CHOICE OF INVENTORY ACCOUNTING METHOD UNDER IFRS: AN EMPIRICAL STUDY FROM THE PERSPECTIVE OF POSITIVE ACCOUNTING THEORY [*]

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ABSTRACT

This study aims to explore how firm-specific factors influence managers' choice of inventory accounting methods under International Accounting Standards/International Financial Reporting Standards from a positive accounting theory perspective. A total of 921 companies from 11 different countries are included in the study for the year 2019. Multiple regression analysis is used to test the impact of explanatory variables on the choice of inventory accounting method. The results demonstrate that firm size and capital intensity influence the choice of FIFO negatively, which show that as firm size and capital intensity increases, companies' tendency to select FIFO decreases, consistent with political-cost hypothesis.

Keywords: Inventory Method, FIFO, Political-Cost Hypothesis, Positive Accounting Theory

JEL Classification: M40, M41

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UFRS'DE STOK DEĞERLEME YÖNTEMİ SEÇİMİ: POZİTİF MUHASEBE TEORİSİ ÇERÇEVESİNDE AMPİRİK BİR ÇALIŞMA

ÖZ

Bu çalışmanın amacı, firmaya özgü faktörlerin Uluslararası Muhasebe Standartları/Uluslararası Finansal Raporlama Standartları çerçevesinde stok değerleme yöntemi seçimini nasıl etkilediğini Pozitif Muhasebe Teorisi perspektifi ile açıklamaktır. Bu bağlamda 11 farklı ülkeden 921 işletmenin 2019 mali yılına ait verileri incelenmiştir. Açıklayıcı değişkenlerin stok değerleme yöntemi seçimine etkisini test edebilmek için çoklu regresyon analizi kullanılmıştır. Elde edilen sonuçlara göre işletme büyüklüğü ve duran varlık yoğunluğu FİFO yöntemi seçimini negatif yönde etkilemektedir. Bu sonuçlara göre duran varlık yoğunluğu arttıkça işletmelerin stok değerleme yöntemi olarak FİFO'yu seçme eğilimleri azalmaktadır. Bulunan sonuçlar, Politik Maliyetler Hipotezi ile uyumludur.

Anahtar Kelimeler: Stok Değerleme Yöntemi, FIFO, Politik Maliyetler Hipotezi, Pozitif Muhasebe Teorisi

JEL Sınıflandırması: M40, M41

GENİŞLETİLMİŞ ÖZET

AMAÇ VE MOTİVASYON

Uluslararası Muhasebe Standartları/Uluslararası Finansal Raporlama Standartları (UMS/UFRS)'na göre stok değerleme yöntemi olarak ilk giren ilk çıkar (FİFO) yöntemi, ağırlıklı ortalama maliyet yöntemi veya türü veya kullanım alanları farklı olan stoklar için ise her iki yöntem aynı anda kullanılabilir. UMS/UFRS ile birden fazla stok maliyeti hesaplama yöntemi belirtilmiş olsa da bu yöntemlerin seçiminde yatan faktörler ile ilgili ampirik bir çalışmaya literatürde rastlanmamıştır. Bu bağlamda bu çalışma firmaya özgü faktörlerin stok değerleme yöntemi seçimini nasıl etkilediğini Pozitif Muhasebe Teorisi perspektifi ile yorumlayarak literatüre katkı sağlamayı amaçlamaktadır.

ARAŞTIRMA STRATEJİSİ VE YÖNTEMİ

Politik Maliyetler Hipotezi'ne göre büyük firmalar küçük firmalara göre daha görünür olduklarından dolayı politik maliyetlere küçük firmalara nazaran daha çok katlanmaktadırlar (Watts & Zimmerman, 1986). Bu nedenle literatürde büyük firmaların gelir azaltıcı muhasebe politikaları tercih ettiğini gösteren birçok çalışma mevcuttur (bknz. Gul, 2001; Missonier-Piera, 2004; Morse & Richardson, 1983; Dyl, 1989; Archambault & Archambault, 1994). Bu nedenle birinci hipotezimiz büyük firmalar daha çok gelir azaltıcı stok değerleme yöntemi tercih etmektedir diye oluşturulmuştur. Holthausen & Leftwich (1983), Watts & Zimmerman (1986), ve Press & Weintrop (1990) dikkate alındığında ikinci hipotezimiz şu şekilde oluşturulmuştur: Yüksek kaldıraca sahip firmalar, kısıtlayıcı borç sözleşmelerine sahip olduklarından gelir

arttırıcı stok değerleme yöntemi tercih etmektedirler. Literatürde zıt sonuçlar olması nedeniyle 3. ve 4. hipotezlerimiz sırasıyla karlılığı yüksek olan firmalar daha çok gelir arttırıcı/azaltıcı stok değerleme yöntemi tercih etmektedir ve duran varlık yoğun firmalar daha çok gelir arttırıcı/azaltıcı stok değerleme yöntemi tercih etmektedir diye oluşturulmuştur. Son hipotezimiz ise yatırım fırsat seti yüksek olan firmalar daha çok gelir arttırıcı stok değerleme yöntemi tercih etmektedir şeklinde oluşturulmuştur.

Çalışmada Avustralya, İngiltere, İrlanda, Yeni Zelanda, Hollanda, Belçika, Almanya, İspanya, Fransa, İtalya ve Portekiz olmak üzere 11 farklı ülkeden borsaya kote olmuş toplamda 921 işletme kullanılmıştır. 2019 mali yılına ait finansal veriler ORBİS veri tabanından indirilmiştir. Firmaların kullandığı stok değerleme yöntemi tek tek firmaların web sitesine girilerek tespit edilmiştir. Çalışmanın bağımlı değişkeni stok değerleme yöntemi seçimidir. Bağımsız değişkenler ise firma büyüklüğü, finansal kaldıraç, karlılık, duran varlık yoğunluğu ve yatırım fırsat setidir. Finansal raporlama sistemi ülke farklılıklarından etkilenmektedir (Craig & Diga, 1998). Benzer şekilde muhasebe politikası tercihleri sektör farklılıklarından etkilenmektedir (Morse & Richardson, 1983; Hunt, 1985; Lee & Hsieh, 1985). Bu nedenle 11 ülke için 10, 14 sektör için 13 kukla değişkeni kullanılmıştır.

BULGULAR VE TARTIŞMA

Çoklu regresyon sonuçlarına göre firma büyüklüğü FİFO yöntemi seçimini negatif olarak etkilemektedir ve bu etki %5 seviyesinde istatistiksel olarak anlamlıdır. Bu sonuç büyük firmaların gelir azaltıcı stok değerleme yöntemlerini seçme eğiliminde olduğunu belirten politik maliyetler hipotezini desteklemektedir. Bu nedenle birinci hipotez (H1) kabul edilmiştir. Bu doğrultuda firmaların satılan mallar maliyetini daha yüksek hesaplayabilen stok değerleme yöntemini tercih ederek karlarını daha düşük gösterebileceği sonucuna ulaşılabilir. Bulunan sonuç önceki çalışmaları (bknz Gul, 2001; Missonier-Piera, 2004; Morse & Richardson, 1983; Dyl, 1989; Archambault & Archambault, 1994) destekler niteliktedir.

Finansal kaldıraç ile stok değerleme yöntemi seçimi arasında negatif ilişki tespit edilse de bu ilişki istatistiksel olarak anlamlı değildir. Bu nedenle ikinci hipotez (H2) reddedilmiştir. Duran varlık yoğunluğunun stok değerleme yöntemi olarak FİFO yönteminin seçiminde 0.069 p-değeri ile istatistiksel olarak anlamlı ve negatif bir ilişkiye sahip olduğu bulunmuştur. Bu durum duran varlık yoğunluğu arttıkça firmaların FİFO yöntemini seçme eğilimlerinin azaldığını göstermektedir. Bu nedenle dördüncü hipotez (H4) kabul edilmiştir. Bu sonuç duran varlık yoğunluğu arttıkça firmaların gelir azaltıcı yöntemleri seçme eğiliminde olduğunu belirten önceki çalışmalar (Ali & Ahmed, 2017; Astami & Tower, 2006; Craycraft ve diğerleri, 1998) ile uyumludur.

Sonuçlar incelendiğinde karlılık ve yatırım fırsat seti ile stok değerleme yöntemi seçimi arasında istatistiksel olarak anlamlı bir ilişki tespit edilememiştir. Bu nedenle üçüncü ve beşinci hipotezler (H3 ve H5) reddedilmiştir. Daha önceki çalışmalar (bknz. Astami & Tower, 2006; Craycraft ve diğerleri, 1998; Hagerman & Zmijewski, 1979; Abdel-Khalik, 1985; Skinner, 1993) karlılık ve yatırım fırsat seti ile stok değerleme yöntemi seçimi arasında ilişki olduğunu belirtseler de bu çalışma söz konusu ilişki için mevcut literatürü desteklememektedir.

SONUÇ VE ÖNERİLER

Çalışmada elde edilen sonuçlara göre işletme büyüklüğü ve duran varlık yoğunluğu FİFO yöntemi seçimini negatif yönde etkilemektedir. Bu bağlamda işletmelerin stok değerleme yöntemi olarak FİFO'yu seçme eğilimleri işletme büyüklüğü ve duran varlık yoğunluğu arttıkça azalmaktadır. Bulunan sonuçlar, büyük ve/veya duran varlık yoğun işletmelerin gelir azaltıcı değerleme yöntemlerini tercih ettiğini belirten Politik Maliyetler Hipotezi ile uyumludur. Bu bağlamda büyük ve/veya duran varlık yoğun işletmelerin karlılık ve finansal performans analizleri yapılırken bu çalışma ile gözler önüne serilen Politik Maliyetler Hipotezi etkisinin dikkate alınması önerilmektedir.

1. INTRODUCTION

Prior to January 1, 2005, companies listed in European stock markets were using domestic accounting standards (Armstrong et al., 2010). Starting from January 1, 2005, all listed companies in Europe should comply with IAS/IFRS as a common set of accounting standards in preparing their consolidated financial statements in order to achieve integration of capital markets and to increase the quality of accounting information (Armstrong et al., 2010). Similarly, many countries from Africa to America integrate their local principles to IAS/IFRS, which, in turn, results in authorized implementations of IAS/IFRS in more than 100 countries (Guggiola, 2010; Terzi et al., 2013). However, some applications within IAS/IFRS are subject to managerial discretion (Ali & Ahmed, 2017). This means that managers can choose among several alternative accounting methods for some accounting practices (e.g. depreciation, inventory, and goodwill). In such a case, managers and/or entrepreneurs may be motivated to choose among alternative accounting methods for opportunistic reasons to report minimized or maximized income (see Ali & Ahmed, 2017). Since this influences the usefulness and relevance of accounting information, it has become important to understand why managers select income-minimizing or income-maximizing accounting policies (see Waweru et al., 2011). In order to address this issue, several authors (e.g. Astami & Tower, 2006; Waweru et al., 2011; Ali & Ahmed, 2017) investigate the factors influencing companies' choice of accounting

policies under IAS/IFRS using a composite score of several accounting policies (depreciation, goodwill, inventory, and property, plant, and equipment). Some other authors (e.g. Missonier-Piera, 2004), on the other hand, explore motives for selection of accounting method for specific accounting policies such as fixed assets revaluation under IFRS.

Considering inventory accounting methods, prior to IAS/IFRS, there were three alternative inventory cost flow assumptions used to calculate cost of goods sold and cost of ending inventory. These methods were weighted average cost (WAC), first-in first-out (FIFO), and last-in first-out (LIFO). The literature review reveals a stream of studies (e.g. Morse & Richardson, 1983; Hunt, 1985; Abdel-Khalik, 1985; Lee & Hsieh, 1985; Dyl, 1989; Craycraft et al., 1998; Gul, 2001) investigating factors influencing managers' selection of particular inventory accounting methods. These studies, in general, attempt to explain why companies do not select LIFO. Within IAS/IFRS, however, LIFO is no longer among the alternative inventory accounting methods. Under IAS 2, three alternative inventory accounting methods are available. These are WAC, FIFO, and a combination of WAC and FIFO. Despite the fact that combination of alternative inventory accounting methods have changed under IAS/IFRS, to the best of the authors' knowledge, there is no study empirically exploring economic determinants of managers' choice of inventory accounting methods under IAS/IFRS. In this regard, this study attempts to fill this gap and it investigates how the factors related to costly contracting theory influence choice of inventory accounting methods under IAS/IFRS. In this study, in line with some of the prior studies (e.g. Skinner, 1993; Astami & Tower, 2006; Ali & Ahmed, 2017), FIFO is considered an income-increasing inventory accounting method. The WAC is considered an income-decreasing inventory accounting method. The combination of FIFO and WAC, on the other hand, is accepted as an inventory accounting method that lies between FIFO and WAC with respect to its effect on income.

Costly contracting theory is closely related to positive accounting theory. The positive accounting theory assumes that managers, as agents, are concerned with their own self-interest and they tend to select among alternative accounting policies to maximize their own benefit which makes the usefulness and value relevance of accounting information questionable (see Waweru et al., 2011). Astami and Tower (2006) imply that costly contracting theory strongly explains the economic drivers of managers' choice of accounting policies. Inspired by this argument, several studies (e.g. Tan et al., 2002; Astami & Tower, 2006) investigate the economic determinants of accounting policy choices using costly contracting theory. Costly contracting theory has also been used by several authors (e.g. Abdel-Khalik, 1985; Hunt, 1985; Lee & Hsieh, 1985) to empirically explore managers' choice of inventory accounting policies prior to IAS/IFRS period. Based on this consideration, use of costly contracting theory for the purpose of this study is quite justifiable.

Accordingly, the current study is expected to contribute to the literature because it is considered to be the first empirical research exploring managers' choice of inventory accounting methods under IAS/IFRS. In addition, findings of the current study are expected to enable users of financial information and standard-setters to understand how and why managers select income-maximizing or income-minimizing inventory accounting methods for opportunistic reasons.

The paper progresses as follows. Section 2 outlines the theoretical background of the study. This is followed by development of the hypotheses in Section 3. Section 4 presents research methodology. Research methodology is followed by presentation of results in Section 5. Section 6 is the final section, and it outlines conclusions and implications.

2. THEORETICAL BACKGROUND

Managers' choice of accounting policies is a function of various contracts, which are written to mitigate conflicts between several internal and external parties (Meyer et al., 2000). The main theme of costly contracting theory, which is utilized in this study, is that the firm exists as a legal nexus of contractual relationships and managers' choice of accounting policies has a link to these relationships (see Watts & Zimmerman, 1978). In this context, since agency theory can be used to explain the texture of the conflicts, the agency theory is first outlined in this section. Next, political cost theory is explained. This is followed by costly contracting theory.

2.1. Agency Theory

The agency theory is based on the agency problem, which is mainly to the result of the principal-agent conflict in the agency relationship when the agent has more insider information than the principal (Jensen & Meckling, 1976). In this relationship, one or more principal(s) engage an agent to perform some services on their behalf, which encompasses delegating some decision-making authority to the agent (Jensen & Meckling, 1976). According to Jensen and Meckling (1976), there exist two types of principal-agent conflicts. One of the conflicts exists between managers and shareholders and results from separation of ownership and control. The other conflict, on the other hand, is between shareholders and creditors and it is brought by increasing debt financing. The manager-shareholder conflict emerges when shareholders have a tendency to maximize their profits and managers have tendency to maximize their personal goals (Su, 2010). In this case, managers' efforts to reach their personal objectives may not be the best for firm value. For example, instead of paying dividends to shareholders, managers tend to invest free cash flow for low return investments and for unrelated diversification (Jensen, 1986; Kochhar, 1996). In order to minimize

managers' opportunistic behavior, shareholders try to establish proper corporate governance mechanisms such as the board of directors, ownership monitoring, and executive compensation contracts (Jensen & Meckling, 1976; Core et al., 1999). The monitoring costs and the residual loss, which result from inefficient managerial behavior, constitute agency costs (Jensen & Meckling, 1976; Williamson, 1988).

On the other hand, according to some authors (e.g. Jensen, 1986; Hart & Moore, 1995), debt financing can be used as a monitoring device to discipline managers' discretionary actions in order to reduce the agency costs caused by the manager-shareholder conflict. However, while trying to minimize agency costs caused by manager-shareholder conflict, increase in debt financing leads to another potential conflict, which is now between creditors and shareholders. The creditor-shareholder conflict emerges when shareholders take risky investment decisions at the expense of creditors. In this case, shareholders may cause underinvestment when they do not take value-enhancing investment opportunities. In addition, shareholders tend to overinvest in high-risk projects where shareholders get most of the gains at the expense of creditors (Jensen & Meckling, 1976). These, in turn, cause agency problem between creditors and shareholders (Jensen & Meckling, 1976; Myers, 1984). In this case, creditors demand higher interest returns and/or impose protective debt contracts and/or monitoring devices to protect themselves from the risk (Long et al., 1994; Anderson et al., 2003).

2.2. Political Cost Theory

Political costs encompass potential wealth transfers imposed by government through adverse political actions such as subsidies, regulation, new taxes and tariffs on companies, and quality and environmental norms (Watts & Zimmerman, 1978; Wong, 1988; Ness & Mirza, 1991; Jones, 1991). According to Cahan (1992), there are three components of political costs, which are the probability that: (1) the regulatory action will be taken, (2) outcome of the action will be unfavorable, and (3) unfavorable outcome will have costs to the firm. Cahan (1992) states that the joint function of these components constitutes expected political costs.

Watts and Zimmerman (1978) assert that politicians have the power to influence corporations' wealth transfers through corporate taxes, regulations, and subsidies. According to Watts and Zimmerman (1978) who reinforced the political cost theory, larger firms are subject to greater government scrutiny, and they are observed politically. Therefore, larger firms are more exposed to regulatory actions taken by the government, and they are subject to wealth transfers and political costs more.

2.3. Costly Contracting Theory

Costly contracting theory is based on the notion that managers' choices of accounting policies have economic consequences (Holthausen & Leftwich, 1983; Watts & Zimmerman, 1986). According to the

costly contracting theory, the firm exists as a legal nexus of contractual relationships between the firm and various internal and external parties and managers have a tendency to select accounting policies that serve their best interests (Watts & Zimmerman, 1978).

Watts and Zimmerman (1978) relate managers' choice of accounting policies to three different contractual relationships. Two of these contracts are explicit and they can be explained within the context of agency theory. One of these explicit contracts is the executive compensation contracts which try to align the interest of the managers and the shareholders in an attempt to reduce the agency conflict between them. The debt covenant contract, on the other hand, is the other explicit contract, which is utilized to reduce the agency conflict between the shareholders and debt holders (Young, 1998). Debt covenants usually encompass dividend payment restrictions, asset maintenance requirements, and restrictions on financing policy (Hunt, 1985). The third contract is implicit, and it is related to the creation of political pressures (see Meyer et al., 2000). This type of contract is between companies and citizens of a country. In this contract, governments act as agents on behalf of the citizens (Meyer et al., 2000). According to Watts and Zimmerman (1986, 1990), there are three hypotheses based on costly contracting theory, which can be used to explain managers' choice of accounting policies. Watts and Zimmerman (1986, 1990) outline these hypotheses as follows: (1) The bonus plan hypothesis: managers of firms with bonus plans have a tendency to select income-increasing accounting policies. (2) The debt covenant hypothesis: managers of firms with larger debt/equity ratios have greater tendency to select income-increasing accounting policies. (3) The political-cost hypothesis: managers of larger firms are more likely to select income-decreasing accounting policies. The following section outlines the explanatory variables and development of the hypotheses within the framework of costly contracting theory.

3. DEVELOPMENT OF THE HYPOTHESES

3.1. Firm Size

The political-cost hypothesis suggests that larger firms are politically more visible than smaller firms and they are more exposed to political costs (Watts & Zimmerman, 1986). The politically visible companies, which are under intense scrutiny, are subject to political costs such as government interventions and retaliations from customers and unions (Waweru et al., 2011). In this regard, politically visible companies have a tendency to choose income-decreasing accounting policies in order to refrain from political costs, such as additional income taxes imposed, as well as other wealth transfers to society (Watts & Zimmerman, 1986; Young, 1998). There is empirical support for the notion that accounting policy choice can be affected

by political considerations (see Lee & Hsieh, 1985; Dopuch & Pincus, 1988). There is empirical evidence for the assumption that larger firms prefer income-decreasing accounting policies (e.g. Gul, 2001; Missonier-Piera, 2004). Similarly, several authors find that larger firms select income-reducing inventory accounting methods (e.g. Morse & Richardson, 1983; Dyl, 1989; Archambault & Archambault, 1994). Accordingly, based on political-cost theory, this study hypothesizes that larger companies would use income-decreasing inventory accounting methods under IAS/IFRS. In other words, it can be argued that as firm size increases, managers are less likely to select FIFO as an inventory accounting method. Consequently, the following hypothesis is formulated:

H1: Larger firms are more likely to select income-decreasing inventory accounting methods under IFRS.

3.2. Leverage

As agency theory pinpoints, restrictive debt contracts are written in order to control the behavior of managers and mitigate the agency conflict between shareholders and bondholders (Jensen & Meckling, 1976). Companies, which violate debt covenants, are subject to potential legal fees as well as other fees related to re-contracting and renegotiating their debt contracts (DeFond & Jiambalvo, 1994). According to debt covenant hypothesis, companies having higher leverage are more likely to encounter restrictive debt covenants and therefore they are more likely to select income-increasing accounting policies in order not to violate their debt covenants (Holthausen & Leftwich, 1983; Watts & Zimmerman, 1986; Press & Weintrop, 1990). The study of Craycraft et al. (1998) reveal that financial leverage has a negative influence on the choice of LIFO, which means that companies having higher leverage are more likely to select an income increasing inventory accounting method such as FIFO. Thus, based on the debt covenant theory, this study hypothesizes that firms with high financial leverage ratios would choose income-increasing inventory accounting policies. Accordingly, the following hypothesis is formulated:

H2: Firms select income-increasing inventory accounting methods under IFRS when financial leverage is higher.

3.3. Profitability

According to the costly contracting theory, companies reporting high profits are more politically visible. In addition, they are subject to regulatory scrutiny and political costs (Holthausen & Leftwich, 1983). Therefore, managers of profitable companies have a tendency to use income-decreasing accounting policies to hide their appealing financial conditions in order to avoid political costs (Cahan, 1992). From this perspective, the impact of profitability on accounting-policy choice is considered within the framework of political-cost hypothesis.

On the other hand, as agency theory postulates, execute compensation contracts are written to align the interests of managers and shareholders in order to mitigate the manager-shareholder conflict (Jensen & Meckling, 1976). According to the bonus-plan hypothesis, managers have a tendency to choose income-increasing accounting policies if their remuneration is linked to reported income in the management bonus plans (Watts & Zimmerman, 1978; Holthausen, 1981; Healy, 1985; Gaver & Gaver, 1993). Prior research (e.g. Astami & Tower, 2006) provides evidence that firms reporting high profits select income-increasing accounting methods. In this case, profitability, which is used as a proxy for bonus plan, is considered from the perspective of bonus-plan hypothesis.

Based on these considerations, in the current study, the impact of profitability on inventory accounting policy choice will be tested for political-cost and bonus-plan hypotheses. Under political-cost hypothesis, managers of profitable firms are more likely to choose WAC as the income-decreasing inventory accounting policy. Under bonus-plan hypothesis, on the other hand, managers of profitable firms are more likely to select FIFO because use of FIFO leads to higher profits when compared to the other methods. In this regard, firms with high profitability may select income-increasing or income-decreasing inventory accounting methods under IAS/IFRS. Hence, the following hypothesis is developed:

H3: Firms select income increasing/decreasing inventory accounting methods under IFRS when profitability is higher.

3.4. Capital Intensity and Investment Opportunity Set

Ali and Ahmed (2017) assert that capital-intensive firms are subject to higher political costs and, therefore, they tend to choose income-reducing accounting methods. Indeed, previous studies (e.g. Astami & Tower, 2006) demonstrate that capital-intensive companies select income-reducing accounting methods. Similarly, Craycraft et al. (1998) find that capital intensity increases the likelihood of selecting income-reducing inventory accounting methods. Craycraft et al. (1998) also state that capital-intensive companies are more likely to use LIFO to report lower profits for minimizing political costs.

On the other hand, companies with high capital intensity and investment opportunity sets are more likely to use incentive compensation plans and debt covenants because accounting figures are good measures for firm performance (see Hagerman & Zmijewski, 1979; Abdel-Khalik, 1985; Skinner, 1993; Astami & Tower, 2006). Based on these considerations, capital intensity may influence the choice of accounting policy differently within the scope of political-cost, bonus-plan, and debt covenant hypotheses. This might be the reason why authors have foundconflicting results. In other words, even though several authors (e.g. Smith & Watts, 1992) find that capital-intensive firms select income-maximizing accounting policies, some others

(e.g. Astami & Tower, 2006) find the opposite. On the other hand, investment opportunity set may encourage selection of income-maximizing accounting policies based on both bonus-plan and debt covenant hypotheses (see Astami & Tower, 2006).

Accordingly, in this study, the impact of capital intensity on the choice of inventory accounting method is tested by drawing on political-cost, bonus-plan, and debt covenant hypotheses. Based on political-cost hypothesis, as capital intensity increases, the possibility of selecting income-decreasing inventory accounting methods also increases. According to the bonus-plan and debt covenant hypotheses, on the other hand, capital intensity should lead to choosing FIFO to report maximum income. On the other hand, the impact of investment opportunity set on the selection of inventory accounting method is tested under bonus-plan, and debt covenant hypotheses. Consequently, the following hypotheses are developed:

H4: Firms select income increasing/decreasing inventory accounting methods under IFRS when capital intensity is higher.

H5: Firms select income-increasing inventory accounting methods under IFRS when investment opportunity set is higher.

Table 1 summarizes the explanatory variables, the hypotheses, and the predicted sign of the coefficients related to the hypotheses within the framework of costly contracting theory.

Table 1. Expected Impact of Explanatory Variables on Choice of Inventory Accounting Method

Explanatory variables	Hypotheses	Related hypotheses within costly contracting theory	Predicted sign of selection of income-increasing inventory accounting methods
SIZE	H1	Political-cost hypothesis	-
PROF	H2	Political-cost and bonus-plan hypotheses	-/+
LEV	H3	Debt-covenant hypothesis	+
CINT	H4	Political-cost, bonus-plan, and debt-covenant hypotheses	-/+
IOS	H5	Bonus-plan and debt-covenant hypotheses	+

Notes: SIZE= Firm size; PROF= Profitability; LEV= Leverage; CINT= Capital intensity; IOS= Investment opportunity set.

4. RESEARCH METHODOLOGY

4.1. Data and Sample Characteristics

The data used in the current study include 921 listed firms from 11 countries operating in manufacturing, communications, computer hardware, retail, wholesale, and mining and extraction sectors. Australia, United Kingdom, Ireland, New Zealand, The Netherlands, Belgium, Germany, Spain, France, Italy, and Portugal are the countries used in this study. The financial data, including the financial year of 2019, is downloaded from ORBIS database. The information about the choice of inventory accounting policy is hand collected from the annual reports of the firms which are solicited from company web pages. Initially, 1,884 companies are downloaded. After visiting websites of the companies, many companies are eliminated due to missing data regarding the inventory evaluation method. Some of other companies are further eliminated because the annual reports are not available on the web pages and/or they are not reported in English. Table 2 presents the details of sample firms:

Table 2. Distribution of Sample Firms According to Country and Industry

Industry	Australia	Netherlands	UK	Ireland	New Zealand	Belgium	Germany	Spain	France	Italy	Portugal	Total
Chemicals, Petroleum, Rubber & Plastic manufacturing	31	12	33	8	5	8	24	2	13	9	0	145
Communications	11	0	5	0	0	6	2	0	1	0	0	25
Computer Hardware	1	0	1	1	0	0	3	0	1	1	0	8
Food & Tobacco Manufacturing	16	6	18	5	5	5	2	3	8	6	0	74
Industrial, Electric & Electronic Machinery manufacturing	39	11	44	5	3	8	43	2	21	15	0	191
Leather, Stone, Clay & Glass products manufacturing	1	1	9	1	2	0	4	1	2	6	2	29
Metals & Metal Products manufacturing	9	1	7	2	1	2	6	4	5	1	1	39
Mining & Extraction	120	2	4	3	2	2	0	0	0	1	1	135
Miscellaneous Manufacturing	2	0	1	0	0	0	4	0	0	0	0	7
Retail	27	3	18	3	7	2	8	1	8	2	2	81

Textiles & Clothing Manufacturing	5	1	7	0	2	4	4	2	7	5	0	37
Transport Manufacturing	7	4	7	1	1	0	13	2	7	7	1	50
Wholesale	24	3	20	3	5	2	9	0	6	4	1	77
Wood, Furniture & Paper Manufacturing	2	1	8	1	0	1	3	0	1	2	4	23
Total	295	45	182	33	33	40	125	17	80	59	12	921

As Table 2 shows, 295 companies included in the sample are from Australia (32.03 per cent), 182 companies are from the UK (19.76 per cent) and 125 companies (13.57 per cent) are from Germany. The remaining 34.64 per cent of the total sample is composed of the companies from other eight countries.

4.2. Study Variables

4.2.1 Dependent Variable

The dependent variable used in this study is the choice of inventory accounting method. According to IAS 2, inventories should be evaluated at lower of cost or net realizable value. In this study, companies value their inventories in line with this rule because all sample firms use IFRS standards. On the other hand, the IAS 2 offers companies three alternative inventory accounting methods, which are FIFO, WAC, and combination of WAC and FIFO (IAS Plus, 2020). In this study, similar to Skinner (1993), Astami & Tower (2006) and Ali & Ahmed (2017), FIFO, which is considered as income-increasing method, is scored as two. The combination of WAC and FIFO is also scored as one. Finally, the lowest score, which is 0, is assigned to companies using WAC. As aforementioned, companies using FIFO are assumed to prefer income-increasing inventory accounting method, while companies using other methods are assumed to prefer income-decreasing methods. Table 3 exhibits the users of FIFO, WAC, and combination of WAC and FIFO by country.

Table 3. Breakdown of Inventory Accounting Method Users by Country

	Inventory Accounting Method			
	WAC	Combination of WAC and FIFO	FIFO	Total
Australia	166	23	106	295
Netherlands	20	1	24	45
UK	62	12	108	182
Ireland	6	5	22	33
New Zealand	19	1	13	33
Belgium	16	9	15	40
Germany	99	13	13	125
Spain	13	2	2	17
France	48	10	22	80
Italy	49	0	10	59
Portugal	11	0	1	12
Total	509	76	336	921

As can be seen in Table 3, 509 companies use WAC method, which corresponds to approximately 55.3 per cent of the total sample. 76 companies (8.3 per cent) use combination of WAC and FIFO. On the other hand, 336 companies use FIFO, which is around 36.4 per cent of the sample firms. As Table 3 demonstrates, in the Netherlands, UK, and Ireland, a vast majority of the companies (53.3 per cent, 59.3 per cent, and 66.6 per cent, respectively) use FIFO which is followed by WAC (44.4 per cent, 34.1 per cent, and 18.2 per cent, respectively) and combination of WAC and FIFO (2.3 per cent, 6.6 per cent, and 15.2 per cent, respectively). This means that the majority of companies operating in the Netherlands, UK, and Ireland mostly prefer to choose an income-increasing inventory accounting method. In other countries, majority of the companies prefer WAC to FIFO. For example, in Germany, 79.2 per cent of the sample firms choose WAC, while only 10.4 per cent of the sample companies select FIFO. On the other hand, companies in Australia, New Zealand, Belgium, Spain, France, Italy, and Portugal also mostly use non-FIFO methods, indicating that they have a tendency to select income-decreasing inventory accounting methods.

4.2.2. Explanatory Variables

In this study, firm size, financial leverage, profitability, capital intensity, and information opportunity set are used as main independent variables. Firm size is measured using natural log of total assets (Gul, 2001; Elayan et al., 2008). Firm size is used as a proxy for political visibility, and it is used to test political-cost hypothesis. On the other hand, the ratio of total debt to total assets is used to measure leverage (Meyer et al., 2000). In this study, leverage represents a proxy for breach of debt covenants, and it is used to test debt-covenant hypothesis. Profitability is measured by the ratio of profit before interest and tax to total assets (Tan et al., 2002). Profitability is used as a proxy for both political visibility and bonus plans. Therefore, it is used to test political-cost and bonus-plan hypotheses. The current study uses ratio of property, plant, and equipment to total assets as a proxy for capital intensity and ratio of property, plant, and equipment to market value of the firm as a proxy for investment opportunity set (Ali & Ahmed, 2017). Capital intensity also represents different proxies for political visibility, bonus, and breach of debt covenant. Thus, capital intensity is used to test political-cost, bonus-plan, and debt-covenant hypotheses. The investment opportunity set represents proxies for bonus and breach of debt covenants. Therefore, this variable is used to test bonus-plan and debt-covenant hypotheses.

4.2.3. Control Variables

Financial-reporting system of a firm is influenced by the country differences (see Craig & Diga, 1998). Parallel to this argument, there is empirical evidence indicating that country differences influence accounting-policy choices (see Tan et al., 2002). There is also empirical evidence demonstrating that industry differences influence the choice of inventory accounting method (see Morse & Richardson, 1983; Hunt, 1985; Lee & Hsieh, 1985). Thus, 10 country dummies for 11 countries and 13 industry dummies for 14 industries are used to examine country and industry effects.

4.3. Statistical Analyses and Model Specification

Multiple regression analysis used to test the impact of the explanatory variables on the choice of inventory accounting method. In this regard, for the dependent variable, companies are classified as FIFO users, WAC users, and the users of a combination of FIFO and WAC. Then, the dependent variable INV is coded as 2 for FIFO users, 1 for the users of a combination of FIFO and WAC, and 0 for the WAC users. Positive beta coefficients of multiple regression models demonstrate higher likelihood of selecting FIFO and negative coefficients represent higher likelihood of choosing methods other than FIFO. Accordingly, the following model is developed:

$INV = \beta0 + \beta1\ (SIZE) + \beta2\ (CINT) + \beta3\ (LEV) + \beta4\ (PROF) + \beta5\ (IOS) + \beta6\ (INDUSTRY\ DUMMIES) + \beta7\ (COUNTRY\ DUMMIES) + \varepsilon$

Where;

INV= Dependent variable representing the firms' choice of inventory accounting method. It is coded as 2 for FIFO, 1 for the combination of FIFO and WAC, and 0 for the WAC.

SIZE= Firm size

CINT= Capital intensity

LEV= Leverage

PROF= Profitability

IOS= Investment opportunity set

5. RESULTS

5.1. Descriptive Statistics and Correlation Analysis

Table 4 presents the descriptive statistics. The mean value of PROF is -0.0141 with a standard deviation of 0.9829. LEV has mean value of 0.6472. Descriptive statistics for the other independent variables can be seen in Table 4.

Table 4. Descriptive Statistics

Variables	Min.	Max.	Mean	SD
PROF	-16.00	19.0972	-.0141	.9829
IOS	-42.4206	61.5848	.3659	3.2199
CINT	-.1873	.9448	.2272	.1917
LEV	.00	57.6136	.6472	2.3094
SIZE	1.4833	8.7390	5.5765	1.1261

Notes: PROF= Profitability; IOS= Investment opportunity set; CINT= Capital intensity; LEV= Leverage; SIZE= Firm size; SD= Standard deviation.

Table 5 portrays correlations among the study variables. Table 5 shows that IOS has a negative relationship with INV and this relationship is significant at 5 %t significance level. In addition, CINT has a negative correlation with INV, which is significant at 1 % level. SIZE also has a negative correlation with INV and this correlation is statistically significant at 1 % level. As can be seen in Table 5, pairwise

correlations between any two of the regressors is below the cutoff point of 0.8, meaning that there is no multicollinearity problem in the current study (Gujarati, 2003).

Table 5. Correlations among Study Variables

	PROF	IOS	CINT	LEV	SIZE	INV
PROF	1	.005	.025	-.242***	.100***	0.008
IOS	.005	1	.079**	.003	.089***	-.069**
CINT	.025	.079**	1	-.050	.207***	-.123***
LEV	-.242***	.003	-.050	1	-.147***	-.024
SIZE	.089***	.100***	.207***	-.147***	1	-.119***
INV	.008	-.069**	-.123***	-.024	-.119***	1

Notes: PROF= Profitability; IOS= Investment opportunity set; CINT= Capital intensity; LEV= Leverage; SIZE= Firm size; INV= Choice of inventory accounting method. ** and *** represent significance levels (2-tailed) at 5% and 1%, respectively.

5.2. Multiple Regression Results

Table 6 exhibits the results of the multiple regression analysis using inventory method choice as the dependent variable. In the regression analysis, industry and country dummies are also included.

Table 6. Results of Multiple Regression

	Predicted sign	Coefficient	t-stat	P-value	VIF
PROF	+/-	-.0126009	-.31	.757	1.17
IOS	+	-.0069527	-.78	.438	1.03
CINT	+/-	-.3058608	-1.82	.069*	1.29
LEV	+	-.010629	-.81	.420	1.15
SIZE	-	-.0647308	-2.02	0.043**	1.59
Industry dummies	Included				
Country dummies	Included				
R-Square	.1872				
Adjusted R Square	.1615				
F-statistics	7.30***				

Notes: PROF= Profitability; IOS= Investment opportunity set; CINT= Capital intensity; LEV= Leverage; SIZE= Firm size; *, ** and *** represent significance levels (2-tailed) at 10%, 5%, and 1%, respectively.

According to Table 6, the adjusted R-square, which is the predictive ability of the regression, is 16.15 %. The VIF values are all below the cutoff value of 10. This means that there is no multicollinearity problem in the statistical analysis (Kutner et al., 2004). The results demonstrate that SIZE influences the choice of FIFO negatively and this influence is statistically significant at 0.05 % level. This finding supports the political-cost hypothesis, which implies that larger firms are more likely to select income-reducing inventory accounting methods. Thus, H1 is supported. According to this result, companies select non-FIFO methods (WAC or combination of WAC and FIFO) to report relatively higher cost of goods sold and lower income.

Contrary to the expected positive sign derived from the debt-covenant hypothesis, there is a negative relationship between LEV and INV, but this relationship is not statistically significant. According to this result, H2 is rejected.

The results also indicate that CINT has a statistically significant negative impact, with a p-value of 0.069, on the selection of FIFO as inventory accounting method. This result implies that as capital intensity increases, companies' tendency to select FIFO decreases. This finding confirms H4. The negative influence of CINT on the choice of FIFO provides evidence for the expectation that capital-intensive firms are more likely to use income-reducing methods (see, for example, Ali & Ahmed, 2017; Astami & Tower, 2006; Craycraft et al., 1998). When companies choose FIFO, they report lower cost of goods sold and higher income. Accordingly, the negative effect of CINT on choice of FIFO supports the political cost theory, which suggests that capital-intensive companies select income-minimizing inventory accounting policies.

The results further show that PROF and IOS do not have a statistically significant impact on the managers' choice of inventory accounting method. Therefore, H3 and H5 are rejected. In this case, this study does not find evidence for the impact PROF on the choice inventory accounting method to support political-cost or bonus-plan hypothesis. Similarly, there is no support for the impact of IOS on inventory accounting method choice under the bonus-plan and debt-covenant hypotheses. Table 7 summarizes the hypotheses test results:

Table 7. Results of Hypotheses Testing

Explanatory variables	Hypothesis	Predicted sign	Hypothesis test	Supported hypothesis under costly contracting theory
SIZE	H1	-	Accepted	Political-cost hypothesis
PROF	H2	+/-	Rejected	-
LEV	H3	+	Rejected	-
CINT	H4	+/-	Accepted	Political-cost hypothesis
IOS	H5	+	Rejected	-

Notes: Notes: PROF= Profitability; IOS= Investment opportunity set; CINT= Capital intensity; LEV= Leverage; SIZE= Firm size.

To sum up, as can be seen in Table 7, SIZE and CINT have a significant impact on the managers' choice of inventory accounting method that are supported by the political cost theory.

6. CONCLUSIONS

The aim of this study is to empirically explore the firm-specific factors influencing the choice of inventory accounting method within the framework of costly contracting theory. This study uses a sample of 921 listed firms operating in 14 industries in 11 countries (including Australia, United Kingdom, Ireland, New Zealand, The Netherlands, Belgium, Germany, Spain, France, Italy, and Portugal), and it contributes to the literature by providing evidence on the determinants of inventory accounting choice under IAS/IFRS.

The descriptive statistics reveal that, in the Netherlands, UK, and Ireland, vast majority of the companies use FIFO as the income-increasing inventory accounting method. In Germany, on the other hand, companies mostly prefer WAC, an income-decreasing method. Similarly, the companies operating in Australia, New Zealand, Belgium, Spain, France, Italy, and Portugal mostly use non-FIFO methods, indicating that they have a tendency to select income-decreasing inventory accounting methods.

According to multiple regression results, larger firms have tendency to select WAC or combination of WAC and FIFO. This result is consistent with the political-cost hypothesis. The results also indicate that CINT has a statistically significant negative impact on the selection of FIFO as an inventory accounting method. That is, as capital intensity increases, companies' tendency to select FIFO decreases. The negative influence of CINT on the choice of FIFO provides evidence for the argument that capital-intensive firms are more likely to select income-reducing methods (see, for example, Ali & Ahmed, 2017; Astami & Tower,

2006; Craycraft et al., 1998). It is also important to emphasize that the negative impact of CINT found in this study is in line with the political cost theory.

Based on these results, it can be stated that costly contracting theory is relevant with respect to the impact of SIZE and CINT on managers' choice of inventory accounting method. This, in turn, implies that SIZE and CINT may influence managers' choice of inventory accounting policy for opportunistic reasons. This conveys valuable information to the users of accounting information such as investors, creditors, and tax authorities. When evaluating financial statements, these users should keep in mind that larger companies tend to use income-reducing inventory accounting policies for opportunistic reasons, especially in order to avoid political costs. They should also be cautious when evaluating financial statements of capital-intensive firms because managers of these firms may intentionally use an income-minimizing inventory accounting method in order to prevent the negative effect of political costs. These findings, which imply that managers of large and/or capital-intensive firms have a tendency to select inventory accounting methods in line with their own self-interests, also give an important message to standard-setters. In this regard, the standard-setters should understand that when accounting standards provide managers with an opportunity to select among different alternatives, they may choose accounting methods for opportunistic reasons, which makes reliability and relevance of accounting information questionable. Finally, this study is expected to provide important information to related parties, such as potential investors, potential buyers, entrepreneurs, analysts, creditors, who analyze the profitability and liquidity of companies. In this regard, the results are expected to assist these users by showing that the degree of liquidity or the degree of profitability of large and/or capital-intensive companies may be questionable because of opportunistic behavior of managers in selecting an inventory accounting method in line with the political cost hypothesis. Accordingly, users who perform financial analysis should take into consideration the subsidies, taxes and regulations to be applied to the company under analysis, so as to understand the real (actual) liquidity and/or profitability of the company.

The findings of this study should be interpreted in light of several limitations. First, this study selects eleven countries in total. Thus, further studies may select a broader sample in Europe as well as in other regions of the world. Second, this study collects the data from a single accounting period after IFRS adoption. Therefore, future studies may expand the number of study periods. Third, the current study explores the firm-specific determinants of inventory accounting policy choice within the framework of costly contracting theory. Future studies may test whether other factors affect the choice of inventory accounting method under IFRS. Fourth, it is suggested for further studies that the data can be separated as

Anglo-Saxon and Continental Countries to compare the results to show whether there is a difference between Anglo-Saxon and Continental Countries or not.

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AUTHORS' CONTRIBUTIONS

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