

DOES ACCOUNTING STANDARDS CHANGE ON EQUITY-LIABILITY CLASSIFICATION MATTER?  
EVIDENCE FROM COOPERATIVE ENTITIES.

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**Abstract.**

This paper aims to test and to assess if a change in accounting standards affecting the definition of equity and liability in cooperatives matters, as well as to shed light on the possible determinant factors. In face of the new accounting standards, cooperatives had to reclassify members' shares from equity to liability or to modify their articles of association changing the terms of the members' shares in order to retain the accounting equity classification. Based on a sample of Spanish cooperatives extracted from SABI, results show that cooperatives perceived important effects and a big majority chose to modify articles of association. Results reject the "information approach" and support the "contracting approach", therefore accounting change matters even if there is not a change in the cash flows. In order to determine the main factors that can affect the decision of the cooperative, a mixed logit model is proposed. The results showed that cooperatives with higher share capital, debts ratio and non current assets are more prone to modify their articles of association in order to retain the accounting equity classification. The paper contributes to literature on the economics effects of accounting standards, providing additional evidence in a different and particular setting. Where, the accounting change affects to a core characteristic of the organizational form. Members' shares are not subject to structuring opportunities. The firms affected are non-listed. There is not tax effect and the change only affects balance sheet not the net income.

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### **Abstract.**

This paper aims to test and to assess if a change in accounting standards affecting the definition of equity and liability in cooperatives matters, as well as to shed light on the possible determinant factors. In face of the new accounting standards, cooperatives had to reclassify members' shares from equity to liability or to modify their articles of association changing the terms of the members' shares in order to retain the accounting equity classification. Based on a sample of Spanish cooperatives extracted from SABI, results show that cooperatives perceived important effects and a big majority chose to modify articles of association. Results reject the "information approach" and support the "contracting approach", therefore accounting change matters even if there is not a change in the cash flows. In order to determine the main factors that can affect the decision of the cooperative, a mixed logit model is proposed. The results showed that cooperatives with higher share capital, debts ratio and non current assets are more prone to modify their articles of association in order to retain the accounting equity classification. The paper contributes to literature on the economics effects of accounting standards, providing additional evidence in a different and particular setting. Where, the accounting change affects to a core characteristic of the organizational form. Members' shares are not subject to structuring opportunities. The firms affected are non-listed. There is not tax effect and the change only affects balance sheet not the net income.

### **1. Introduction.**

The purpose of this paper is to test and to assess if a change in accounting standards affecting the definition of equity and liability in cooperatives matters, as well as to shed light on the possible determinant factors.

Standards Setters have found in Equity-liability distinction one of the more difficult issues in accounting. Equity-liability separation has raised considerable debate regarding cooperatives and IASB developed the application of IAS 32 to cooperatives in the IFRIC 2 "Members' shares in Co-operative Entities and similar instruments".

The new Spanish Accounting Standards for cooperatives introduces the IFRIC 2 criteria and supposes a reclassification of members' shares from equity to liability if the cooperative does not modify its articles of association, changing the terms of the members' shares introducing a right of the cooperative to refuse unconditionally the redemption of members' shares at the cessation of membership. Therefore, cooperatives choose to modify or no modify their articles of association depending on the perceived possible effects of the accounting reclassification.

This setting constitutes an interesting event which differs from the scarce previous studies on the effects of the reclassification from equity to liability. The required changes in the members' shares affect a core characteristic of the cooperative as organizational form. Members' shares are not subject to structuring opportunities with the aim to achieve a target financial reporting

outcome. The sample is composed by non-listed firms. Debt covenants are rarely used in bank finance. The accounting change only affect the balance sheet but not the net income; the accounting change does not affect the terms of members' shares only its presentation in the balance sheet; the accounting change does not have tax effect, and therefore, there is not effect on cash flows at all.

Based on data of Spanish cooperatives obtained from SABI, our results show an important effect of the accounting change, a high percentage of the cooperatives in the sample chose to modify their articles of association (85.61%), supporting that equity-liability distinction is important, rejecting the "claims approach" (Entity View) and favoring Proprietary approaches in accounting.

Results reject the "information approach" and therefore accounting equity-liability reclassification matters even if there is no change in terms of cash flows. This is consistent with the "contracting approach" which is based on the theory of the firm, even when debt covenants are not a common place.

The results of the mixed logit model have showed that decision cooperatives to modify their articles of association is affected by a positive relationship with the share capital to total assets ratio, the debt ratio and the non current assets to total assets ratio.

The paper draws on the economics effects of accounting standards literature. This literature stream started with the seminal work of Zeff (1978)<sup>1</sup> and currently its interest is increasing significantly<sup>2</sup> (e.g. Haller, *et al*, 2012; Trombetta *et al.*, 2012; EFRAG, 2011).

This paper contributes to the literature providing additional evidence in a different setting, showing the importance of the accounting change from equity to liability even when there is no change in terms of cash flows and when it is relatively easy to make a readjustment to the financial statement by users to undo the reclassifications from equity to liability made according the new accounting standards.

In the following section we trace briefly on the equity-liability distinction in accounting identifying two opposing views, basically if to distinguish or not between equity and liability. From finance literature is argued that such distinction is important but from this literature, at least is not clear that accounting changes in equity-liability distinction matters if cash flows are not affected (information perspective). On the contrary, the contracting approach asserts that accounting changes can affect the firm's value and therefore they are important. Finally, we review the scarce literature on changes in accounting standards affecting equity-liability definition.

In the third section we summarize the main characteristics of the cooperatives as a different kind of firm comparing with the Investor Owned firms, we describe briefly the accounting reform process in Spain with especial reference to cooperatives and we conclude this section describing the options of the cooperatives and the setting of the accounting standard change.

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<sup>1</sup> Zeff (1978) uses the term "economic consequences" meaning the impact of accounting reports on the decision – making behavior of business, government, unions, investors and creditors.

<sup>2</sup> See the Special Issue: "The effects of Accounting Standards", of the Journal "Accounting in Europe", Volume 2, number 2, 2012.

In the fourth section we develop the hypothesis and define the variables; section fifth explains the methodology and the proposed model. Section sixth describes the sample, the data and provides the main descriptive statistics, section seventh explains and discusses the results and finally section eighth concludes.

## **2. Background.**

Equity-liability distinction has become a problematic issue to be addressed by Standard Setters, as it has been pointed out in several instances (f.e. the Financial Instruments with characteristic of equity” IASB-FASB joint project, the amendments to IAS 32 in 2008 regarding Puttable Financial Instruments and Obligations Arising on Liquidation (IASB, 2008), etc.). Therefore, it is not surprising that Standard Setters have been considering to eliminate the distinction between equities and liabilities. This is the so called “claims approach” (FASB, 2007) which was discussed first in the FASB (1990) Discussion Memorandum. The claims approach ranks all claims in order to priority and does not distinguish between equity and liability. But this approach traces as far as 1922 on the Paton’s work (Paton1922) who proposed not to distinguish between equity and liabilities considering that all are claims<sup>3</sup> against the entity, which has its own existence. This is in summary the “Entity View”<sup>4</sup>. On the other hand, the Proprietary Views, which make the assumption that the financial statements should be prepared under the point of view of the proprietors (owners) of the entity and there is sharp distinction between equity (proprietors’ interest) and liability.

Therefore, if the distinction is useful to users of financial statements Standards Setters should be follow a Proprietary View or at least a position more close to it. Another interesting issue arises, if the distinction is useful a change in the accounting standards affecting equity-liability distinction should be economic effects.

Clark (1993), motivated by the Discussion Memorandum of the FASB (1990), carried out a review of the financial literature, concluding that alternative to equity financing affect future cash flows, and therefore the distinction between equity and liability should be continue. There has been an extant financial literature from the proposal of Modigliani and Miller (1958) on the irrelevance of the capital structure on the firm’s value. Taxes, bankruptcy costs, agency costs, etc., all present in the actual world explain that capital structure impacts on firm’s value.

But, there are a lot of things unsaid, if the accounting change affects to equity-liability distinction but not the terms of the instrument and neither cash flows is not clear from the finance literature that the accounting change in equity-liability distinction matters. In few words, this is the so called “information perspective”.

On the contrary, following the “contracting approach” (Watts and Zimmerman, 1990) accounting numbers are used in contracts between parties to the firm, affecting the values of those contracts and the firm’s value.

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<sup>3</sup> He named them equities.

<sup>4</sup> There are different variations under the Entity View; a relevant variation is the Self-equity View which considers that the entity has its own equity separated from the funds provided by shareholders and debtholders.

Therefore; changes in accounting standards which suppose reclassifications between equity and liability merit deep study. But, despite the fact that is an interesting issue; empirical works in such contexts are scarce. For instance, Levy and Segal (2015) report on the *ex ante* effects of accounting reclassification of mandatorily redeemable preferred shares (MRPS) from a *mezzanine*<sup>5</sup> section to liability section in the balance sheet motivated by the SFAS 150. The share of MRPS in firms' new financing declined, especially in firms with higher level of debt and lower coverage ratios. Therefore, the accounting classification as debt made these securities a less popular financing vehicle.

Moser et al. (2011) focused on the *ex post* effects of SFAS 150 on debt covenants. The accounting reclassification of trust preferred stock (TPS) as debt brought some firms closer to breaching their debt covenants, as a result out of 58 industrial firms with TPS in 2002, 36 firms redeemed these stocks between 2003 and 2005. In a similar way, De Jong et al. (2006) examined the adoption of IAS 32 by 34 Dutch firms, and found that most firms affected by the new accounting standard with regard to preference shares, either bought back their preference shares or changed characteristics of the shares in such a way that the classification as equity can be maintained on the balance sheet.

Scott *et al.* (2011) studied the introduction in Canada of new and more restricted accounting standards in 2004 which prohibited the equity classification of anything other than the conversion option in convertible bonds in shares. This motivated the decline of the use of hybrid instruments in corporations with high leverage, but not so in trusts, where the principal motivation for their use was that they provided more financial flexibility.

All previous studies are focused in hybrid securities issued by listed companies and they are likely subject to structuring opportunities. On the contrary, as exposed in the next section, because of the nature of cooperative firms, where members' shares would be, with all due caution, the equivalent to common shares in a public or private company (investor owned firm), and not a new designed kind of instrument with mixed characteristics of debt and equity. Therefore, it is not plausible that members' shares are subject to structuring opportunities, in addition the setting of our study is made by no listed firms, where market securities is not an issue. The setting of the accounting changes is exposed with more detail in the next section.

### **3. The setting: cooperative firms and the accounting reform process in Spain with reference to cooperatives.**

The more usual kind of firm (known Investor Owned Firm (IOF)), public or private, is characterized by voting rights and economic rights attached to the number of share held. On the contrary, cooperatives are focused in the user members, where the member is owner, controller and economic participant in the cooperative (Birchall, 2005). Cooperatives are set up in order to fulfill the needs of their members (f.e. to sell the products of the members in the market, to supply products or services to the members, to provide a job, etc.). Members transact with the cooperative as consumer, supplier or employee and provide share capital to

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<sup>5</sup> Prior SFAS 150 securities with characteristics of equity and debt as the MRPS were reported in a mezzanine section between equity and liability.

the cooperative. Voting rights are attached to membership and not to the number of shares held and economic rights are attached to the level of economic transactions with the cooperative and not to the number of shares held. Chaddad and Cook (2004) characterise traditional cooperatives as having the following attributes: *“ownership rights are restricted to member-patrons, residual return rights are non transferable, nonappreciable and redeemable; and benefits are distributed among members in proportion to patronage”*. Therefore, members’ shares are redeemed at the end of membership at par value. Therefore the increase in the cooperative net worth or at least a part of this is left in the cooperative in order to satisfy the needs of the remaining members or future members. Members’ shares may be or may be not are remunerated. Its remuneration, called Share interest, is capped because of the surplus of the cooperative has to be distributed in proportion to the transactions between the member and the cooperative and not in proportion to the number of shares held.

The fact that accounting standards are developed with a kind of firm in mind (IOF) and the different characteristics of cooperatives, have raised considerable debate surrounding the equity-liability classification in cooperatives<sup>6</sup>, mainly triggered by the International Accounting Standards 32 and its unsuitability for cooperatives, even the solution offered by IFRIC 2 (unconditional right to refuse redemption) caused concerns on that such a stipulation would violate a core cooperative principle of open membership<sup>7</sup> (and the ability to withdraw).

In Spain, the introduction of International Financial Reporting Standards concluded with the passage of the Law 16/2007 on reform and adaptation of commercial legislation in matters of accounting in pursuit of international harmonisation based on European Union norms.

This process of reform of the mercantile norms in accounting matters has modified the basic body of regulations (Commercial Code, Law on Public Limited Companies and Law on Limited Liability) and has also developed a new General Accountancy Plan that is in consonance with the International Financial Reporting Standards. Based on the current IAS 32 and of its interpretation IFRIC 2, members’ shares in cooperatives would be reclassified as liabilities. The accounting reform in relation to cooperatives concludes in the Order EHA/3360/2010, of 21<sup>st</sup> December, which approves the *“Norms on accounting aspects of cooperative societies<sup>8</sup>”* and develops, between others, the accounting classification of members’ shares according to IFRIC 2.

In the face of the possible impacts that these changes could have, as early as 2007, the Law on reform and adaptation of commercial legislation in matters of accounting modified the national law on cooperatives, introducing the possibility of a new regime of members’ shares that would retain their classification as equity. Later, regional cooperative laws have incorporated the same regimen.

The main modifications introduced by the cooperative laws consist of the introduction of members’ shares whose redemption in the event of cessation of membership may be refused unconditionally by the Governing Board of the cooperative. This right to refuse may be

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<sup>6</sup> E.g. Detilleux, and Naett, 2005; Polo-Garrido, 2005; López-Espinosa, Maddocks and Polo-Garrido, 2009; Beubien, 2011; López-Espinosa, Maddocks and Polo-Garrido 2012.

<sup>7</sup> First Cooperative Principle of the International Co-operative Alliance (ICA, 1995).

<sup>8</sup> There after Spanish Accounting Standards for Cooperatives.

applicable to all members' shares, or partially, that is to a proportion of outstanding members' shares, i.e. the Articles of association may provide that when in an accounting year the amount of the return of members' shares exceeds over a fixed amount established in the Articles of association, any new redemptions will be conditional upon a favourable resolution of the Governing Board. In addition the Articles of association may provide that the members' shares of any new members joining a cooperative must preferentially be made through acquisition of the members' shares whose redemption has been requested due to their holders' cessation of membership and refused by the cooperative. This acquisition shall be made in the same order as the requests of this type were made, and in the case of requests made on the same date, shall be distributed in proportion to the amount of the contributions.

Therefore, cooperatives can opt for modifying their articles of association in order to introduce this new regimen of members' shares which retains the accounting equity classification of members' shares or on the contrary, do not modify their articles of association keeping the traditional regimen of redeemable members' shares but reclassifying the members' shares as accounting liability.

As cooperatives can choose between two options, this presents an interesting event. The setting of this event differs from those present in the few previous literature, and can be summarized as follow:

- Considering that cooperatives are a different kind of firm, the introduction of a new regimen of members' shares, whose redemption can be unconditional refused by the cooperative, affects a core characteristic of this organizational form.
- Because of the role of members and the members' shares in the cooperative as organizational form, members' shares are not subject to structuring opportunities in order to achieve a desirable financial reporting outcome, as the new financial instruments are.
- Members' shares are not transferable, therefore they cannot be listed instruments, but cooperatives can issue listed debt instruments. There are only two cooperatives which have listed financial instruments. Therefore, the sample (see section 6) is almost completely formed by non-listed firms. Consequently, securities markets do not play a role, but on the contrary, bank finance and other contracts can play a major role.
- The accounting change only affects the equity-liability classification in the balance sheet but not the net income. Before the current Spanish Accounting Standards for cooperatives (Order EHA/3360/2010) took in force, Share interest was accounted as expense and presented as a special item at the bottom of the net income according the former Spanish Accounting Standards for cooperatives<sup>9</sup>.
- The accounting change does not have tax effects, since that Share interest is tax deductible according to special cooperative fiscal regimen, independently of the accounting classification of the Members' Shares as equity or liability and independently of the accounting treatment of the Share interest as expense or distribution of profit.

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<sup>9</sup> ORDEN ECO/3614/2003, de 16 de diciembre, por la que se aprueban las normas sobre los aspectos contables de las Sociedades Cooperativas.

In the next section we develop the hypothesis in the context of this event.

#### **4. Hypothesis development.**

From the information perspective (Watts and Zimmerman, 1990) if the accounting change does not affect cash flows, it does not affect firm's value and therefore accounting change does not matter. As the accounting reclassification from equity to liability is only an accounting change in terms of presentation in the financial statements and does not modify the terms of the financial instrument (the members' shares) at all. Therefore the accounting change does not affect the cash flows resulting from that financial instrument. As explained, this accounting changes does not have tax effects, therefore cash flows relative to taxes are not affected. Consequently, the accounting change does not affect the cash flows at all, and then it does not affect firm's value. Consequently cooperatives do not have any incentive to modify their articles of association. Following the information perspective we can formulate the following hypothesis:

**H1a. Cooperatives do not have incentives to modify their articles of association because of the accounting change only affects the reclassification of members' shares from equity to liability and does not change the terms the instrument, neither changes the cash flows.**

On the contrary, from the theory of the firm, a firm is seen as a nexus of contracts and those firms which minimize contracting costs are more likely to survive (Fama and Jensen, 1983a); Fama and Jensen, 1983b). Furthermore, accounting (methods, principles, standards, etc.) affects the firm's contracts and therefore affects the firm's organizational costs (Watts, 1977). In summary this is the perspective of the Positive Accounting Theory (Watts and Zimmerman, 1978 and Watts and Zimmerman, 1990) and the resulting economic consequences of accounting standards (Zeff, 1978). Therefore, the new accounting standard and the resulting accounting reclassification from equity to liability of members' shares have an impact on the contracting costs of the cooperatives; consequently cooperatives have incentives to modify articles of association.

**H1b. The accounting change consisting of the reclassification of members' shares from equity to liability affects to contracting costs. Therefore accounting change matters and cooperatives have incentives to modify their articles of association.**

If the accounting change matters, regarding how important the economic effect of the new standard will be it is a difficult question *ex ante*, it will depend on different factors, such as institutional factors, capital structure of the cooperative, the credit technologies used by financial entities. But our starting point is that there is an important cost of modifying the articles of association. As commented, redeemable share at the end of membership is a traditional characteristic in cooperatives, and it is present in general terms in cooperatives around the world as well in Spain. The introduction of a right of the cooperative to refuse unconditionally the redemption of members' shares supposes an important change in terms of ownership contract, and we do not expect that the cooperative changes its articles of association if the cost of no modifying articles of association, that is the accounting reclassification to liability of members' shares, is perceived as not important. We must point out that the exit option, articulated by redeemable shares in cooperatives (because of these

shares are not transferable), is an important agency mechanism, which is highlighted by Llewellyn (2004). Therefore its modification could unbalance the existing ownership contracts in cooperatives.

Nevertheless, we can formulate several hypotheses on factors which can influence the decision of the cooperative to modify its articles of association, which can be later tested using direct measures or proxy variables.

The more share capital the cooperative presents according its size, the more important effects its reclassification has, therefore, cooperatives with more share capital in relative terms (scaled by cooperative's size) have more incentives to modify its articles of association. We measure share capital in relative terms as the share capital deflated by total assets, that is, the share capital to total assets ratio (SCR).

**H2. Share capital to total assets ratio (SCR) has a positive relation with the probability of the cooperative to modify its articles of association.**

The size of the cooperative can influence the modification of articles of association, big cooperatives are subject to more scrutiny and the accounting information plays a more important role than in small cooperatives. We use as measure of the size of the cooperative the logarithm of the total assets (TA) in millions of euros.

**H3. Total Assets (TA) has a positive relation with the probability of the cooperative modifies its articles of association.**

Obviously equity-liability reclassification can affect existing debt contract by means of violating some debt covenants. Unfortunately we do not have data on debt covenants, but according to Polo-Garrido (2014) are rarely used in this setting, although sometimes are used in refinancing operations. But on the other hand, debt ratios (or solvency ratios) can affect the access to new bank financing and/or its cost, as well can impact on long term contracts with customers because of they may be concern on the financial stability of their suppliers. In addition, trade creditors can change their credit policy if they asses that the risk increases. For all the above reasons, we expect that cooperatives which present higher debt ratios have more incentives to modify theirs articles of association in order to retain accounting equity classification of members' shares. Debt ratio is defines as total debts to total assets ratio.

**H4. Debt ratio (TA) has a positive relation with the probability of the cooperative to modify its articles of association.**

As it well known assets structure can impact on capital structure. That is, firms with more non-current assets need more permanent financing; as a result, cooperatives with more non-current assets (deflated by size) should be more affected by the equity-liability reclassification of members' shares and have more incentives to modify theirs articles of association.

**H5. Non Current Assets to total assets Ratio (NCAR) has a positive relation with the probability of the cooperative to modify its articles of association.**

An increase in sales is seen as a subrogate of growth opportunities, according the Pecking Order theory, firms will finance their growth opportunities first with internal funds, and later, when the internal funds are not enough, firms resort to debt. Therefore, cooperatives with more growth opportunities will resort more to debt and consequently will be more affected by the equity-liability reclassification of members' shares and have more incentives to modify their articles of association. We define sales variation as sales in year  $t$  divided by sales in year  $t-1$ .

**H6. Sales Variation (SV) has a positive relation with the probability of the cooperative to modify its articles of association.**

Old cooperatives are more consolidated and have reached more reputation than young ones; they can present stronger relationships with their stakeholders and as a result they will be less affected by the equity-liability reclassification of members' shares and have less incentives to modify their articles of association. We use as measure of age the logarithm of number of years of the cooperative.

**H7. Age has a negative relation with the probability of the cooperative modifies its articles of association.**

Cooperatives with low liquidity will be more affected by the equity-liability reclassification of members' shares and will have more incentives to modify their articles of association, because of liquidity ratios are harmed by the equity-liability reclassification of members' shares. We use as measure of liquidity the liquidity ratio defined as the current assets to current liabilities ratio.

**H8. Liquidity Ratio (LR) has a negative relation with the probability of the cooperative to modify its articles of association.**

Credit technologies used by financial entities can influence the effects of the equity-liability reclassification of members' shares. If credit technologies are based more in hard information, which includes accounting information, the equity-liability reclassification of members' shares will affect bank financing and cooperatives have incentives to modify their articles of association. On the contrary, if credit technologies are based strongly in soft information, that is named, relationship banking<sup>10</sup>, cooperatives will be affected in less extend by the equity-liability reclassification of members' shares and cooperatives have less incentives to modify their articles of association.

One of the more relevant dimensions which characterize the bank relations is the number of financial entities with which the firm operates (Berger and Udell, 1992; Petersen and Rajan, 1994). Finding proxies for relationship banking is not an easy task. In our study we construct a dichotomous variable which takes the value 0 if the cooperative operates with three or more banks and the value of 1 if the cooperative operates with one or two banks. All cooperatives in

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<sup>10</sup> Relationship banking relies on analysis of the information possessed by the financial institution as a result of its previous relations with the client. It does not have a structured methodology, but through the historical information on the relationships between the bank and the client aims to find a response adequate to the desired level of risk (Berger and Udell, 2006).

the sample operate with at least one bank. This variable is named relationship banking (RB), its level 1 means strong relationship banking and level 0 otherwise.

**H9. Relationship banking (RB) has a negative relation with the probability of the cooperative to modify its articles of association.**

### 5. Methodology and modelling.

In order to assess and to test the possible effect of the accounting reclassification a binomial test will be performed allowing us to infer about the population proportion of the cooperatives which modify its articles of association.

After that, we propose a mixed logit model to find out the drivers of the effect, that is, with the aim of shedding light on which factors can motivate that the cooperative chooses to modify its articles of association in order to retain the accounting equity classification of the share capital and, or on the contrary, which factors can influence the cooperative's decision to not modify its articles of association, despite de facto that share capital will be reclassified as liability.

Mixed logit has only been more or less recently applied in accounting research. The paper of Jones and Hensher (2004) is one of the first ones applying mixed logit in accounting research, specifically in financial distress (bankruptcy) research, but, as Jones and Hensher (2004) assert, mixed logit has potential usefulness in other areas of accounting research.

Discrete choice theory deals with the understanding of the discrete behavioral responses of individuals to the actions of business, markets, and government when faced with two or more possible outcomes, or choices (Louviere et al. 2000). Under Discrete choice theory, agents make their choices according to their preferences and the resulting utility maximization. Given the incomplete knowledge on the information inputs of the agents, there are unobserved heterogeneity (individual variations), and this heterogeneity can impinge the validity of various theoretical and empirical models (Jones and Hensher, 2004) with discrete dependent variable.

"Standard" logit assumes that the errors are independently and identically distributed (IID), but the errors from the same cluster (f.e. an economic sector, same individual over time, etc.) can be correlated. Mixed logit allows control of this unobserved heterogeneity by means of random parameters (slopes) and/or random intercept for each individual (individual random effect) in the sample. Furthermore, in our model the individual random effect presents a hierarchical structure; that is to say, they are nested and centered in each sector. The individual random effect refers to the specific characteristics of each cooperative which are not captured by the fixed effects of the model. The variance of the individual random effect represents a measure of the intensity of its effect. In our model, the terms  $u_i$  accounts for the unobserved heterogeneity among cooperatives within each economic sector; they are centered in each sector dummy coefficient, presenting zero mean.

The model is:

$$\text{Level 1: } \text{Logit}(\text{CAS}_i) = \alpha + \beta_1 \text{SCR}_i + \beta_2 \text{Log}(\text{TA})_i + \beta_3 \text{DR}_i + \beta_4 \text{NCAR}_i + \beta_5 \text{SV}_i + \beta_6 \text{Log}(\text{Age})_i + \beta_7 \text{LR}_i + \beta_8 \text{RB}_i + \beta_9 \text{Sector}_2_i + \beta_{10} \text{Sector}_3_i + e_i \quad (1a)$$

Level 2:

$$\alpha = \gamma_0 + u_i \quad (1b)$$

$$\beta_{10} = \gamma_1 + u_i \quad (1c)$$

$$\beta_{11} = \gamma_2 + u_i \quad (1d)$$

Where, the dependent variable Change in Articles of association (CAS) is a dichotomous variable response which takes the value 1 if the cooperative has modified its articles of association in order to introduce a new regime of members' shares which retains accounting classification as equity, and 0 otherwise.

The explanatory variables have been defined in the previous section<sup>11</sup>, in addition, economic sectors have been considered. They are grouped in three sectors based on NACE codes and the different rate of change in articles of association. Sector 1 is comprised by NACEs 01 to 04 (agriculture, forestry and fishing) and NACEs 13 to 35 (manufacturing industry<sup>12</sup>). Sector 2 is comprised by NACEs 10 to 12 (Manufacture of food goods, beverages and tobacco products) and NACEs 45 to 48 (Wholesale and retail trade; repair of motor vehicles and motorcycles) and Sector 3 is comprised by other NACEs, that is NACEs 49 to 99 and NACEs 35 to 43 (Electricity, gas, steam and air conditioning supply, water supply; sewerage; waste management and remediation activities and construction).

## 6. Sample, data and descriptive statistics.

SABI (*Sistema de Análisis de Balances Ibéricos*), a company accounts data base compiled by Bureau van Dijk, is the data source of this study. SABI covers Spain and Portugal and cooperatives can be selected by legal form. The sample is composed by all Spanish cooperatives in the data base which are set up before 1 of January of 2010 with accounts available in all accounting years between 2008 and 2012, as well an additional criterion is established, accounts have to be audited at least one of the previous accounting years.

The sample comprises 164 cooperatives. Cooperatives with missing data in the dependent or explanatory variables are dropped from the sample, resulting in a final sample comprised by 146 cooperatives.

The dependent variable has been coded as 1 if the cooperative has modified its Articles of association or 0 otherwise. The dependent variable has been hand-coded; we looked at the classification of the share capital in 2012. If share capital is classified as equity, it means that the cooperative has modified its Articles of association in order to retain equity classification of share capital. On the contrary, if share capital has been reclassified as liability, it means that cooperative did not modify its articles of association and accordingly the share capital has

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<sup>11</sup> Share Capital Ratio (SCR) is the share capital to total assets ratio. Log(TA) is the logarithm of the total assets in millions of euros. Debt Ratio (DR) is the total debts to total assets ratio. Non Current Assets Ratio (NCAR) is the non current assets to total assets ratio. Sales Variation (SV) is defined as sales in year t divided by sales in year t-1. Log(Age) is the logarithm of number of years of the cooperative since the cooperative was set up. Liquidity Ratio (LR) is the current assets to current liabilities ratio. Relationship banking (RB) is a dichotomous variable which takes the value 0 if the cooperative operates with 3 or more banks and 1 if operates with 1 or 2 banks.

<sup>12</sup> Except food goods, beverages and tobacco products.

been reclassified. We coded the dependent variable according to the classification in 2012 and not in 2011 on order to allow a span time which cooperatives may need to modify its articles of association.

Table 1 reports on the descriptive statistics and shows that Total Assets (LA) and Liquidity Ratio (LR) present strong "heavy-tailed" distributions.

[Insert table 1 about here]

Table 2 reports on correlations between the explanatory continuous variables and shows no important correlations between the explanatory continuous variables.

[Insert table 2 about here]

## **7. Results and discussion.**

Over the total cooperatives in the sample (146), 125 cooperatives modified their articles of association in order to introduce a new regimen of members' shares which retains the accounting equity classification of them, resulting in a percentage of 85.61. In a first sight this is obviously a strong support for the view that accounting affects firm's value (Positive Accounting Theory, economic consequences of accounting standards) and a strong rejection of the information perspective. A binomial test is computed using R software and is informed in table 3, in order to check the hypothesis 1a the null hypothesis is formulated as "the population rate of cooperatives that modify articles of association is zero".

[Insert table 3 about here]

The null hypothesis (population rate is 0%) is strongly rejected (p-value <0.001) and the confidence interval at 95% is 78.86%-90.87%, therefore we reject hypothesis 1a and do not reject hypothesis 1b. The confidence interval shows, without doubt, and important effect of the accounting reclassification of members' shares.

We ran the proposed model using R software and the results are reported on the table 4.

[Insert table 4 about here]

The results show three significant explanatory variables. Share capital to total assets ratio (SCR) has resulted significant at 1% (p-value 0.00477). The coefficient shows a positive sign according to the expected relation, as well an important effect ( $\beta=8.80$ ), tacking account that is a ratio, that is given as a fraction of unity (not a percentage), it means that an increment of 0.01 units of the ratio (1% of increment) leads to an increment of 0.092<sup>13</sup> (9.2%) of the ratio between odds ratios.

Total debts to total assets ratio (DR) has resulted significant at 1% (p-value 0.0034). The coefficient shows a positive sign according to the expected relation and an important effect ( $\beta=8.54$ ), tacking account that is a ratio, that is given as a fraction of unity (not a percentage), it

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<sup>13</sup> This is the exponential of  $\beta/100$  and means the increment of the ratio between of odds ratios when an increment of 0.01 (one percent) of SCR has took place, when all other explanatory variables are equal.

means that an increment of 0.01 units of the ratio (1% of increment) leads to an increment of 0.089 (8.9%) of the ratio between odds ratios.

Non current assets to total assets ratio (NCAR) has resulted significant at 5% (p-value 0.03407). The coefficient shows a positive sign according to the expected relation, as well an important effect ( $\beta=4.95$ ), although less effect than the previous significant explanatory variables. Its effect means that an increment of 0.01 units of the ratio (1% of increment) leads to an increment of 0.05 (5%) of the ratio between odds ratios.

The logarithm of total assets has exhibited a positive sign according the expected sign, but has resulted no significant.

Sales variation has not resulted significant and has returned a negative sign which is contrary to the expected; although the size of the effect would be low.

Age, as the logarithm of the number of years of the cooperative has showed a negative sign, which is according to the expected sign, but, as well, has resulted no significant.

Liquidity ratio has returned a positive sign which is contrary to the expected sign; although the size of the effect would be low. Regardless, the variable has resulted no significant.

Hypothesis 9 was not confirmed. Relationship banking resulted no significant, but exhibits a negative sign conforming to the expected sign. The size of the effect would be considerable if relationship banking would have been significant.

Finally, sector dummy variables have not resulted significant.

There are deviance residuals bigger than two in absolute value which can indicate a lack of fitness in some observations, but there are only four deviance residuals which are bigger than two in absolute value, therefore the size and number of deviance residuals do not indicate lack of fitness.

Table 5 reports on the classification of the model.

[Insert table 5 about here]

The model has an overall rate of correct classification of 89.72%. Depending on the observed values, the model classifies correctly the 97.6% of the cases when the cooperative modified its articles of association (observed value of CAS is 1) and the 42.85% of the cases when the cooperative does not modify its articles of association (observed value of CAS is 0). The model misclassifies the 57.14% of the cases when the cooperative does not modify its articles of association and the 2.4% of the cases when the cooperative modifies its articles of association. The classification's results show general good fitness of the model.

## **8. Conclusions.**

Equity-liability distinction has resulted in a problematic area for Standards Setters. In the case of cooperative entities has given rise to a considerable debate. This paper studies the accounting change in Spain affecting cooperatives. As a result of the new Spanish accounting standards for cooperatives that introduced the IFRIC 2 criteria, cooperatives had to reclassify

the members' shares from equity to liability or to modify their articles of association, introducing a new regimen of members' shares whose redemption can be unconditionally refused by the cooperative. Cooperatives can opt for modifying their articles of association in order to retain the accounting equity classification of members' shares or to reclassify the members' shares to liability.

This constitutes an interesting event because of there are only few previous empirical works which addressed effects of changes in accounting standards which supposed a reclassification from equity to liability and the settings of this event presents substantive differences with the previous accounting changes.

In summary, the required changes in the instrument (members' shares) affect a core characteristic of cooperative organizational form. Members' shares are not subject to structuring opportunities in order to achieve a desirable financial reporting outcome such as the previous financial instruments studied. The sample is almost completely formed by non-listed firms. Consequently, securities markets do not play any role. Debt covenants are rarely used in bank finance. The accounting change only affects the presentation of the instrument in the balance sheet but not the net income, neither affects the terms of the instrument (members' shares) and does not have tax effect, therefore there is not effect on cash flows.

From a sample of Spanish cooperatives extracted from SABI, the results shows an important rate of cooperatives which modify their articles of association, changing the terms of members' shares (85.61% (95% confidence interval of the population rate: 78.86%-90.87%)) at the end of the second year after the new accounting standards took in place.

The results support that accounting equity-liability distinction is important and should be continued rejecting the so called "claims approach" and favoring Proprietary approaches in accounting. Results reject the "information approach" and therefore accounting equity-liability reclassification matters even if there is no change in cash flows. On the contrary, results are consistent with the "contracting approach" which is based on the theory of the firm, even when debt covenants are not a common place. The results are in line with the economic consequences of accounting standards literature.

The proposed mixed logit model provided results on which factors can affect the decision of the cooperative on modifying or not its articles of association. Three variables have resulted significant. Share capital to total assets ratio and total debts to assets ratios are significant and have an important effect on favor of modifying the articles of association. Non current assets to total assets ratio is significant and has an important positive effect on the decision of modifying the articles of association, but less important than the previous.

The remaining variables are not resulted significant although they present signs according to the expected signs except to sales variation and liquidity ratio.

Relationship banking is negatively related to the decision of modifying articles of association, but has not resulted significant. Although is worthy to point out that is difficult to define proxies of relationship banking.

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**Table 1. Descriptive statistics of the explanatory continuous variables.**

| Variables | Mean  | Sd     | Min  | Max      | Median | Skewness | Kurtosis |
|-----------|-------|--------|------|----------|--------|----------|----------|
| SCR       | 0.14  | 0.15   | 0.00 | 1.04     | 0.10   | 2.34     | 8.84     |
| TA        | 73.59 | 306.43 | 0.92 | 3.432.65 | 14.47  | 9.33     | 96.71    |
| DR        | 0.63  | 0.20   | 0.14 | 0.99     | 0.66   | -0.53    | -0.45    |
| NCAR      | 0.36  | 0.19   | 0.00 | 0.91     | 0.35   | 0.29     | -0.19    |
| SV        | 0.25  | 0.30   | 0.01 | 1.18     | 0.12   | 1.47     | 0.56     |
| Age       | 42.32 | 20.59  | 9    | 113      | 37.50  | 0.78     | 0.48     |
| LR        | 1.65  | 2.09   | 0.37 | 24.25    | 1.21   | 8.91     | 91.87    |

SCR = share capital to total assets ratio. TA = Total Assets. DR =debt ratio, debt to total assets ratio. NCAR = non-current assets to total assets ratio. SV = sales variation defined as Sales 2010/Sales 2009. Age = age in number or years. LR = liquidity ratio (current assets to current liabilities).

**Table 2. Correlations of the explanatory continuous variables.**

|      | SCR    | TA     | DR     | NCAR   | SV    | Age   | LR    |
|------|--------|--------|--------|--------|-------|-------|-------|
| SCR  | 1.000  |        |        |        |       |       |       |
| TA   | 0.033  | 1.000  |        |        |       |       |       |
| DR   | -0.324 | -0.047 | 1.000  |        |       |       |       |
| NCAR | 0.204  | 0.134  | -0.358 | 1.000  |       |       |       |
| SV   | 0.027  | -0.084 | -0.275 | 0.225  | 1.000 |       |       |
| Age  | 0.014  | 0.096  | -0.261 | 0.228  | 0.025 | 1.000 |       |
| LR   | -0.036 | -0.001 | -0.171 | -0.050 | 0.098 | 0.235 | 1.000 |

SCR = share capital to total assets ratio. TA = Total Assets. DR =debt ratio, debt to total assets ratio. NCAR = non-current assets to total assets ratio. SV = sales variation defined as Sales 2010/Sales 2009. Age = age in number or years. LR = liquidity ratio (current assets to current liabilities).

**Table 3. Binomial test on the population rate of modification of articles of association.**

binom.test(125,146, p=0)

Exact binomial test

data: 125 and 146

number of successes = 125, number of trials = 146, p-value &lt; 2.2e-16

alternative hypothesis: true probability of success is not equal to 0

95 percent confidence interval: 78.86% 90.87%

sample estimates: probability of success 85.61%

**Table 4. The mixed logistic regression model.**

Fixed effects coefficients

| Variable  | Estimate | Std. Error | z value | Pr(> z )  |
|-----------|----------|------------|---------|-----------|
| Intercept | 10.7168  | 724.32     | 0.015   | 0.98820   |
| SCR       | 8.8062   | 3.12       | 2.822   | 0.00477** |
| Log(TA)   | 0.3835   | 0.32       | 1.226   | 0.22019   |
| DR        | 8.5460   | 2.92       | 2.930   | 0.00340** |
| NCAR      | 4.9497   | 2.33       | 2.119   | 0.03407*  |
| SV        | -0.4318  | 1.13       | -0.384  | 0.70129   |
| Log(Age)  | -0.1183  | 0.70       | -0.169  | 0.86600   |
| LR        | 0.2777   | 0.48       | 0.580   | 0.56174   |
| RB        | -0.3636  | 0.64       | -0.567  | 0.57082   |
| Sector2   | -17.8637 | 724.32     | -0.025  | 0.98032   |
| Sector3   | -13.2406 | 724.32     | -0.018  | 0.98542   |

Signif. codes: '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 '' 1

Random effects:

| Groups             | Name        | Variance  | Std.Dev.  |
|--------------------|-------------|-----------|-----------|
| sector:cooperative | (Intercept) | 4.048e-14 | 2.012e-07 |

Number of obs: 146, groups: sector:cooperative, 146

Performance of the model

| AIC | BIC   | logLik | deviance | df.resid |
|-----|-------|--------|----------|----------|
| 102 | 137.8 | -39.0  | 78.0     | 134      |

Deviance residuals:

| Min        | 1Q        | Median    | 3Q        | Max       |
|------------|-----------|-----------|-----------|-----------|
| -2.5220000 | 0.0000571 | 0.2321000 | 0.1033000 | 0.4621000 |

Share Capital Ratio (SCR) is the share capital to total assets ratio. Log(TA) is the logarithm of the total assets in millions of euros. Debt Ratio (DR) is the total debts to total assets ratio. Non Current Assets Ratio (NCAR) is the non current assets to total assets ratio. Sales Variation (SV) is defined as sales in year t divided by sales in year t-1. Log(Age) is the logarithm of number of years of the cooperative since the cooperative was set up. Liquidity Ratio (LR) is the current assets to current liabilities ratio. Relationship banking (RB) is a dichotomous variable which takes the value 0 if the cooperative operates with 3 or more banks and 1 if operates with 1 or 2 banks. Sector 1 (intercept) is comprised by NACEs 01 to 04 and NACEs 13 to 35. Sector 2 is comprised by NACEs 10 to 12 and NACEs 45 to 48 and Sector 3 is comprised by other NACEs, that is, NACEs 49 to 99 and NACEs 35 to 43.

**Table 5. Classification table using a cut point of 0.5.**

| Observed | Predicted   |              | Total |
|----------|-------------|--------------|-------|
|          | CAS=0       | CAS=1        |       |
| CAS=0    | 9<br>42.85% | 12<br>57.14% | 21    |
| CAS=1    | 3<br>2.4%   | 122<br>97.6% | 125   |
| Total    | 12          | 134          | 146   |