters who are thinking on harmonizing their models with IFRS.

I therefore believe that research on the reasons underlying the model choice and how users of financial statements interpret the information provided under the two valuation approaches is necessary to improve accounting standards.

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